LYON COUNTY HIGHWAY DEPARTMENT
504 FAIRGROUNDS ROAD
MARSHALL, MN 56258

**********PROPOSAL**********

FOR HIGHWAY CONSTRUCTION
AND MAINTENANCE PROJECTS WITH
BIDS RECEIVED UNTIL 9:30 O'CLOCK A.M. ON JUNE 11th, 2013
Bids accepted by Lyon County Auditor/Treasurer, 607 West Main Street, Marshall, MN 56258

PROPOSAL OF _____
(NAME OF FIRM)

_____
(ADDRESS)

_____
(AREA CODE) TELEPHONE

TO FURNISH AND DELIVER ALL MATERIALS AND TO PERFORM ALL WORK IN ACCORDANCE WITH THE CONTRACT, THE PLANS AND THE APPROVED DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION", 2005 EDITION, EXCEPT AS STATED OTHERWISE IN THE SPECIAL PROVISIONS WHICH ARE PART OF THIS PROPOSAL, FOR

STATE PROJECT NO. **SAP 042-607-026 and SAP 042-607-027**

MINNESOTA PROJECT NO.

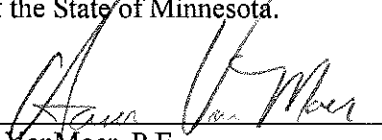
LOCATION: CSAH 7 between US 14 and CSAH 2 in Lyon County

TYPE OF WORK: SAP 042-607-026 Bridge Replacement with Approach Grading
SAP 042-607-027 Grading, Aggregate Base, Bituminous Surfacing

STARTING DATE: **July 1, 2013**
COMPLETION DATE: **October 16, 2013**

NOTICE TO BIDDERS: In submitting a bid, you must return this complete proposal. You must initial changes made in the Schedule of Prices in the Proposal and acknowledge addenda on the back cover sheet.

I certify that this Proposal was prepared by me or under my direct supervision, and that I am a licensed professional engineer under the laws of the State of Minnesota.



Aaron VanMoer, P.E.
License Number 50428 Date: 5/17/13

****

BID RIGGING IS A SERIOUS CRIME. IF YOU HAVE ANY INFORMATION CONCERNING COLLUSIVE BIDDING, EVEN A REQUEST TO SUBMIT A COMPLIMENTARY BID, PLEASE CALL THE MINNESOTA ATTORNEY GENERAL'S OFFICE AT TELE. NO. 651-296-1796.

To Lyon County Board of Commissioners:

According to the advertisement of Lyon County inviting proposals for the improvement of the section of highway hereinbefore named, and in conformity with the Contract, Plans, Specifications and Special Provisions pertaining thereto, all on file in the office of the Auditor of Lyon County:

(I)(We) hereby certify that (I am)(we are) the only person(s) interested in this proposal as principal(s); that this proposal is made and submitted without fraud or collusion with any other person, firm or corporation at all; that an examination has been made of the site of the work and the Contract form, with the Plans, Specifications and Special Provisions for the improvement.

(I)(We) understand that the quantities of work shown herein are approximate only and are subject to increase or decrease; that all quantities of work, whether increased or decreased within the limits specified in Mn/DOT 1903, are to be done at the unit prices shown on the attached schedule; that, at the time of opening bids, totals only will be read, but that comparison of bids will be based on the correct summation of item totals obtained from the unit prices bid, as provided in Mn/DOT 1301.

(I)(We) propose to furnish all necessary machinery, equipment, tools, labor and other means of construction and to furnish all materials specified, in the manner and at the time prescribed, all according to the terms of the Contract and Plans, Specifications, and the Special Provisions forming a part of this.

(I)(We) further propose to do all Extra Work that may be required to complete the contemplated improvement, at unit prices or lump sums to be agreed upon in writing before starting such work, or if such prices or sums cannot be agreed upon, to do such work on a Force Account basis, as provided in Mn/DOT 1904.

(I)(We) further propose to execute the form of Contract within 10 days after receiving written notice of award, as provided in Mn/DOT 1306.

(I)(We) further propose to furnish a payment bond equal to the Contract amount, and a performance bond equal to the Contract amount, with the aggregate liability of the bond(s) equal to twice the full amount of the Contract if the contract is less than or equal to five million dollars ($5,000,000.00), or if the contract is in excess of five million dollars ($5,000,000.00) the aggregate liability shall be equal to the amount of the contract, as security for the construction and completion of the improvement according to the Plans, Specifications and Special Provisions as provided in Mn/DOT 1305.

(I)(We) further propose to do all work according to the Plans, Specifications and Special Provisions, and to renew or repair any work that may be rejected due to defective materials or workmanship, before completion and acceptance of the Project by Lyon County.

(I)(We) agree to all provisions of Minnesota Statutes, Section 181.59.

(I)(We) further propose to begin work and to prosecute and complete the same according to the time schedule set forth in the Special Provisions for the improvement.

(I)(We) assign to Lyon County all claims for overcharges as to goods and materials purchased in connection with this Project resulting from antitrust violations that arise under the antitrust laws of the United States and the antitrust laws of the State of Minnesota. This clause also applies to subcontractors and first tier suppliers under this Contract.

SAP 042-607-026 and SAP 042-607-027
LYON COUNTY
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Equal Employment Opportunity (EEO) Special Provisions
Schedule of Prices

S.A.P. No. 042-607-026
DATE: May 7, 2013

Bridge No. 42567 Lyon County

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Notification Form on Ownership/Transfer of Treated Wood
MPCA Notice of Intent to Perform a Bridge Demolition
Asbestos and Regulated Waste Assessment Report

I hereby certify that the special provisions for the Bridge Construction (Division SB) contained in this Proposal were prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota.

Date: 5/13/13 Lic. No. 44959

NOTICE:

The Lyon County Highway Dept. will administer this Contract in accordance with the provisions set forth in Minnesota Statutes Section 177.44, subdivision 4, and the provisions and wage rates set forth in the Certified Prevailing Wages for Highway and Heavy Construction in the Proposal for this Contract.

The work required by this Contract may be in more than one County. Wage determinations for all pertinent Counties are included in the Proposal, and the following shall apply:

> If a Contract for road or bridge construction commences in one County and uninterrupted ends in another, the highest wage rate shown for each labor code and class in any one County wage determination contained in the Proposal shall govern for all work on the entire Contract regardless of the County in which each type of work is performed.
>
> or,
>
> If a Contract such as guardrail, turn lanes, signing, lighting, bridge repair, or similar construction has work in two or more Counties, but none of the work is continuous and uninterrupted across a County line, the wage rate for each labor code and class shall be paid for the work performed in each County.

It shall be the Contractor's responsibility to determine the proper wage rates to be paid for each class of work on this Contract.

March 16, 1998

PREVAILING WAGE STATEMENT

A recent unpublished decision of the Minnesota Court of Appeals, affirms the authority of the Minnesota Commissioner of Transportation to enforce the Minnesota Prevailing Wage Law on State Highway projects on a case-by-case basis. International Union of Operation Engineers, Local 49 vs. Minn. Dept. of Transportation, et al., Court of Appeals Case No. C6-97-1582, also see, Minn. Stat. §§ 177.43 and 177.44 (1996).

The Department of Transportation will enforce the Minnesota Prevailing Wage Law in a manner consistent with the Court of Appeal's decision notwithstanding any prior notices on this subject. A copy of the Court of Appeal's decision is available to anyone who is interested in reviewing it. Please call Charles Groshens, Labor Compliance Unit at (651) 297-5716 to receive a copy.

June 26, 2001

PREVAILING WAGE STATEMENT II

On June 18, 2001, the Minnesota Department of Labor & Industry (MnL&I) published in the State Register a notice of modification and adoption of the rules as published in State Register, Volume 25, Number 14, Pages 772-778, October 2, 2000, (25 SR 772). The rules were promulgated under the Minnesota Administrative Procedures Act, Minn. Stat. Chap. 14, and affect all projects funded in whole or part with state monies that are advertised for bid 5 working days after the publication date. The rules give guidance on the application of the State Prevailing Wage Statute, Minn. Stat. § 177.41 to 177.44, as it applies to contractor's labors and mechanics working at off-site facilities, truck drivers performing hauling activities for state funded projects, and the calculation and application of truck rental rates. The truck rental rates, when certified by the MnL&I, will take effect on state funded projects advertised after the rates are published in the State Register. MnDOT will incorporate the truck rental rates into the appropriate contracts when published after they have been published in the State Register. Copies of the rules can be received by contacting the MnL&I, Labor Standards, Erik Oelker, at (651) 296-6452 or MnDOT, Labor Compliance Office, Charles Groshens, at (651) 297-5716.

NOTICE TO BIDDERS

The proposal wage rate is current as of the advertising date. It will be the Contractor's responsibility to bid estimated quantity prices with the most updated wage rate at the time of letting.

NOTICE TO ALL BIDDERS

To report bid rigging activities call:

1-800-424-9071

The U.S. Department of Transportation (DOT) operates the above toll-free "hotline" Monday through Friday, 8:00 a.m. to 5:00 p.m., eastern time. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the "hotline" to report such activities.

The "hotline" is part of the DOT's continuing effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the DOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

NOTICE TO BIDDERS

SUSPENSIONS/DEBARMENTS

May 6, 2013

DEPARTMENT OF TRANSPORTATION

NOTICE OF DEBARMENT

NOTICE IS HEREBY GIVEN that MnDOT has ordered that the following vendors be debarred for a period of three (3) years, effective March 25, 2011 until March 25, 2014:

- Philip Joseph Franklin and his affiliates, Leesburg, VA
- Franklin Drywall, Inc. and its affiliates, Little Canada, MN
- Master Drywall, Inc. and its affiliates, Little Canada, MN

NOTICE IS HEREBY GIVEN that MnDOT has ordered that the following vendors be debarred for a period of three (3) years, effective May 6, 2013 until May 6, 2016:

- Gary Francis Bauerly and his affiliates, Rice, MN
- Gary Bauerly, LLC and its affiliates, Rice, MN
- Watab Hauling Co. and its affiliates, Rice, MN

NOTICE OF SUSPENSION

NOTICE IS HEREBY GIVEN that the Department of Transportation ("MnDOT") has ordered that the following vendors be suspended for a period of sixty (60) days, effective May 6, 2013 until July 5, 2013:

- Marlon Louis Danner and his affiliates, South St. Paul, MN
- Danner, Inc. and its affiliates, South St. Paul, MN
- Bull Dog Leasing, Inc. and its affiliates, Inver Grove Heights, MN
- Danner Family Limited Partnership and its affiliates, South St. Paul, MN
- Ell-Z Trucking, Inc. and its affiliates, South St. Paul, MN
- Danner Environmental, Inc. and its affiliates, South St. Paul, MN

Minnesota Statute section 161.315 prohibits the Commissioner, counties, towns, or home rule or statutory cities from awarding or approving the award of a contract for goods or services to a person who is suspended or debarred, including:

1) any contract under which a debarred or suspended person will serve as a subcontractor or material supplier,
2) any business or affiliate which the debarred or suspended person exercises substantial influence or control, and
3) any business or entity, which is sold or transferred by a debarred person to a relative or any other party over whose actions the debarred person exercises substantial influence or control, remains ineligible during the duration of the seller's or transfer's debarment.

DEPARTMENT OF ADMINISTRATION

As of the date of this notice and in accordance with Minnesota Rules 1230.1150, the Minnesota Department of Administration has debarred and disqualified the following persons and businesses from entering into or receiving a State of Minnesota contract:

NAME	DATE OF DEBARMENT
Best Used Trucks of Minnesota, Inc. 635 Marin Ave. Crookston, MN 56716	Nov. 20, 2012 through Nov. 20, 2015 (eligible for reinstatement on Nov. 20, 2016)
Bull Dog Leasing, Inc. 7854 Danner Court Inver Grove Heights, MN 55076	Aug. 30, 2011 through Aug. 30, 2014 (eligible for reinstatement on Aug. 30, 2015)
Danner Family Ltd. Ptnship. 843 Hardman Ave. S. S. St. Paul, MN 55075	Aug. 30, 2011 through Aug. 30, 2014 (eligible for reinstatement on Aug. 30, 2015)
Danner, Inc. 843 Hardman Ave. S. S. St. Paul, MN 55075	Aug. 30, 2011 through Aug. 30, 2014 (eligible for reinstatement on Aug. 30, 2015)
Ell-Z Trucking, Inc. 843 Hardman Ave. S. S. St. Paul, MN 55075	Aug. 30, 2011 through Aug. 30, 2014 (eligible for reinstatement on Aug. 30, 2015)
Franklin Drywall, Inc. 43279 Fieldsview Crt. Leesburg, VA 20176	March 25, 2011 through March 25, 2014 (eligible for reinstatement on March 25, 2015)
Master Drywall, Inc. 43279 Fieldsview Crt. Leesburg, VA 20176	March 25, 2011 through March 25, 2014 (eligible for reinstatement on March 25, 2015)
Watab Hauling Co. Gary Francis Bauerly 9695 Deerwood Rd. NE Rice, MN 56367	Jan. 14, 2013 through Jan. 14, 2016 (eligible for reinstatement on Jan. 14, 2017)

Minnesota Administrative Rule part 1230.1150, subpart 6 requires the Materials Management Division to maintain a master list of all suspensions and debarments. The master list must retain all information concerning suspensions and debarments as a public record for at least three (3) years following the end of a suspension or debarment. Refer to the following website for the master list: http://www.mmd.admin.state.mn.us/debarredreport.asp.

If the project is financed in whole or in part with federal funds, refer to the following website for vendors debarred by federal government agencies: http://sam.gov.

STATE FUNDED CONSTRUCTION CONTRACTS
SPECIAL PROVISIONS DIVISION A - LABOR
April 7, 2006

I. PREAMBLE

It is in the public interest that public buildings and other public works projects be constructed and maintained by the best means and the highest quality of labor reasonably available and that persons working on public works projects be compensated according to the real value of the services they perform.[1]

Therefore, the department shall administer this contract pursuant to the **State of Minnesota Statutes and Rules, MN/DOT's Standard Specifications for Construction, MN/DOT's Contract Administration Manual, MN/DOT's State Aid Manual** and applicable federal labor regulations.

II. DEFINITIONS[2]

A. **Contract**: The written agreement between the contracting authority and the prime contractor setting forth their obligations, including, but not limited to, the performance of the work, the furnishing of labor and materials, the basis of payment, and other requirements contained in the contract documents.

B. **Contracting Authority**: The political subdivision, governmental body, board, department, commission, or officer making the award and execution of contract as the party of the first part.

C. **Contractor**: The term "contractor" in these provisions shall include the prime contractor, subcontractor, agent, or other person doing or contracting to do all or part of the work under this contract.[3]

D. **Department**: The Department of Transportation of the State of Minnesota, or the political subdivision, governmental body, board, commission, office, department, division, or agency constituted for administration of the contract work within its jurisdiction.

E. **First Tier Subcontractor**: An individual, firm, corporation, or other entity to which the prime contractor sublets part of the contract.

F. **Independent Truck Owner/Operator (ITO)**: An individual, partnership, or principal stockholder of a corporation who owns or holds a vehicle under lease and who contracts that vehicle and the owner's services to an entity that provides construction services to a public works project.[4]

G. **Laborer or Mechanic**: A worker in a construction industry labor class identified in or pursuant to Minnesota Rules 5200.1100, Master Job Classifications.[5]

H. **Plan**: The plan, profiles, typical cross-sections, and supplemental drawings that show the locations, character, dimensions, and details of the work to be done.

I. **Prime Contractor**: The individual, firm, corporation, or other entity contracting for and undertaking prosecution of the prescribed work; the party of the second part to the contract, acting directly or through a duly authorized representative.

J. **Project**: The specific section of the highway, the location, or the type of work together with all appurtenances and construction to be performed under the contract.

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[1] Minnesota Statute 177.41
[2] MN/DOT Standard Specifications for Construction, Section 1103
[3] Minnesota Statute 177.44, Subdivision 1
[4] Minnesota Rules 5200.1106, Subpart 7(A)
[5] Minnesota Rules 5200.1106, Subpart 5(A)

K. **Second Tier Subcontractor**: An individual, firm, corporation, or other entity to which a first tier subcontractor sublets part of the contract.

L. **Special Provisions**: Additions and revisions to the standard and supplemental specifications covering conditions peculiar to an individual project.

M. **Specifications**: A general term applied to all directions, provisions, and requirements pertaining to performance of the work.

N. **Subcontractor**: An individual, firm, corporation, or other entity to which the prime contractor or subcontractor sublets part of the contract.

O. **Substantially In Place**: Mineral aggregate is deposited on the project site directly or through spreaders where it can be spread from or compacted at the location where it was deposited.[6]

P. **Trucking Broker**: An individual or business entity, the activities of which include, but are not limited to: contracting to provide trucking services in the construction industry to users of such services, contracting to obtain such services from providers of trucking services, dispatching the providers of the services to do work as required by the users of the services, receiving payment from the users in consideration of the trucking services provided and making payment to the providers for the services.[7]

Q. **Trucking Firm/Multiple Truck Owner (MTO)**: Any business entity that owns more than one vehicle and hires the vehicles out for services to brokers or contractors on public works projects.[8]

R. **Work**: The furnishing of all labor, materials, equipment, and other incidentals necessary or convenient to the successful completion of the project and the carrying out of all the duties and obligations imposed by the contract upon the contractor. Also used to indicate the construction required or completed by the contractor.

III. SCOPE – SPECIAL PROVISIONS DIVISION A & CONTRACT

A. These provisions shall apply to this contract, which is funded in whole or part with state funds.[9]

B. These provisions shall apply to the prime contractor and all subcontractors contracting to do all or part of the work under this contract.[10]

C. The provisions established in this document do not necessarily represent all federal, state, and local laws, ordinances, rules and regulations. It is the responsibility of the prime contractor to inform itself and all subcontractors about other regulations that may be applicable to this contract.

D. The prime contractor is responsible to ensure that each subcontractor performing work under this contract receives copies of all required contract provisions. These provisions shall be incorporated into written subcontracts and must be displayed on the poster board.[11]

E. The department shall administer this contract in accordance with all applicable state statutes and rules,[12] along with the plans, specifications and provisions, which are incorporated into and found elsewhere in this contract.

F. An unpublished decision from the Minnesota Court of Appeals affirms the authority of the Minnesota Commissioner of Transportation to enforce the Minnesota Prevailing Wage Law on a case-by-case basis.[13]

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[6] Minnesota Rules 5200.1106, Subpart 5(C)
[7] Minnesota Rules 5200.1106, Subpart 7(C)
[8] Minnesota Rules 5200.1106, Subpart 7(B)
[9] Minnesota Statute 177.41
[10] Minnesota Statute 177.44, Subdivision 1
[11] Minnesota Statute 177.44, Subdivision 5
[12] Minnesota Rules 8820.3000, Subpart 2
[13] Minnesota Court of Appeals Case Number: C6-97-1582

G. For additional information refer to: www.dot.state.mn.us/const/labor/.

IV. PAYROLLS AND STATEMENTS

A. All contractors shall submit a payroll statement to the department.[14] The statement shall be submitted based on the contractor's payment schedule. If a contractor pays its employees weekly, a payroll statement shall be submitted weekly. If a contractor pays its employees biweekly, a payroll statement shall be submitted biweekly.[15] All contractors shall pay its employees at least once every 15 days on a date designated in advance by the employer.[16] Each statement submitted shall include all employees that performed work under this contract and provide at a minimum the following information:[17]

1. Contractor's name, address, and telephone number.
2. State project number.
3. Payroll report number.
4. Project location.
5. Workweek ending date.
6. Name, social security number, and home address for each employee.
7. Labor classification(s) and/or three-digit code for each employee.
8. Hourly straight time and overtime wage rates paid to each employee.
9. Daily and weekly hours worked in each labor classification, including overtime hours for each employee.
10. Authorized legal deductions for each employee.
11. Project gross amount, weekly gross amount and net wages paid to each employee.

B. Payroll records may be submitted in any form provided it includes all the information contained in **Subpart A (1 - 11)** of this section. However, contractors needing a payroll form may utilize the "front side" of the **U.S. Department of Labor's, WH-347 - Payroll Form.** This form is available by visiting the Labor Compliance website.[18]

C. All payroll records must be accompanied with a completed and signed **MN/DOT, 21658 - Statement of Compliance Form.**[19]

D. The prime contractor is responsible for assuring that its payroll records and those of all subcontractors include all employees that performed work under this contract and accurately reflect the hours worked, regular and overtime rates of pay and classification of work performed.[20]

E. The prime contractor is responsible to maintain all certified payroll records, including those of all subcontractors, throughout the course of a construction project and retain all records for a period of three years after the final contract voucher has been issued.[21]

F. At the end of each pay period, each contractor shall provide every employee, in writing, an accurate, detailed earnings statement.[22]

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[14] Minnesota Statute 177.44, Subdivision 7
[15] Mn/DOT Contract Administration Manual, Section .320
[16] Minnesota Statute 181.10
[17] Minnesota Rules 5200.1106, Subpart 10 and Minnesota Statute 177.30
[18] www.dot.state.mn.us/const/labor/
[19] Minnesota Rules 5200.1106, Subpart 10
[20] Minnesota Statute 177.30(1)(2)(3)(4)
[21] Minnesota Statute 177.30(4)
[22] Minnesota Statute 181.032

G. Upon request from the Minnesota Department of Labor and Industry (MN/DLI) or the Department, the prime contractor shall promptly furnish copies of payroll records for its workers and those of all subcontractors, along with other records, deemed appropriate by the requesting agency to determine compliance with these contract provisions.[23]

H. At the department's discretion, the project engineer may administer the submission of payroll records according to MN/DOT's Payroll Maintenance Program. The guidelines for the implementation and administration of this program are outlined in the **MN/DOT Contract Administration Manual, Section A(4)(d).**

I. If, after written notice, the prime contractor fails to submit its payroll reports and certification forms and those of any subcontractor, the department may implement the actions prescribed in section **XVI (NON-COMPLIANCE AND ENFORCEMENT).**

V. WAGE RATES

A. The prime contractor is responsible to ensure that its workers and those of all subcontractors are compensated according to the MN/DLI state prevailing wage determination(s) incorporated into and found elsewhere in this contract. All contractors shall pay each worker the required minimum total hourly wage rate for all hours worked on the project and for the appropriate classification of labor.

1. State highway and heavy wage determinations are issued for ten separate regions throughout the state of Minnesota. If the contract work is located in more than one region, the applicable wage decision for each region shall be incorporated into and found elsewhere in this contract. If this contract contains multiple state highway and heavy wage determinations, there shall be only one standard of hours of labor and wage rates. [24]

2. State commercial wage determinations are issued for each county throughout the state of Minnesota. If the contract work is located in more than one county, the applicable wage determination for each county shall be incorporated into and found elsewhere in this contract. If this contract contains multiple state commercial wage determinations, there shall be only one standard of hours of labor and wage rates.[25]

B. Wage rates listed in the state wage determination(s) contain two components: the hourly basic rate and the fringe rate; together they equal the total prevailing wage rate. A contractor shall compensate a worker at a minimum, a combination of cash and fringe benefits equaling the total prevailing wage rate.[26]

C. The applicable certified wage decision(s) incorporated into and found elsewhere in this contract remain in effect for the life of this contract. The wage decision(s) do not necessarily represent the workforce that can be obtained at the rates certified by the MN/DLI. It is the responsibility of the prime contractor and any subcontractor to inform themselves about local labor conditions and prospective changes or adjustments to the wage rates. No increase in the contract price shall be allowed or authorized due to wage rates that exceed those incorporated into this contract.

D. A contractor shall not reduce a worker's private, regular rate of pay when the wage rate certified by the MN/DLI is less than the worker's normal hourly wage.[27]

E. From the time a worker is required to report for duty at the project site until the worker is allowed to leave the site, no deductions shall be made from the worker's hours for any delays of less than twenty consecutive minutes.[28]

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[23] Minnesota Statute 177.44, Subdivision 7 and Minnesota Rules 5200.1106, Subpart 10
[24] Minnesota Statute 177.44, Subdivision 4
[25] Minnesota Statute 177.44, Subdivision 4
[26] Minnesota Statute 177.42, Subdivision 6
[27] Minnesota Statute 181.03, Subdivision 1(2)
[28] Minnesota Rules 5200.0120,Subpart 1

F. In situations where a delay may exceed twenty consecutive minutes and the contractor requires a worker to remain on the premises or so close to the premises that the worker cannot use the time effectively for the worker's own purposes, the worker is considered "on-call"[29] and shall be compensated in accordance with **Subpart B** of this section, unless the worker is allowed or required to leave the project site.

G. A contractor making payment to an employee, laborer, mechanic, worker, or truck owner-operator shall not accept a rebate for the purpose of reducing or otherwise decreasing the value of the compensation paid.[30]

H. Any employee who knowingly permits a contractor to pay less than the total prevailing wage or gives up any part of the compensation to which the employee is entitled may be subject to penalties.[31]

VI. BONA FIDE FRINGE BENEFITS

A. A "funded" fringe benefit plan is one that allows the contractor to make irrevocable contributions on behalf of an employee to a financially responsible trustee, third person, fund, plan or program, without prior approval from the U.S. Department of Labor. Types of "funded" fringe benefits may include, but are not limited to: pension, health and life insurance.[32]

B. An "unfunded" fringe benefit plan or program is one that allows the contractor to furnish an in-house benefit on behalf of an employee. The cost to provide the benefit is funded from the contractor's general assets rather than funded by contributions made to a trustee, third person, fund, plan or program. Types of "unfunded" fringe benefits may include, but are not limited to: holiday plans, vacation plans and sick plans.[33]

C. Credit toward the total prevailing wage rate shall be determined for each individual employee and is allowed for bona fide fringe benefits that:[34]

   1. include contributions irrevocably made by a contractor on behalf of an employee to a financially responsible trustee, third person, fund, plan, or program;

   2. are legally enforceable;

   3. have been communicated in writing to the employee; and

   4. are made available to the employee once he/she has met all eligibility requirements.

D. No credit shall be allowed for benefits required by federal, state or local law, such as: worker's compensation, unemployment compensation, and social security contributions.[35]

E. Upon request from the Minnesota Department of Labor and Industry (MN/DLI) or the Department, the prime contractor shall promptly furnish copies of fringe benefit records for its workers and those of all subcontractors, along with other records, deemed appropriate by the requesting agency to determine compliance with these contract provisions.[36]

F. In addition to the requirements set forth in **Subpart C** of this section, it is the responsibility of the prime contractor and any subcontractor to inform themselves about other federal and state fringe benefit regulations that may be applicable to this contract.

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[29] Minnesota Rules 5200.0120, Subpart 2
[30] Minnesota Rules 5200.1106, Subpart 6
[31] Minnesota Statute 177.44, Subdivision 6
[32] 29 CFR Parts 5.26 and 5.27
[33] 29 CFR Part 5.28
[34] 29 CFR Part 5.23
[35] 29 CFR Part 5.29(f)
[36] Minnesota Statute 177.44, Subdivision 7 and Minnesota Rules 5200.1106, Subpart 10

G. Contractors shall submit a completed and signed **MN/DOT, 21658 - Statement of Compliance Form,** identifying any fringe contributions made on behalf of a worker.[37] The form must be submitted in accordance with section **IV (PAYROLLS AND STATEMENTS), Subparts A and C.**

H. Pursuant with ***Minnesota Statute 181.74, Subdivision 1***, a contractor that is obligated to deposit fringe benefit contributions on behalf of its employees into a financially responsible trustee, third person, fund, plan, or program and fails to make timely contributions may be guilty of a gross misdemeanor. A contractor found in violation of the above-mentioned statute shall compel the department to take such actions as prescribed in section **XVI, (NON-COMPLIANCE AND ENFORCEMENT).**

VII. OVERTIME

A. A contractor shall not permit or require a worker to work longer than the prevailing hours of labor unless the worker is paid for all hours in excess of the prevailing hours at a rate of at least 1-1/2 times the hourly basic hourly rate of pay.[38] The prevailing hours of labor is defined as not more than 8 hours per day or more than 40 hours per week.[39]

B. In addition to the requirements set forth in **Subpart A** of this section, it is the responsibility of the prime contractor and any subcontractor to inform themselves about other federal and state overtime regulations that may be applicable to this contract.

VIII. LABOR CLASSIFICATIONS

All contractors shall refer to the state wage determination(s) incorporated into and found elsewhere in this contract or the Master Job Classification List[40] to obtain an applicable job classification. If a contractor cannot determine an appropriate job classification, state law requires that the worker be assigned a job classification that is the "same or most similar".[41] Contractors needing clarification shall contact MN/DLI or the MN/DOT Labor Compliance Unit at (651) 296-6503.

IX. INDEPENDENT CONTRACTORS, OWNERS, SUPERVISORS AND FOREMAN

A. An independent contractor performing work as a laborer or mechanic is subject to the contract prevailing wage requirements[42] for the classification of work performed and shall adhere to the requirements established in sections **IV (PAYROLLS AND STATEMENTS); V (WAGE RATES); VI (FRINGE BENEFITS); VII (OVERTIME) and VIII (LABOR CLASSIFICATIONS).** In order to ensure compliance, the department may examine the subcontract agreement to determine if the bid price submitted covers the applicable prevailing wage rate for the number of hours worked, along with other records, deemed appropriate by the department.[43]

B. Pursuant with state regulations, owners, supervisors and foreman performing work under the contract[44] shall be compensated in accordance with section **V (WAGE RATES).** Furthermore, the prime contractor and any subcontractor shall adhere to the requirements established in sections **IV (PAYROLLS AND STATEMENTS); VI (FRINGE BENEFITS); VII (OVERTIME) and VIII (LABOR CLASSIFICATIONS).**

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[37] Minnesota Rules 5200.1106, Subpart 10
[38] Minnesota Statute 177.44, Subdivision 1
[39] Minnesota Statute 177.42, Subdivision 4
[40] Minnesota Rules 5200.1100
[41] Minnesota Statute 177.44, Subdivision 1
[42] 29 CFR Part 5.2(o) and Minnesota Statute 177.41
[43] Minnesota Statute 177.44, Subdivision 7 and Minnesota Rules 5200.1106, Subpart 10
[44] Minnesota Statute 177.44, Subdivision 1

X. APPRENTICES, TRAINEES AND HELPERS

A. An apprentice is not subject to the state wage decision(s) incorporated into and found elsewhere in this contract, provided the contractor can demonstrate compliance with **Subparts (1 - 4)** of this section:[45]

1. The apprentice is performing the work of his/her trade.
2. The apprentice is registered with the U.S. DOL Bureau of Apprenticeship and Training or MN/DLI Division of Voluntary Apprenticeship.
3. The apprentice is compensated according to the rate specified in the program for the level of progress.
4. The ratio of apprentices to journeyman workers on the project is not greater than the ratio permitted for the contractor's entire work force under the registered program.[46]

B. If a contractor fails to demonstrate compliance with the terms established in **Subpart A (1 – 4)** of this section, the contractor shall compensate the worker not less than the applicable total prevailing wage rate for the actual work performed.[47]

C. A trainee and a helper are not exempt under state law; the contractor shall assign the trainee or helper a job classification that is the "same or most similar"[48] and compensate the trainee or helper for the actual work performed regardless of the trainee's or helper's skill level.

XI. SUBCONTRACTING PART OF THIS CONTRACT[49]

A. If the prime contractor intends to sublet any portion of this contract, it shall complete and submit a **MN/DOT, TP-21834, Request To Sublet Form** to the project engineer 10 days prior to the first day of work for any subcontractor.

B. The prime contractor shall not subcontract any portion of this contract without prior written consent from the project engineer.

C. The prime contractor's organization shall perform work amounting to not less than 40 percent of the total original contract cost. However, contracts with Disadvantaged Business Enterprise (DBE) or Targeted Group Business (TGB) established goals, or both, the contractor's organization shall perform work amounting to not less than 30 percent of the total original contract cost.

D. A first tier subcontractor shall not subcontract any portion of its work under this contract unless approved by the prime contractor and the project engineer. In addition, a first tier subcontractor may only subcontract up to 50% of its original subcontract.

E. A second tier subcontractor shall not subcontract any portion of its work under this contract.

F. Written consent to subcontract any portion of this contract does not relieve the prime contractor of liabilities and obligations under the contract and bonds.

G. Contractors shall not subcontract with or purchase materials or services from a debarred or suspended person.[50]

XII. POSTER BOARDS

A. The prime contractor shall construct and display a poster board, which contains all required posters, is complete, accurate, legible and accessible to all workers from the first day of work

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[45] Minnesota Rules 5200.1070
[46] MN/DOLI Division of Apprenticeship – April 6, 1995 Memorandum from Jerry Briggs, Director
[47] Minnesota Rules 5200.1070, Subpart 3
[48] Minnesota Statute 177.44, Subdivision 1
[49] MN/DOT Standard Specifications for Construction, Section 1801
[50] Minnesota Statute 161.315, Subdivision 3(3)

until the project is 100 percent complete.[51] The prime contractor is not allowed to place a poster board at an off-site location.

B. The prime contractor can obtain the required posters by contacting MN/DOT at (651) 366-3091. The prime contractor will need to furnish its name, mailing address, the type of posters (state-aid) and the quantity needed.

C. Refer to the poster board section of the Labor Compliance website to obtain applicable contact information for each poster. The link to the website can be found in section **III (SCOPE – SPECIAL PROVISIONS DIVISION A & CONTRACT), Subpart G** of these provisions.

XIII. EMPLOYEE INTERVIEWS

At any time the prime contractor shall permit representatives from MN/DLI or the Department to interview its workers and those of any subcontractor during working hours on the project.[52]

XIV. TRUCKING / OFF-SITE FACILITIES

A. The prime contractor is responsible to ensure that its workers and those of all subcontractors, are compensated in accordance with the state wage determination(s) incorporated into and found elsewhere in this contract for the following work duties:

1. The processing or manufacturing of material, including the hauling of material to and from a prime contractor's material operation that is not a separate commercial establishment.[53]
2. The processing or manufacturing of material, including the hauling of material to and from an off-site material operation that is not considered a commercial establishment.[54]
3. The hauling of any or all stockpiled or excavated materials on the project work site to other locations on the same project even if the truck leaves the work site at some point.[55]
4. The delivery of materials from a non-commercial establishment to the project and the return haul.[56]
5. The delivery of materials from another construction project site to the public works project and the return haul, either empty or loaded. Construction projects are not considered commercial establishments.[57]
6. The hauling required to remove any materials from the project to a location off the project site and the return haul, either empty or loaded from other than a commercial establishment.[58]
7. The delivery of mineral aggregate materials from a commercial establishment, which is deposited "substantially in place" and the return haul, either empty or loaded.[59]

B. The work duties prescribed in **Subpart A (1 - 7)** of this section do not represent all possible hauling activities and/or other work duties that may be performed under this contract. It is the responsibility of the prime contractor to inform itself and all subcontractors about other applicable job duties that may be subject to the contract labor provisions. Refer to the Labor Compliance website for additional information regarding trucking regulations.

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[51] Minnesota Statute 177.44, Subdivision 5
[52] MN/DOT Standard Specifications for Construction, Section 1511
[53] ALJ Findings of Fact, Conclusions of Law, and Recommendation, Conclusions (7), Case #12-3000-11993-2
[54] Minnesota Rules 5200.1106, Subpart 3B(2)
[55] Minnesota Rules 5200.1106, Subpart 3B(1)
[56] Minnesota Rules 5200.1106, Subpart 3B(2)
[57] Minnesota Rules 5200.1106, Subpart 3B(3)
[58] Minnesota Rules 5200.1106, Subpart 3B(4)
[59] Minnesota Rules 5200.1106, Subpart 3B(5)(6)

C. A contractor acquiring trucking services from an ITO, MTO and/or Truck Broker to perform and/or provide "covered" hauling activities shall comply with the payment of the certified state truck rental rates,[60] which are incorporated into and found elsewhere in this contract.

D. Each month, in which hauling activities were performed under this contract, the prime contractor and all subcontractors shall submit a **MN/DOT, TP-90550 - Month-End Trucking Report** and **MN/DOT, TP-90551 - Statement of Compliance Form**, along with each ITOs, MTOs and/or Truck Brokers reports to the department.[61] The specifications regarding the dates for submission can be found near the bottom of the **MN/DOT, TP-90551 - Statement of Compliance Form.**

E. A Truck Broker contracting to provide trucking services in the construction industry may charge a reasonable broker fee to the provider of trucking services.[62] The prime contractor and any subcontractor contracting to receive trucking services shall not assess a broker fee.

F. A contractor with employee truck drivers shall adhere to the requirements established in sections **IV (PAYROLLS AND STATEMENTS); V (WAGE RATES); VI (FRINGE BENEFITS); VII (OVERTIME) and VIII (LABOR CLASSIFICATIONS).**

G. If after written notice, the prime contractor fails to submit its month-end trucking reports and certification forms and those of any subcontractor, MTO and/or Truck Broker, the department may take such actions as prescribed in section **XVI, (NON-COMPLIANCE AND ENFORCEMENT).**

XV. CHILD LABOR

A. Except as permitted under **Subpart B** of this section, no worker under the age of 18 is allowed to perform work on construction projects.[63]

B. In accordance with state law, a worker under the age of 18, employed in a corporation totally owned by one or both parents that is supervised by the parent(s), may perform work on construction projects.[64] However, if this contractor is subject to the federal Fair Labor Standards Act, a worker under the age of 18 is not allowed to perform work in a hazardous occupation.[65]

C. To protect the interests of the department, the project engineer may remove a worker that appears to be under the age of 18 from the construction project until the contractor or worker can demonstrate proof of age[66] and compliance with all applicable federal and/or state regulations.[67]

XVI. NON-COMPLIANCE AND ENFORCEMENT

A. The prime contractor shall be liable for any unpaid wages to its workers or those of any subcontractor, ITO, MTO and/or Truck Broker.[68]

B. If it is determined that a contractor has violated the state prevailing wage law, or any portion of this contract, the department after written notice, may implement one or more of the following sanctions:

1. Withhold or cause to be withheld from the prime contractor such amounts in considerations or assessments against the prime contractor, whether arising from this contract or other contract with the department.[69]

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[60] Minnesota Rules 5200.1106, Subpart 1
[61] Minnesota Rules 5200.1106, Subpart 10
[62] Minnesota Rules 5200.1106, Subpart 7(C)
[63] Minnesota Rules 5200.0910, Subpart F
[64] Minnesota Rules 5200.0930, Subpart 4
[65] 29 CFR Part 570.2(a)(ii)
[66] Minnesota Statute 181A.06, Subdivision 4
[67] MN/DOT Standard Specifications for Construction, Section 1701
[68] MN/DOT Standard Specifications for Construction, Section 1801
[69] MN/DOT Standard Specifications for Construction, Section 1906

2. The department may reject a bid from a prime contractor that has demonstrated continued or persistent noncompliance with the prevailing wage law on previous or current contracts with the department.[70]

3. The department may take the prosecution of the work out of the hands of the prime contractor, place the contractor in default and terminate this contract for failure to demonstrate compliance with these provisions.[71]

C. Any contractor who violates the state prevailing wage law is guilty of a misdemeanor and may be fined not more than $300 or imprisoned not more than 90 days or both. Each day that the violation continues is a separate offense.[72]

D. All required documents and certification reports are legal documents; willful falsification of the documents may result in civil action and/or criminal prosecution[73] and may be grounds for debarment proceedings.[74]

[70] Minnesota Statute 161.32, Subdivision 1(d)
[71] MN/DOT Standard Specifications for Construction, Section 1808
[72] Minnesota Statute 177.44, Subdivision 6
[73] Minnesota Statutes 16B, 161.315, Subdivision 2, 177.43,Subdivision 5 177.44, Subdivision 6, 609.63
[74] Minnesota Statute 161.315 and Minnesota Statute 609.63

NOTICE TO BIDDERS

Minnesota Statutes that require prompt payment to subcontractors:

471.425 Prompt payment of local government bills.

Subd. 1. Definitions. For the purposes of this section, the following terms have the meanings here given them.

(d) "Municipality" means any home rule charter or statutory city, county, town, school district, political subdivision or agency of local government. "Municipality" means the metropolitan council or any board or agency created under chapter 473.

Subd. 4a. Prompt payment to subcontractors.

Each contract of a municipality must require the prime contractor to pay any subcontractor within ten days of the prime contractor's receipt of payment from the municipality for undisputed services provided by the subcontractor. The contract must require the prime contractor to pay interest of 1-1/2 percent per month or any part of a month to the subcontractor on any undisputed amount not paid on time to the subcontractor. The minimum monthly interest penalty payment for an unpaid balance of $100 or more is $10. For an unpaid balance of less than $100, the prime contractor shall pay the actual penalty due to the subcontractor. A subcontractor who prevails in a civil action to collect interest penalties from a prime contractor must be awarded its costs and disbursements, including attorney's fees, incurred in bringing the action.

HIST: 1985 c 136 s 5; 1995 c 31 s 1

MINNESOTA DEPARTMENT OF LABOR AND INDUSTRY PREVAILING WAGES FOR STATE FUNDED CONSTRUCTION PROJECTS

⚠ THIS NOTICE MUST BE POSTED ON THE JOBSITE IN A CONSPICUOUS PLACE

Construction Type: Highway and Heavy

Region Number: 08

Counties within region:

- CHIPPEWA-12
- KANDIYOHI-34
- LAC QUI PARLE-37
- LINCOLN-41
- LYON-42
- MCLEOD-46
- MEEKER-47
- MURRAY-51
- PIPESTONE-59
- REDWOOD-64
- RENVILLE-65
- YELLOW MEDICINE-87

Effective: 2012-10-29

This project is covered by Minnesota prevailing wage statutes. Wage rates listed below are the minimum hourly rates to be paid on this project.

All hours worked in excess of eight (8) hours per day or forty (40) hours per week shall be paid at a rate of one and one half (1 1/2) times the basic hourly rate.

Violations should be reported to:

Department of Transportation
Office of Construction
Transportation Building MS650
John Ireland Blvd
St. Paul, MN 55155
(651) 366-4209

Refer questions concerning the prevailing wage rates to:

Department of Labor and Industry
Prevailing Wage Section
443 Lafayette Road N
St Paul, MN 55155

(651) 284-5091
DLI.PrevWage@state.mn.us

LABOR CODE AND CLASS	EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
LABORERS (101 - 112) (SPECIAL CRAFTS 701 - 730)				
101 LABORER, COMMON (GENERAL LABOR WORK)	2012-10-29	19.31	13.18	32.49
	2013-05-01	19.31	13.43	32.74
102 LABORER, SKILLED (ASSISTING SKILLED CRAFT JOURNEYMAN)	2012-10-29	19.31	13.18	32.49
	2013-05-01	19.31	13.43	32.74
103 LABORER, LANDSCAPING (GARDENER, SOD LAYER AND NURSERY OPERATOR)	2012-10-29	16.50	0.00	16.50
104 FLAG PERSON	2012-10-29	17.50	5.85	23.35
105 WATCH PERSON	2012-10-29	17.31	13.13	30.44
	2013-05-01	17.31	13.38	30.69
106 BLASTER	2012-10-29	22.31	13.18	35.49
	2013-05-01	22.31	13.43	35.74
107 PIPELAYER (WATER, SEWER AND GAS)	2012-10-29	21.31	13.18	34.49
	2013-05-01	21.31	13.43	34.74
108 TUNNEL MINER	2012-10-29	16.69	6.91	23.60
109 UNDERGROUND AND OPEN DITCH LABORER (EIGHT FEET BELOW STARTING GRADE LEVEL)	2012-10-29	20.01	13.18	33.19
	2013-05-01	20.01	13.43	33.44
110 SURVEY FIELD TECHNICIAN (OPERATE TOTAL STATION, GPS RECEIVER, LEVEL, ROD OR RANGE POLES, STEEL TAPE MEASUREMENT; MARK AND	2012-10-29	23.00	10.17	33.17

	DRIVE STAKES; HAND OR POWER DIGGING FOR AND IDENTIFICATION OF MARKERS OR MONUMENTS; PERFORM AND CHECK CALCULATIONS; REVIEW AND UNDERSTAND CONSTRUCTION PLANS AND LAND SURVEY MATERIALS). THIS CLASSIFICATION DOES NOT APPLY TO THE WORK PERFORMED ON A PREVAILING WAGE PROJECT BY A LAND SURVEYOR WHO IS LICENSED PURSUANT TO MINNESOTA STATUTES, SECTIONS 326.02 TO 326.15.				
111	TRAFFIC CONTROL PERSON (TEMPORARY SIGNAGE)	2012-10-29	16.59	9.91	26.50
112	QUALITY CONTROL TESTER (FIELD AND COVERED OFF-SITE FACILITIES; TESTING OF AGGREGATE, ASPHALT, AND CONCRETE MATERIALS); LIMITED TO MN DOT HIGHWAY AND HEAVY CONSTRUCTION PROJECTS WHERE THE MN DOT HAS RETAINED QUALITY ASSURANCE PROFESSIONALS TO REVIEW AND INTERPRET THE RESULTS OF QUALITY CONTROL TESTERS. SERVICES PROVIDED BY THE CONTRACTOR.	2012-10-29	16.04	0.00	16.04
	SPECIAL EQUIPMENT (201 - 204)				
201	ARTICULATED HAULER	2012-10-29	23.26	16.70	39.96
		2013-05-01	23.41	16.70	40.11
202	BOOM TRUCK	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
203	LANDSCAPING EQUIPMENT, INCLUDES HYDRO SEEDER OR MULCHER, SOD ROLLER, FARM TRACTOR WITH ATTACHMENT SPECIFICALLY SEEDING, SODDING, OR PLANT, AND TWO-FRAMED FORKLIFT (EXCLUDING FRONT, POSIT-TRACK, AND SKID STEER LOADERS), NO EARTHWORK OR GRADING FOR ELEVATIONS	2012-10-29	20.00	0.00	20.00
204	OFF-ROAD TRUCK	2012-10-29	28.66	16.70	45.36
		2013-05-01	28.81	16.70	45.51
205		2012-10-29	20.00	0.00	20.00

PAVEMENT MARKING OR MARKING REMOVAL EQUIPMENT (ONE OR TWO PERSON OPERATORS); SELF-PROPELLED TRUCK OR TRAILER MOUNTED UNITS.

HIGHWAY/HEAVY POWER EQUIPMENT OPERATOR

GROUP 2	2012-10-29	24.50	16.70	41.20
	2013-05-01	24.65	16.70	41.35

302 HELICOPTER PILOT (HIGHWAY AND HEAVY ONLY)

303 CONCRETE PUMP (HIGHWAY AND HEAVY ONLY)

304 ALL CRANES WITH OVER 135-FOOT BOOM, EXCLUDING JIB (HIGHWAY AND HEAVY ONLY)

305 DRAGLINE, CRAWLER, HYDRAULIC BACKHOE (TRACK OR WHEEL MOUNTED) AND/OR OTHER SIMILAR EQUIPMENT WITH SHOVEL-TYPE CONTROLS THREE CUBIC YARDS AND OVER MANUFACTURER.S RATED CAPACITY INCLUDING ALL ATTACHMENTS. (HIGHWAY AND HEAVY ONLY)

306 GRADER OR MOTOR PATROL

307 PILE DRIVING (HIGHWAY AND HEAVY ONLY)

308 TUGBOAT 100 H.P. AND OVER WHEN LICENSE REQUIRED (HIGHWAY AND HEAVY ONLY)

GROUP 3	2012-10-29	23.57	16.70	40.27
	2013-05-01	23.72	16.70	40.42

309 ASPHALT BITUMINOUS STABILIZER PLANT

310 CABLEWAY

311 CONCRETE MIXER, STATIONARY PLANT (HIGHWAY AND HEAVY ONLY)

312 DERRICK (GUY OR STIFFLEG)(POWER)(SKIDS OR STATIONARY) (HIGHWAY AND HEAVY ONLY)

313 DRAGLINE, CRAWLER, HYDRAULIC BACKHOE (TRACK OR WHEEL MOUNTED) AND/OR SIMILAR EQUIPMENT WITH SHOVEL-TYPE CONTROLS, UP TO THREE CUBIC YARDS MANUFACTURER.S RATED CAPACITY INCLUDING ALL ATTACHMENTS (HIGHWAY AND HEAVY ONLY)

314 DREDGE OR ENGINEERS, DREDGE (POWER) AND ENGINEER

315 FRONT END LOADER, FIVE CUBIC YARDS AND OVER INCLUDING ATTACHMENTS. (HIGHWAY AND HEAVY ONLY)

316 LOCOMOTIVE CRANE OPERATOR

317 MIXER (PAVING) CONCRETE PAVING, ROAD MOLE, INCLUDING MUCKING OPERATIONS, CONWAY OR SIMILAR TYPE

318 MECHANIC . WELDER ON POWER EQUIPMENT (HIGHWAY AND HEAVY ONLY)

319 TRACTOR . BOOM TYPE (HIGHWAY AND HEAVY ONLY)

320 TANDEM SCRAPER

321 TRUCK CRANE . CRAWLER CRANE (HIGHWAY AND HEAVY ONLY)

322 TUGBOAT 100 H.P AND OVER (HIGHWAY AND HEAVY ONLY)

GROUP 4	2012-10-29	23.26	16.70	39.96
	2013-05-01	23.41	16.70	40.11

323 AIR TRACK ROCK DRILL

324 AUTOMATIC ROAD MACHINE (CMI OR SIMILAR) (HIGHWAY AND HEAVY ONLY)

325 BACKFILLER OPERATOR

326 CONCRETE BATCH PLANT OPERATOR (HIGHWAY AND HEAVY ONLY)

327 BITUMINOUS ROLLERS, RUBBER TIRED OR STEEL DRUMMED (EIGHT TONS AND OVER)

328 BITUMINOUS SPREADER AND FINISHING MACHINES (POWER), INCLUDING PAVERS, MACRO SURFACING AND MICRO SURFACING, OR SIMILAR TYPES (OPERATOR AND SCREED PERSON)

329 BROKK OR R.T.C. REMOTE CONTROL OR SIMILAR TYPE WITH ALL ATTACHMENTS

330 CAT CHALLENGER TRACTORS OR SIMILAR TYPES PULLING ROCK WAGONS, BULLDOZERS AND SCRAPERS

331 CHIP HARVESTER AND TREE CUTTER

332 CONCRETE DISTRIBUTOR AND SPREADER FINISHING MACHINE, LONGITUDINAL FLOAT, JOINT MACHINE, AND SPRAY MACHINE

333 CONCRETE MIXER ON JOBSITE (HIGHWAY AND HEAVY ONLY)

334 CONCRETE MOBIL (HIGHWAY AND HEAVY ONLY)

335 CRUSHING PLANT (GRAVEL AND STONE) OR GRAVEL WASHING, CRUSHING AND SCREENING PLANT

336 CURB MACHINE

337 DIRECTIONAL BORING MACHINE

338 DOPE MACHINE (PIPELINE)

339 DRILL RIGS, HEAVY ROTARY OR CHURN OR CABLE DRILL (HIGHWAY AND HEAVY ONLY)

340 DUAL TRACTOR

341 ELEVATING GRADER

342 FORK LIFT OR STRADDLE CARRIER (HIGHWAY AND HEAVY ONLY)

343 FORK LIFT OR LUMBER STACKER (HIGHWAY AND HEAVY ONLY)

344 FRONT END, SKID STEER OVER 1 TO 5 C YD

345 GPS REMOTE OPERATING OF EQUIPMENT

346 HOIST ENGINEER (POWER) (HIGHWAY AND HEAVY ONLY)

347 HYDRAULIC TREE PLANTER

348 LAUNCHER PERSON (TANKER PERSON OR PILOT LICENSE)

349 LOCOMOTIVE (HIGHWAY AND HEAVY ONLY)

350 MILLING, GRINDING, PLANNING, FINE GRADE, OR TRIMMER MACHINE

351 MULTIPLE MACHINES, SUCH AS AIR COMPRESSORS, WELDING MACHINES, GENERATORS, PUMPS (HIGHWAY AND HEAVY ONLY)

352 PAVEMENT BREAKER OR TAMPING MACHINE (POWER DRIVEN) MIGHTY MITE OR SIMILAR TYPE

353 PICKUP SWEEPER, ONE CUBIC YARD AND OVER HOPPER CAPACITY(HIGHWAY AND HEAVY ONLY)

354 PIPELINE WRAPPING, CLEANING OR BENDING MACHINE

355 POWER PLANT ENGINEER, 100 KWH AND OVER (HIGHWAY AND HEAVY ONLY)

356 POWER ACTUATED HORIZONTAL BORING MACHINE, OVER SIX INCHES

357 PUGMILL

358 PUMPCRETE (HIGHWAY AND HEAVY ONLY)

359 RUBBER-TIRED FARM TRACTOR WITH BACKHOE INCLUDING ATTACHMENTS (HIGHWAY AND HEAVY ONLY)

360 SCRAPER

361 SELF-PROPELLED SOIL STABILIZER

362 SLIP FORM (POWER DRIVEN) (PAVING)

363 TIE TAMPER AND BALLAST MACHINE

364 TRACTOR, BULLDOZER (HIGHWAY AND HEAVY ONLY)

365 TRACTOR, WHEEL TYPE, OVER 50 H.P. WITH PTO UNRELATED TO LANDSCAPING (HIGHWAY AND HEAVY ONLY)

366 TRENCHING MACHINE (SEWER, WATER, GAS) EXCLUDES WALK BEHIND TRENCHER (HIGHWAY AND HEAVY ONLY)

367 TUB GRINDER, MORBARK, OR SIMILAR TYPE

368 WELL POINT DISMANTLING OR INSTALLATION (HIGHWAY AND HEAVY ONLY)

GROUP 5	2012-10-29	13.97	0.00	13.97

369 AIR COMPRESSOR, 600 CFM OR OVER (HIGHWAY AND HEAVY ONLY)

370 BITUMINOUS ROLLER (UNDER EIGHT TONS)

371 CONCRETE SAW (MULTIPLE BLADE) (POWER OPERATED)

372 FORM TRENCH DIGGER (POWER)

373 FRONT END, SKID STEER UP TO 1C YD

374 GUNITE GUNALL (HIGHWAY AND HEAVY ONLY)

375 HYDRAULIC LOG SPLITTER

376 LOADER (BARBER GREENE OR SIMILAR TYPE)

377 POST HOLE DRIVING MACHINE/POST HOLE AUGER

378 POWER ACTUATED AUGER AND BORING MACHINE

379 POWER ACTUATED JACK

380 PUMP (HIGHWAY AND HEAVY ONLY)

381 SELF-PROPELLED CHIP SPREADER (FLAHERTY OR SIMILAR)

382 SHEEP FOOT COMPACTOR WITH BLADE . 200 H.P. AND OVER

383 SHOULDERING MACHINE (POWER) APSCO OR SIMILAR TYPE INCLUDING SELF-PROPELLED SAND AND CHIP SPREADER

384 STUMP CHIPPER AND TREE CHIPPER

385 TREE FARMER (MACHINE)

GROUP 6	2012-10-29	20.95	16.70	37.65
	2013-05-01	21.10	16.70	37.80

387 CAT, CHALLENGER, OR SIMILAR TYPE OF TRACTORS, WHEN PULLING DISK OR ROLLER

388 CONVEYOR (HIGHWAY AND HEAVY ONLY)

389 DREDGE DECK HAND

390 FIRE PERSON OR TANK CAR HEATER (HIGHWAY AND HEAVY ONLY)

391 GRAVEL SCREENING PLANT (PORTABLE NOT CRUSHING OR WASHING)

392 GREASER (TRACTOR) (HIGHWAY AND HEAVY ONLY)

393 LEVER PERSON

394 OILER (POWER SHOVEL, CRANE, TRUCK CRANE, DRAGLINE, CRUSHERS, AND MILLING MACHINES, OR OTHER SIMILAR HEAVY EQUIPMENT) (HIGHWAY AND HEAVY ONLY)

395 POWER SWEEPER

396 SHEEP FOOT ROLLER AND ROLLERS ON GRAVEL COMPACTION, INCLUDING VIBRATING ROLLERS

397 TRACTOR, WHEEL TYPE, OVER 50 H.P., UNRELATED TO LANDSCAPING

TRUCK DRIVERS

GROUP 1	2012-10-29	21.17	13.25	34.42
	2013-05-01	21.32	13.60	34.92

601 MECHANIC . WELDER

602 TRACTOR TRAILER DRIVER

603 TRUCK DRIVER (HAULING MACHINERY INCLUDING OPERATION OF HAND AND POWER OPERATED WINCHES)

GROUP 2	2012-10-29	14.47	0.00	14.47

604 FOUR OR MORE AXLE UNIT, STRAIGHT BODY TRUCK

GROUP 3	2012-10-29	20.51	13.25	33.76
	2013-05-01	20.66	13.60	34.26
605 BITUMINOUS DISTRIBUTOR DRIVER				
606 BITUMINOUS DISTRIBUTOR (ONE PERSON OPERATION)				
607 THREE AXLE UNITS				
GROUP 4	2012-10-29	20.51	13.25	33.76
	2013-05-01	20.66	13.60	34.26
608 BITUMINOUS DISTRIBUTOR SPRAY OPERATOR (REAR AND OILER)				
609 DUMP PERSON				
610 GREASER				
611 PILOT CAR DRIVER				
612 RUBBER-TIRED, SELF-PROPELLED PACKER UNDER 8 TONS				
613 TWO AXLE UNIT				
614 SLURRY OPERATOR				
615 TANK TRUCK HELPER (GAS, OIL, ROAD OIL, AND WATER)				
616 TRACTOR OPERATOR, UNDER 50 H.P.				
SPECIAL CRAFTS				
701 HEATING AND FROST INSULATORS	2012-10-29	20.50	4.46	24.96
702 BOILERMAKERS	2012-10-29	31.87	24.40	56.27
	2013-01-01	33.52	24.40	57.92
703 BRICKLAYERS	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
704 CARPENTERS	2012-10-29	23.31	16.08	39.39
	2013-05-01	23.81	16.08	39.89
705 CARPET LAYERS (LINOLEUM)	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
706 CEMENT MASONS	2012-10-29	32.80	17.00	49.80
	2013-05-01	33.05	17.00	50.05

707	ELECTRICIANS	2012-10-29	28.42	13.88	42.30
708	ELEVATOR CONSTRUCTORS	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
709	GLAZIERS	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
710	LATHERS	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
711	GROUND PERSON	2012-10-29	16.63	6.38	23.01
712	IRONWORKERS	2012-10-29	34.15	21.20	55.35
713	LINEMAN	2012-10-29	24.82	8.50	33.32
714	MILLWRIGHT	2012-10-29	30.18	20.24	50.42
715	PAINTERS (INCLUDING HAND BRUSHED, HAND SPRAYED, AND THE TAPING OF PAVEMENT MARKINGS)	2012-10-29	30.45	13.84	44.29
716	PILEDRIVER (INCLUDING VIBRATORY DRIVER OR EXTRACTOR FOR PILING AND SHEETING OPERATIONS)	2012-10-29	23.31	16.08	39.39
		2013-05-01	23.81	16.08	39.89
717	PIPEFITTERS . STEAMFITTERS	2012-10-29	30.62	24.97	55.59
		2012-10-29	33.18	22.36	55.54
718	PLASTERERS	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
719	PLUMBERS	2012-10-29	29.90	25.57	55.47

720	ROOFER	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
721	SHEET METAL WORKERS	2012-10-29	25.41	9.69	35.10
722	SPRINKLER FITTERS	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
723	TERRAZZO WORKERS	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
724	TILE SETTERS	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
725	TILE FINISHERS	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
726	DRYWALL TAPER	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
727	WIRING SYSTEM TECHNICIAN	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
728	WIRING SYSTEMS INSTALLER	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
729	ASBESTOS ABATEMENT WORKER	2012-10-29	27.33	14.94	42.27
		2013-01-01	27.53	15.34	42.87
730	SIGN ERECTOR	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			

Official Notices

Department of Labor and Industry (DLI)

Labor Standards Unit

Notice of Certification of Truck Rental Rates and Effective Date Pursuant to *Minnesota Rules*, Part 5200.1105

On May 1, 2012, the Commissioner of the Department of Labor and Industry ("DLI") certified the minimum truck rental rates for highway projects in the state's ten highway and heavy construction areas for trucks and drivers operating "four or more axle units, straight body trucks," "three axle units," "tractor only" and "tractor trailers." The certification followed publication of the Notice of Determination of Truck Rental Rates in the *State Register* on March 12, 2012, and the informal conference held pursuant to Minnesota Rules, part 5200.1105 on April 4, 2012.

According to Minnesota Rules, part 5200.1105, the purpose of the informal conference is for DLI to obtain further input regarding the proposed rates before the rates are certified. Approximately 18 individuals attended the informal conference. Many of the attendees voiced strong concerns regarding the inadequacy of the proposed rates. Among the concerns raised was the fact that the proposed rates were based on 2010 costs, including the 2010 price of fuel. Speakers indicated that because of the dramatic increase in the price of diesel in recent months, the published rates were far below the operators' current costs. As stated by some attendees:

> **"This year, right now yesterday we were paying $4.10...I know when fuel went up that last time, a lot of us had to eat the cost because there was no way of recouping it."**
>
> Testimony of Colleen Donovan, Transcript of Informal Conference, pp. 13, 14.

Ms. Donavan provided DLI written information that her 2010 average cost for fuel was $2.99 per gallon.

> **"And, like the price of fuel, $4.25, $4.30. That's what it is down by my place, anyway."**
>
> Testimony of Bob Dornsbach, Transcript of Informal Conference, p. 32.

Mr. Bob Dornsbach provided DLI written information that in October 2010 his fuel cost was $3.15 per gallon.

In response to the informal conference Jim Lloyd provided written information that his 2010 fuel cost was close to $3.00 per gallon and "now is at $4.00 plus and it does not look like it is going to decrease."

After the informal conference, Tom Barnes provided written information that his fuel costs in March 2010 were $2.82 per gallon and that his fuel costs for March 2012 were $4.07 per gallon.

Following the informal conference, DLI staff obtained data from the United States Department of Energy ("DOE") regarding the price of diesel during 2010 as compared to current costs.[1] That data, available at *www.eia.doe.gov*, show that the average price of diesel during 2010 was $2.964 per gallon. The average price of diesel during January, February, and March 2012 was $3.862 per gallon. Consequently, the average price of diesel for the first three months of this year was 30.4% higher than the average cost of diesel during 2010.

The purpose of *Minnesota Rules*, part 5200.1105, as stated in its Statement of Need and Reasonableness, is to "provide equitable compensation" to independent truck operators. The commissioner finds that in order to carry out the purpose of the rule, it is appropriate to consider the concerns expressed at the informal conference[2] and to use average 2012 diesel costs in computing and certifying 2012 truck rental rates. Specifically, the commissioner finds that the extreme disparity between 2010 and current fuel costs warrants this adjustment in order for truck operators to be equitably compensated.[3]

(Footnotes)

[1] U.S. Energy Information Administration Midwest No. 2 Retail Prices (Dollars per Gallon)

[2] The DLI has historically used input from the informal conferences to establish certified rates. For example, truck rental rates certified in 2009 varied from the proposed rates based on information gathered at the informal conference.

[3] The commissioner notes that the Minnesota Department of Transportation incorporates a fuel adjustment clause in certain of its contracts to accommodate the fluctuating price of fuel. That clause generally provides for the adjustment of contract payments when the cost of fuel increases or decreases by more than 15% from an indexed rate during the term of the contract. By using 2012 fuel costs in certifying 2012 truck rental rates, the commissioner is not intending to adopt or establish a similar fuel adjustment mechanism. Rather, he is taking this action to effectuate the purpose of Part 5200.1105 in light of the concerns raised at the informal conference and the dramatic increase in the price of diesel between 2010 and effective date of 2012 truck rental rates.

Construction truck operating costs were initially determined by survey on a statewide basis and were the subject of further input by interested parties attending the informal conference pursuant to *Minnesota Rules*, part 5200.1105 on April 4, 2012 and further data on fuel prices from the DOE for 2010 and 2012. In light of the discussion above, fuel costs stated in the surveys were adjusted upward by 30.4% to determine statewide operating costs. As a result of this adjustment, the operating cost for "four axle units, straight body trucks" is determined to be $51.58 per hour; the operating cost for "three axle units" is determined to be $37.35 per hour; the operating cost for "tractor only" is determined to be $41.43 per hour; and the operating cost for "tractor trailers" is determined to be $52.89 per hour.

Adding the prevailing wage for drivers of these four types of trucks from each of the State's ten highway and heavy construction areas to the operating costs, the minimum hourly truck rental rate for the four types of trucks in each area is certified to be as follows:

3 Axle Units

	Effective Date	607 Driver Rate	Operating Cost	Truck Rental Rate
Region 1	May 1, 2012	40.10	37.35	77.45
Region 2	May 1, 2012	33.76	37.35	71.11
Region 3	May 1, 2012	25.40	37.35	62.75
Region 4	May 1, 2012	33.76	37.35	71.11
Region 5	May 1, 2012	40.50	37.35	77.85
Region 6	May 1, 2012	38.30	37.35	75.65
Region 7	May 1, 2012	33.76	37.35	71.11
Region 8	May 1, 2012	33.76	37.35	71.11
Region 9	May 1, 2012	40.50	37.35	77.85
Region 10	May 1, 2012	13.22	37.35	50.57

4 or more Axle Units

	Effective Date	604 Driver Rate	Operating Cost	Truck Rental Rate
Region 1	May 1, 2012	40.20	51.58	91.78
Region 2	May 1, 2012	33.91	51.58	85.49
Region 3	May 1, 2012	24.71	51.58	76.29
Region 4	May 1, 2012	33.91	51.58	85.49
Region 5	May 1, 2012	26.34	51.58	77.92
Region 6	May 1, 2012	38.40	51.58	89.98
Region 7	May 1, 2012	20.87	51.58	72.45
Region 8	May 1, 2012	20.87	51.58	72.45
Region 9	May 1, 2012	40.60	51.58	92.18
Region 10	May 1, 2012	32.91	51.58	84.49

	Effective Date	Tractor 602 Driver Rate	Operating Cost	Tractor Only Truck Rental Rate	Plus Trailer Operating Cost	Tractor Trailer Rental Rate
Region 1	May 1, 2012	40.75	41.43	82.18	11.46	93.64
Region 2	May 1, 2012	34.42	41.43	75.85	11.46	87.31
Region 3	May 1, 2012	22.37	41.43	63.80	11.46	75.26
Region 4	May 1, 2012	34.42	41.43	75.85	11.46	87.31
Region 5	May 1, 2012	21.38	41.43	62.81	11.46	74.27
Region 6	May 1, 2012	37.95	41.43	79.38	11.46	90.84
Region 7	May 1, 2012	25.85	41.43	67.28	11.46	78.74
Region 8	May 1, 2012	34.42	41.43	75.85	11.46	87.31
Region 9	May 1, 2012	41.15	41.43	82.58	11.46	94.04
Region 10	May 1, 2012	33.42	41.43	74.85	11.46	86.31

The operating costs, including the average truck broker fees paid by those survey respondents who reported paying truck broker fees, and the truck rental rates may also be reviewed by accessing DLI's website at *www.dli.mn.gov*. Questions regarding the operational costs and truck rental rates can be answered by calling (651) 284-5091.

The minimum truck rental rates certified for these four types of trucks in the state's ten highway and heavy construction areas will be effective for all highway and heavy construction projects financed in whole or part with state funds advertised for bid on or after May 1, 2012.

Dated: 1 May 2012

Ken B. Peterson, Commissioner
Department of Labor and Industry

DIVISION S

S-1 CONTACT INFORMATION

Questions regarding this project, including any questions prior to bidding, shall be directed to Aaron VanMoer at (507) 532-8205.

S-2 GOVERNING SPECIFICATIONS

The Minnesota Department of Transportation "Standard Specifications for Construction", 2005 Edition shall apply on this Contract except as modified or altered in the following Special Provisions.

S-3 COMPLIANCE WITH ZONING ORDINANCE

All bidders shall familiarize themselves and shall comply with the County's zoning ordinance for conditional use of land pertaining to gravel and borrow pits. Copies of the ordinance may be examined at the County Zoning Office, located at 504 Fairgrounds Road, Marshall, MN or at www.lyonco.org.

S-4 AFFIRMATIVE ACTION RESPONSIBILITIES

All bidders shall meet with the County's Affirmative Action requirements. If a bidder does not meet the requirements, the County reserves the right not to consider the bid.

S-5 SPECIAL PROVISIONS ENCOURAGING INDIAN EMPLOYMENT

It is Mn/DOT policy to promote and encourage Indian employment on transportation projects on or near reservations.

S-5.1 This project is on or near the Upper Sioux and the Lower Sioux Reservation. The Contractor is advised to work with the tribal government to utilize Indian labor in performing contract work. The Contractor should contact Teresa Pederson from the Upper Sioux at 320-564-3853 or Faye Zaske from the Lower Sioux at 507-697-6185 for Indian employment opportunities under this contract.

S-5.2 This project does not contain any specific OJT requirements. The lack of a specific OJT goal does not relieve the Contractor of any other responsibilities.

S-5.3 The Contractor and all subcontractors are hereby made aware that this Special Provision is made part of the Contract and that Mn/DOT will monitor these provisions. If the Contractor or subcontractor is not living up to the spirit of the Special Provisions, the Department will address these issues with the Contractor and/or subcontractor and the Tribal Contact Person. If requested by the tribe, the Contractor will meet with the tribe's contact person to discuss Indian employment issues.

S-5.4 If the Contractor deems that an employee referred by the Tribal Contact Person is in danger of being suspended or terminated, the Contractor shall notify the Tribal Contact Person for assistance in resolving the problem. Nothing in the Special Provisions will be construed to interfere with the Contractor's ability to dismiss any employee for cause including, but not limited to, lack of adequate skills or training, inability to perform by virtue of state or federal law, or breach of the Contractor's standards of conduct.

S-5.5 This Special Provision supplement does not replace the existing equal employment opportunity requirements contained elsewhere in this Contract.

S-5.6 Questions, other than Tribal Employment questions, should be directed as indicated in the CONTACT INFORMATION section of these Special Provisions.

S-6 (1101) ABBREVIATIONS

All references to A.A.S.H.O. or A.A.S.H.T.O. publications as contained anywhere in the Contract documents shall be construed to mean the American Association of State Highway and Transportation Officials publications as referenced.

S-7 (1206) PREPARATION OF PROPOSAL

The Provisions of Mn/DOT 1206 are hereby deleted and replaced with the following:

S-7.1 The bidder shall submit a Proposal upon the **bid schedule** forms furnished by Lyon County.

The bidder shall specify a unit price in figures for each pay item for which a quantity is given, (for all items with a quantity of "Lump Sum" a numeric quantity of "1" shall be assumed) except as not required in the case of alternate bid items, and shall also show the products of the respective unit prices and quantities written in figures in the column provided for that purpose, together with the total amount of the Proposal obtained by adding the amounts of the several items. All figures shall be in ink or typed. In case of a discrepancy between a unit bid price and the extension, the unit bid price shall govern.

When an item in the Proposal contains a choice to be made by the bidder, the bidder shall indicate a choice in accordance with the Specifications for that particular item; and thereafter, no further choice will be permitted.

The bidder's Proposal shall be signed with ink by the individual, by one or more members of the partnership, by one or more members or officers of each firm representing a joint venture, or by one or more officers of a corporation. If the Proposal is made by an individual, the bidder's name and post office address shall be shown; by a partnership, the name and post office address of each partnership member shall be shown; as a joint venture, the name and post office address of each member or officer of the firms represented by the joint venture shall be shown; by a corporation, the name of the corporation, the State in which it was chartered, and the business address of its corporate officials shall be shown.

The attention of all bidders is particularly directed to Minnesota Statutes, **section 161.32, subdivision 1c** which provides among other things that a bid shall be rejected if it contains any alterations or erasures which are not corrected as follows:

(1) The alteration or erasure must be crossed out and the correction thereof printed in ink or typewritten adjacent thereto: and
(2) The correction must be initialed in ink by the person signing the bid Proposal.

Any alteration or erasure made by the bidder in the Proposal in accordance with a specific instruction contained in an "Addendum" will not be considered to be an "alteration or erasure" within the meaning of the Statute.

S-8 (1207) IRREGULAR PROPOSALS

The Provisions of Mn/DOT 1207 are hereby deleted and replaced with the following:

S-8.1 Proposals will be considered irregular and may be rejected for any of the following reasons:

(1) If the Proposal is on a form other than that allowed in S-7.1, or if the Proposal is altered.
(2) If there are unauthorized additions, conditional or alternate bids, or irregularities of any kind which may tend to make the Proposal incomplete, indefinite, or ambiguous as to its meaning.
(3) If the bidder adds any unauthorized provisions reserving the right to accept or reject an award, or to enter into a Contract pursuant to an award.
(4) If the Proposal does not contain a unit price for each pay item listed except in the case of authorized alternate pay items.
(5) If any unit prices are obviously unbalanced, either in excess of or below the reasonable costs analysis values.

S-9 (1208) PROPOSAL GUARANTY

Delete the Provisions of Mn/DOT 1208 and substitute the following:

S-9.1 Each Proposal shall be accompanied by a separate guaranty in an amount of not less than 5 percent of the total amount of the bid. The guaranty shall be either a certified check or an acceptable bond made payable to the Contracting Authority. Bonds shall be issued by corporations authorized to contract as a surety in the State of Minnesota. Bonds shall be conditioned on execution of the Contract and Contract Bond, with the penal sum being expressed either as a lump sum or as a percentage of the total amount of the bid.

S-10 (1210) WITHDRAWAL OR REVISION OF PROPOSALS

The first sentence of Mn/DOT 1210 (1) is hereby deleted and replaced with the following:

S-10.1 (1) Each Addendum will be sent by Facsimile with confirmation of receipt requested to each prospective bidder who has received a Proposal form prior to the date of the Addendum.

S-11 (1213) DISQUALIFICATION OF BIDDERS

The Provisions of Mn/DOT 1213 are hereby deleted and replaced with the following:

S-11.1 Either of the following reasons may be considered sufficient cause for disqualification of a bidder and the rejection of his Proposal:

(1) More than one Proposal for the same work from an individual, form or corporation under the same or different name.
(2) Evidence of collusion among bidders. Participants in collusion will receive no recognition as bidders on future work until they have been reinstated as responsible bidders.

S-12 (1301) CONSIDERATION OF PROPOSALS

The first paragraph of Mn/DOT 1301 is deleted and the following substituted therefore:

S-12.1 After the proposals are opened and read, they will be compared on the basis of the correct summation of the products of the scheduled quantities and unit prices.
The County reserves the right to determine which option(s) will be accepted. In case of a discrepancy between a unit bid price and the extension, the unit bid price shall govern.

S-13 (1302) AWARD OF CONTRACT

The Provisions of Mn/DOT 1302 are hereby supplemented by the following:

S-13.1 As a condition precedent to the award of contract, the bidder shall furnish proof that he is in compliance with Minnesota Statutes Section 363, as amended by Laws of 1969, implementing the rules and regulation of the Minnesota Department of Human Rights.

S-14 (1305) REQUIREMENT OF CONTRACT BOND

The Provisions of Mn/DOT 1305 are hereby deleted and replaced with the following:

S-14.1 The successful bidder shall furnish a payment bond equal to the contract amount and a performance bond equal to the contract amount as required by Minnesota Statutes, section 574.26. The surety and form of the bonds shall be subject to the approval of the contracting authority.

S-14.2 The contracting authority shall require for all contracts less than or equal to five million dollars ($5,000,000.00), that the aggregate liability of the payment and performance bonds shall be twice the amount of the contract. All contracts in excess of five million dollars ($5,000,000.00) shall have an aggregate liability equal to the amount of the contract.

S-15 (1404) MAINTENANCE OF TRAFFIC, (1707) PUBLIC SAFETY, AND (2563) TRAFFIC CONTROL

The Provisions of Mn/DOT 1404 are supplemented as follows:

All traffic control devices shall conform and be installed in accordance to the "Minnesota Manual on Uniform Traffic Control Devices" (MN MUTCD) and Part 6, "Field Manual for Temporary Traffic Control Zone Layouts", the "Guide to Establishing Speed Limits in Highway Work Zones", the Minnesota Flagging Handbook, the provisions of MnDOT 1404 and 1710, the Minnesota Standard Signs Manual, the Traffic Engineering Manual, the Traffic Control Layouts/Typical Traffic Control Layouts in the Plans, and these Special Provisions.

The Contractor shall furnish, install, maintain, and remove all traffic control devices required to provide safe movement of vehicular traffic through the Project during the life of the Contract from the start of Contract operations to the final completion thereof. The Engineer will have the right to modify the requirements for traffic control as deemed necessary due to existing field conditions. The highways shall be kept open to traffic at all times, except as modified below.

Traffic control devices include, but are not limited to, barricades, warning signs, trailers, flashers, cones, and drums, as required and sufficient barricade weights to maintain barricade stability.

S-15.1 <u>TRAFFIC CONTROL</u>

(A) The Contractor shall be responsible for the immediate repair or replacement of all traffic control devices that become damaged, moved or destroyed, of all lights that cease to function properly, and of all barricade weights that are damaged, destroyed, or otherwise fail to stabilize the barricades. The Contractor shall further provide sufficient surveillance of all traffic control devices at least once every 24 hours.

The Contractor shall furnish names, addresses, and phone numbers of at least three (3) individuals responsible for the placement and maintenance of traffic control devices. These individuals shall be "on call" 24 hours per day, seven days per week during the times any traffic control devices, furnished and installed by the Contractor, are in place. The required

information shall be submitted to the Engineer at the Pre-construction Conference. The Contractor shall also furnish the names, addresses, and phone numbers of those individuals to the following:

1.	Lyon County Highway/Public Works Department	(507) 532-8205
2.	Lyon County Sheriff's Department	(507) 537-7666
3.	Balaton City Hall	(507) 734-4711
4.	Tracy Fire Department	(507) 629-5544
5.	Tracy City Police	(507) 629-5534

(B) If traffic control layouts are not present in the Plan, or the Contractor modifies the layout or sequence from the Plan, the Contractor shall submit the proposed traffic control layout to the Engineer, for approval, at least fourteen (14) days prior to the start of construction. At least 24 hours prior to placement, all traffic control devices shall be available on the Project for inspection by the Engineer. The Contractor shall modify his/her proposed traffic control layout and/or devices as deemed necessary by the Engineer.

(C) The Contractor shall notify the Engineer in writing at least 72 hours prior to the start of any construction operation that will necessitate lane closure or internal traffic control signing.

(D) The Contractor shall inspect, on a daily basis, all traffic control devices, which the Contractor has furnished and installed, and verify that the devices are placed in accordance with **the Traffic Control Layouts,** these Special Provisions, and/or the MN MUTCD. Any discrepancy between the placement and the required placement shall be immediately corrected.

The Contractor shall be required to respond immediately to any call from the Engineer or his designated representative concerning any request for improving or correcting traffic control devices. **If the Contractor is negligent in correcting the deficiency within one hour of notification the Contractor shall be subject to an hourly charge assessed at a rate of $250.00 per hour for each hour or any portion thereof with which the Engineer determines that the Contractor has not complied.**

(E) The person performing the inspection in paragraph (D) above, shall be required to make a daily log. This log shall also include the date and time any changes in the stages, phases, or portions thereof go into effect. The log shall identify the location and verify that the devices are placed as directed or corrected in accordance with the Plan. All entries in the log shall include the date and time of the entry and be signed by the person making the inspection. The Engineer reserves the right to request copies of the logs as he deems necessary.

The Contractor shall be required to provide copies of the inspection logs, within the time frame agreed upon, when requested by the Engineer. **If the Contractor is negligent in providing the inspection logs within the time frame agreed upon, the Contractor shall be subject to an hourly charge assessed at a rate of $500.00 per hour for each hour or any portion thereof with which the Engineer determines that the Contractor has not complied.**

(F) The third sentence of paragraph 2 in MnDOT 1404.7 (Winter Suspension) is hereby revised as follows:

"In the event that any Contractor-owned traffic control devices are damaged or destroyed making them ineffective for their intended use, the Contractor will receive payment in the amount of the value of the traffic control device as determined by the Engineer."

(G) If, at any time, the Contractor fails to, in a timely manner, properly furnish, install, maintain or remove any of the required traffic control devices, the Department reserves the right to properly correct the deficiency. **Each time the Department takes such corrective action, the costs thereof, including mobilization, plus $5,000 will be deducted from monies due or coming due the Contractor.**

(H) Measurement and Payment:

No measurement will be made of the various Items that constitute Traffic Control but all such work will be construed to be included in the single Lump Sum payment under Item 2563.601 (Traffic Control).

S-15.2 VEHICLE WARNING LIGHT SPECIFICATION

All Contractors', subcontractors' and suppliers' mobile equipment, operating within the limits of the Project with potential exposure to passing traffic, shall be equipped with operable warning lights which meet the appropriate requirements of the SAE specifications. This would include closed roads that are open to local traffic only. This also includes any vehicle which enters the traveled roadway at any time. The SAE specification requirements are as follows:

360 Degree Rotating Lights - SAE Specification J845

Flashing Lights - SAE Specification J595

Flashing Strobe Lights - SAE Specification J1318

Lights shall be mounted so that at least one light is visible at all times from a height of 3.5 feet and from a 100 foot radius about the equipment. In order to meet the 360 degree at 18 m [60 foot] radius requirements supplemental lighting may be used in addition to the lights on the Approved Products List. All supplemental lights must be SAE Class 1 certified. This specification is to be used for both day and night time operations. All costs incurred to provide warning lights shall be at no cost to the Department. These warning lights shall also be operating and visible when a vehicle decelerates to enter a construction work zone and again when a vehicle leaves the work zone and enters the traveled traffic lane.

Contractor shall equip their vehicles with lights that are on the Approved Products List which can be found at: http://www.dot.state.mn.us/products/vehiclelighting/index.html.

S-15.3 FLAGGER TRAINING

Any person acting as a flagger on this Project shall have attended a training session taught by a Contractor's qualified trainer. The Contractor's qualified trainer shall have completed a "MnDOT Flagger Train the Trainer Session" in the five years previous to the start date of this Contract and shall be on file as a qualified flagger trainer with the Department. The Flagger Trainer's name and Qualification Number shall be furnished by the Contractor at the pre-construction meeting. The Contractor shall provide all flaggers with the MnDOT Flagger

Handbook and shall observe the rules and regulations contained therein. This handbook shall be in the possession of all flaggers while flagging on the Project. The Contractor shall obtain handbooks from the Department. Flaggers shall not be assigned other duties while working as authorized flaggers. The "Checklist for Flagger training" form shall be furnished to the Engineer any time a new flagger reports to work on the Project. The "Checklist for Flagger Training" form can be found at: http://www.dot.state.mn.us/const/wzs/flagger.html.

The Engineer will have the right to waive the above requirements.

S-15.4 GENERAL REQUIREMENTS

(A) All portable sign assemblies shall be perpendicular to the ground. No traffic control device (signs, channelizing devices, arrowboards, etc.) shall be weighted so they become hazardous to motorists and workers. The approved ballast system for devices mounted on temporary portable supports is sandbags, unless it is designed, crash tested, and approved for the specific device. During freezing conditions, the sand for bags shall be mixed with a de-icer to prevent the sand from freezing. The sandbags shall be placed and maintained at the base of the traffic control device to the satisfaction of the Engineer.

When signs will remain in the same location for more than 30 consecutive days the signs shall be post mounted. This would not include portable signs which are set up and taken down at the beginning and end of each work shift. The signs must be post mounted according to the Typical Temporary Sign Framing and Installation Detail Sheet found in the Plan or in these Special Provisions.

(B) When signs are installed, they shall be mounted on posts driven into the ground at the proper height and lateral offset as detailed in the MN MUTCD. **When signs are removed, the sign posts and stub posts shall also be removed from the Right of Way within two (2) weeks or the Contractor shall be subject to a daily charge assessed at a rate of $100.00 per day for each day or portion thereof with which the Engineer determines that the Contractor has not complied.**

(C) The Contractor shall be required to cover or remove all traffic control devices which may be inconsistent with traffic patterns during all traffic switches. See Maintenance and Staging of Traffic Control.

(D) Open excavation adjacent to the existing pavement will not be permitted on opposite sides of the roadway at the same time.

(E) The Contractor shall provide protective devices necessary to protect traffic from excavations, drop-offs, falling objects, splatter or other hazards that may exist during construction. Equipment will not be allowed to suspend over traffic. This work shall be an incidental cost to the Contractor.

(F) The Contractor will not be permitted to park vehicles or construction equipment so as to obstruct any traffic control device. The parking of workers' private vehicles will not be allowed within the Project limits unless so approved by the Engineer.

(G) The Contractor will not be allowed to store materials or equipment within 10 m [**30 feet**] of through traffic unless approved by the Engineer. If materials or equipment must be

stored within 10 m [**30 feet**] of through traffic, the Contractor shall provide Type B channelizers, barricades or barriers, placed near the object to warn and protect traffic.

(H) All workers within the road Right-of-Way who are exposed to either traffic or to construction equipment shall wear reflectorized high-visibility safety apparel.

High-visibility safety apparel means personal protective safety clothing that is intended to provide conspicuity during both daytime and nighttime usage, and at a minimum meets performance Class 2 requirements of the ANSI/ISEA 107 – 2004 publication entitled "American National Standard for High-Visibility Safety Apparel and Headwear".

Additional Requirements: ANSI/ISEA 107-2004 Class 3 Requirements (Class 2 Vest with Class E Long Pants)

- Flag Persons – In addition to an ANSI Class 2 hat, vest, shirt, or jacket, flaggers shall wear high visibility Class E long pants.
- Nighttime and Low Light Conditions – All workers working at night or in low light conditions shall wear high visibility Class E long pants in addition to an ANSI Class 2 vest, shirt, or jacket.

All high visibility apparel must be worn in the manner for which it is intended to be worn. All apparel worn on the torso must be closed in the front to provide contiguous 360 degree visibility. If a worker's high-visibility apparel becomes faded, worn, torn, dirty, or defaced, reducing the conspicuity of the apparel, the apparel shall be removed from service and replaced with new apparel.

The Contractor will be subject to a non-compliant charge for failure to adhere to the clothing requirements as listed above. Non-compliance charges, for each incident, will **assessed at a rate of $500.00 per incident** that the Engineer determines that the Contractor has not complied.

(I) At the beginning of the Project, the Contractor shall store at least **6** extra Type III barricades and **0** extra retroreflective drums, at a convenient location within the Project limits, to be used at the discretion of the Engineer. No direct compensation will be made to the Contractor for furnishing and erecting these traffic control devices.

If additional devices, beyond the quantity specified above, are ordered by the Engineer the Contractor will be compensated according to Section S-15.5 (ADDITIONAL TRAFFIC CONTROL DEVICES) of this Special Provision.

No additional payment will be made for any devices that are a part of the Engineer-approved Traffic Control Plan as required by S-15.1(B).

(J) When work will be performed between the official hours of sunset and sunrise, all appropriate practices for night work will apply.

The Contractor shall provide sufficient numbers of light plants to adequately illuminate the work area as determined by the Engineer. All costs incurred to provide such light plants shall be incidental to the lump sum traffic control.

All Contractor's personnel, except operators who will remain in their vehicles at all times, shall wear reflectively striped (approximately 10 m [**33 feet**] of striping), highly visible, short sleeved one or two piece coveralls (color and striping pattern to be determined by the District Traffic Engineer), at all times while working on the Project. These coveralls shall be considered an incidental expense for which no direct compensation will be made. Any Contractor's employee found on the Project not wearing the prescribed reflective coveralls will be immediately ordered off the Project by the Engineer.

The Contractor shall provide a sufficient amount of 50 mm [**2 inch**] wide highly reflective vehicle marking tape to be applied to Contractor vehicles and equipment, as directed by the Engineer, and as provided by the manufacturer's instructions. This tape shall be considered an incidental expense for which no direct compensation will be made and shall be on the qualified products list for conspicuity vehicle sign sheeting as found at: http://www.dot.state.mn.us/trafficeng/qpl/Signing.pdf. Vehicle examples to be marked with tape are Contractor rollers, paver, millers and other equipment normally found in the lane closure.

(K) Street identification signage shall be maintained at all times. Where the only existing signs are small city or county signs located at the intersection, street names and address numbers shall be maintained by temporary installations as required by the Engineer. This is necessary to maintain the 911 emergency system.

S-15.5 ADDITIONAL TRAFFIC CONTROL DEVICES

In addition to the traffic control devices shown on the Traffic Control Layouts, and/or Field Manual, the Engineer may require more traffic control as traffic conditions may warrant. These items are not intended for temporary lane closures.

NOTE: These provisions will apply ONLY when the Plan contains Item(s) for 2563.601 (Traffic Control) and/or if "Traffic Control Layouts" are included in the Plan or attached to this Proposal.

(A) General Requirements:
The Contractor shall furnish the additional traffic control devices as ordered by the Engineer.

The devices shall be installed and maintained in a functional and/or legible condition, at all times, to the satisfaction of the Engineer.

(B) Measurement:
Flashers, barricades, reflectorized drums, portable changeable message signs, 1220 x 1220 mm [**48 x 48 inch**] signs, and flashing arrow boards will be measured by the number of individual units of each type multiplied by the number of Calendar Days each unit is in service.

Standard signs of each type, other than 1220 x 1220 mm [**48 x 48 inch**] signs will be measured by the face area of signs furnished multiplied by the number of Calendar Days each square meter [**square foot**] of sign is in service.

Special construction signs will be measured by the face area thereof furnished and installed as specified.

Flag Persons and Police Officers will be measured by the length of time each is in service on the job. Police Officers shall be equipped with a car at all times on the job and the car shall be incidental in the payment for the Police Officer.

(C) Payment:
Payment for additional traffic control devices of each type, at the appropriate pre-determined Unit Day price set forth below, shall be compensation in full for all costs of furnishing, installing, maintaining, and subsequently removing and disposing of the device.

Payment for standard signs of each type, other than 1220 x 1220 mm [**48 x 48 inch**] signs, will be made at the appropriate pre-determined Square Meter/Day [**Square Foot/Day**] price which shall be payment in full for all costs of furnishing, installing, maintaining and subsequently removing and disposing of the signs.

The pre-determined Square Meter [**Square Foot**] price for "Construction Signs - Special" shall be payment in full to furnish, install, maintain and remove such signs. All materials required to furnish and install these signs will remain the property of the Contractor.

Payment for Flag Persons and Police Officers will be by the Unit Hour for each hour or portion thereof that each is in service on the Project.

Payment for all additional traffic control devices, as ordered by the Engineer, will be made in accordance with the following schedule:

ADDITIONAL TRAFFIC CONTROL DEVICES

Item No.	Item	Unit	Predetermined Price
2563.610	Flag Person	Hour	*
2563.610	Police Officer	Hour	**
2563.613	Type I Barricade w/Steady Burn Light	Unit Day	$1.05
2563.613	Type III Barricade	Unit Day	2.75
2563.613	Direction Indicator Barricade	Unit Day	1.25
2563.613	Reflectorized Plastic Safety Drum	Unit Day	0.85
2563.613	Reflectorized Plastic Safety Drum w/Down Arrow	Unit Day	0.95
2563.613	Weighted Traffic Channelizer	Unit Day	0.40
2563.613	Flasher Type A (Low Intensity)	Unit Day	0.50
2563.613	Flasher Type B (High Intensity)	Unit Day	1.75
2563.613	Flasher Type C (Steady Burn)	Unit Day	0.90
2563.613	1220 x 1220 mm [**48 x 48 inch**] Standard Sign	Unit Day	1.75
2563.613	1220 x 1220 mm [**48 x 48 inch**] Standard Sign w/Support	Unit Day	2.20
2563.613***	Portable Changeable Message Sign	Unit Day	225.00
2563.613****	Flashing Arrow Board (one shift)	Unit Day	33.00
2563.613****	Flashing Arrow Board (24 hour day)	Unit Day	45.00
2563.617*****	Standard Signs	m^2/Day	1.08
2563.617*****	Standard Signs	**SQ.FT./Day**	**0.10**
2563.617*****	Standard Signs w/support	m^2/Day	1.72
2563.617*****	Standard Signs w/support	**SQ.FT./Day**	**0.16**
2563.604	Construction Signs - Special	m^2	270.00
2563.618	Construction Signs - Special	**SQ.FT.**	**25.00**

* Shall be paid at the Contract Flagger Classification Total Rate, which is the Basic Rate plus the Fringe Rate.

** Shall be paid at the invoice price plus 10%

*** (PCMS) Type C Trailer Mounted Message Signs will be permitted. It is imperative that the Contractor continually operate each PCMS at maximum legibility. Many factors, such as mechanical problems, insufficient charging, incorrect intensity settings, or other factors can degrade performance. If at any time the Contractor fails to operate a Portable Changeable Message Sign at maximum legibility, as determined by the Engineer, no payment will be made for each day that the Message Sign is deemed inadequate.

**** It is imperative that the Contractor continually operate each Flashing Arrow Board at maximum legibility. Many factors, such as mechanical problems, insufficient charging, incorrect intensity settings, or other factors can degrade performance. If at any time the Contractor fails to operate the Flashing Arrow Board at maximum legibility, as determined by the Engineer, no payment will be made for each day that the Flashing Arrow Board is deemed inadequate.

***** Other than 1220 X 1220 mm [**48 X 48 inch**] Signs, with or without support.

NOTE: These predetermined unit prices apply only if not listed as separate bid items.

Barricades, drums and signs by the Unit Day shall be paid for up to 90 days per device. After 90 days, payment per Unit Day will continue at a reduced price of 40% of the Unit price.

S-15.6 In order to provide for public convenience and safety, the Contractor may have to provide for dust control on public roads or streets over which materials are being hauled. Dust Control, solely for the benefit of the public, shall be implemented by the Contractor as directed by the Engineer and shall be considered incidental to the Contract Items and no other compensation will be made therefore.

The first and second paragraphs of 1404 are hereby deleted and the following substituted therefore:

S-15.7 During construction, the road shall be closed except to local traffic until such time as indicated by the Engineer. The Contractor shall keep the road open to all local traffic at his own expense.

S-15.8 The Contractor shall keep the portions of the project being used by local traffic in such condition that traffic will be adequately accommodated at all times. The Contractor shall provide and maintain temporary approaches, crossings, and intersections with trails, roads, streets, businesses, parking lots, residences, garages, farms, and other abutting property in acceptable condition, but will not be required to remove snow.

S-16 (1505) COOPERATION BY CONTRACTORS

The Contractor shall coordinate his work and cooperate with all other agencies and forces as may be performing concurrent work within the limits of this project, or on sections of roadway adjacent thereto, in a manner consistent with the Provisions of Mn/DOT 1505.

S-17 (1506) SUPERVISION BY CONTRACTOR

The Provisions of Mn/DOT 1506 are supplemented as follows:

S-17.1 At the Preconstruction Conference the Contractor shall designate in writing who the competent superintendent and competent individual (if different) will be for this Project. These persons can only be changed throughout the duration of the Project by submission of written authorization to the Engineer by the Contractor. The submittal of these persons shall be done before any work is performed on this Project.

S-17.2 The Contractor will be subject to an hourly charge for failure to comply with the requirements of Mn/DOT 1506. Non-Compliance charges, for each incident, will be **assessed at a rate of $100 per**

hour, for each hour or portion thereof, during which the Engineer determines that the Contractor has not complied. No charge will be made if the deficiency is corrected within one (1) hour of notification.

S-17.3 An incident of Non-Compliance will be defined as the receipt of a written work order by the Contractor with instructions to correct a deficiency.

S-18 (1507) UTILITY PROPERTY AND SERVICE

All work over, below, or adjacent to any public utility shall be performed in accordance with the Provisions of Mn/DOT 1507, except as modified below:

S-18.1 No compensation will be made for additional costs incurred by the Contractor for any Special work or Special construction method necessary to prosecute work over, below or adjacent to utility property whose existence was indicated in the plans or Special Provisions.

S-18.2 The Contractor will be required to work around all utility poles, whether or not they have been moved or lowered. Where poles have been moved or lowered, prior to grading operations, a mound of earth shall be left around each pole of sufficient size to ensure its stability. Where such poles are moved or lowered before all grading on the project is otherwise completed, the Contractor shall remove any mounds of earth which may have been left. No compensation in addition to the contract price for Common Excavation will be made for this work.

S-18.3 It will be the Contractor's responsibility to contact the owners of all utilities in any area prior to the construction in the area so that the Contractor can be informed of the exact locations of all the utilities in the area including any that are not shown in the plans. It will also be the Contractor's responsibility to: (1) report any existing damage or faulty condition (i.e. sand in manholes, damaged valve boxes, etc.) to the owners prior to construction, as once excavation has commenced it will be assumed that all damage to underground installations has been caused by the Contractor's operations and it will be his responsibility to make the necessary repairs; and (2) upon completion of the project, contact all utility owners and make arrangements for a field inspection trip by his representative and representatives of the utility owners to confirm that all damages caused by the Contractor's operations have been repaired to the satisfaction of the owners.

S-18.4 All utilities that relate to this Project are classified as "Level D", unless the Plans specifically state otherwise. This utility quality level was determined according to the guidelines of CI/ASCE 38-02, entitled "Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data".

S-18.5 The following utility owners have existing facilities that may be affected by the work under this Contract, all of which they intend were necessary to relocate or adjust in advance of or concurrently with the Contractor's operations.

Xcel Energy
Lyon-Lincoln Electric
Frontier Citizens Communications Company

S-19 (1513) TRUCK LOADING REQUIREMENTS

The maximum load for any truck or trailer combination shall be the maximum allowable loading weight limits under Minnesota Statutes.

S-20 (1515) CONTROL OF HAUL ROADS

Control of haul roads shall be in accordance with the Provisions of Mn/DOT 1515 except as modified below:

S-20.1 The Contractor shall make all necessary arrangements concerning the use of all roads, except Trunk Highways, and shall be fully responsible to the road authority in control for any damages caused by his hauling operations, as well as for any other conditions created or imposed.

S-20.2 The Contractor shall safely maintain all public and private accesses affected by work on the Contract.

S-20.3 The Engineer can require the Contractor to furnish any material or equipment the Engineer determines is needed for the safe use of haul roads, detours, etc., both on or off the project. This shall include the use of water for dust control at the expense of the Contractor.

S-20.4 Any water used in conjunction with the "Control of Haul Roads" will be incidental work and no direct compensation will be made therefore.

S-21 (1517) CLAIMS FOR COMPENSATION ADJUSTMENT

The Provisions of Mn/DOT 1517 are hereby supplemented with the following:

S-21.1 NOTICE OF CLAIM:

At the time the Contractor gives written notice of the claim, the Contractor and the County shall immediately begin to keep and maintain complete and specific records to the extent possible. The records shall consist of, but are not limited to, cost and schedule records concerning the details of the perceived claim.

Unless otherwise agreed to in writing, the Contractor shall continue with and carry on the work and progress during the pendency of any claim, dispute, decision or determination by the Engineer, and any arbitration proceedings.

S-21.2 SUBMISSION OF CLAIMS

The Contractor shall submit the claim to the Engineer no later than 60 calendar days after receiving written notice from the Engineer that direct damages (money or time due) resulting from the claim has occurred in the opinion of the Engineer. If, in the opinion of the Contractor, the direct damages have not fully occurred, the Contractor shall provide written justification detailing why the direct damages have not fully occurred. This written justification shall be submitted to the Engineer no later than 30 calendar days from receiving the notice from the Engineer. If proper justification is not given as required within the 30 calendar day requirement or the claim is not submitted to the Engineer within 60 calendar days after receiving notice from the Engineer that the direct damages have occurred, the Contractor waives all claims for additional compensation in connection with the work already performed.

The contents of the claim shall be in accordance with MN/DOT 1517 and shall also include all scheduling documentation related to the claim.

The Engineer shall have access to the Contractors records involved in the claim and, when so requested, shall furnish the Engineer copies of claim documentation.

The Contractor shall promptly furnish any clarification and additional information or data requested in writing by the Engineer.

All claims shall be submitted through the Contractor. Submission of claims directly from subcontractors shall constitute a waiver of that portion of the claim.

S-21.3 DECISION ON CLAIMS

The County intends to resolve claims at the lowest possible administrative level. Upon receipt of the claim, the Engineer will make a written decision in relation to any claim presented by the Contractor within the following time frames:

(A) For an adjustment in compensation, or other contractual dispute between the parties where the amount in controversy is $100,000.00 or less, 60 calendar days from the receipt of the Contractor's claim;

(B) For an adjustment in compensation, or other contractual dispute between the parties where the amount in controversy is more than $100,000.00, 90 calendar days from the receipt of the Contractor's claim.

Unless the Contractor and the Engineer otherwise stipulate in writing to a later time, if the Engineer does not make a decision or determination within these time frames, the claim shall be deemed denied.

When the Contract has established a dispute resolution process, that moves the dispute through various levels of both organizations, this process shall also be completed within the above time period.

S-21.4 RIGHTS OF ARBITRATION

The decision of the Engineer in relation to the Contractor's claim shall be deemed final unless the Contractor commences a legal action within the time prescribed by law or unless the Contractor invokes arbitration as prescribed hereafter in these Special Provisions. Nothing herein contained shall be so construed as to preclude the Contractor from commencing a legal action in relation to claims for a single issue in excess of $100,000.00 but the Contractor's sole legal remedy in relation to claims of $100,000.00 or less shall be arbitration as prescribed hereafter in these Special Provisions. If the claim amount is in excess of $100,000.00, the Contractor and Lyon County may mutually agree to arbitration.

S-21.5 Arbitration of Claims and Disputes:

(A) All arbitration of claims shall be conducted in Minneapolis, Minnesota, or another mutually agreed upon location, in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association then in effect.

(B) If the Contractor elects to invoke his/her right to arbitration the Contractor shall file a Demand for Arbitration in writing with the American Arbitration Association and serve a copy thereof upon the Engineer. Such Demand for Arbitration shall be made by claimant within 30 Calendar Days measured from actual receipt of the Engineer's decision as provided for above. The scope of the arbitration proceeding shall be restricted and limited to the matters presented to the Engineer upon which the decision or determination was made and shall include no other matters.

When the amount of the claim for arbitration is less than $10,000.00, the Demand for Arbitration shall be given as provided for above, but the date for the hearing may be delayed by mutual consent until a date that is convenient for all parties. In no instances will this delay exceed one year in length from the date of Demand for Arbitration.

(C) Because many issues will combine both a question of responsibility or liability and an issue of compensation amount, when the issue to be arbitrated contains a question of responsibility or liability, as well as an issue of compensation, the arbitration shall be bifurcated (separate rulings). The arbitrator shall rule as to liability prior to receiving evidence or testimony on any damage claim. In the event that the County is found to be liable to any degree, the arbitration proceeding shall continue before the same arbitrator to resolve any and all damage issues.

(D) Each party shall submit to the arbitrator and exchange with each other in advance of the hearing their last best offers. The arbitrator shall be limited to awarding only one of the two figures submitted.

(E) The decision or award of the arbitrator shall be supported by substantial evidence and, in writing, contain the basis for the decision or award and the findings of fact. The decision or award by the arbitrator when made shall be final and binding on both the County and the Contractor. There shall be no right of appeal of the decision and the award shall have the same finality as is accorded awards under the Uniform Arbitration Act, Minnesota Statutes Chapter 572.

(F) For purposes of this section, a claim for adjustment in compensation shall mean an aggregate of operative facts which give rise to the rights which the Contractor seeks to enforce. That is to say, a claim under this section is defined as the event, transaction, or set of facts that give rise to a claim for compensation costs or expenses or damages which do not exceed $100,000.00 in amount.

(G) Any Contractor having a claim adjustment or dispute for an amount in excess of $100,000.00 may waive or abandon the dollar amount of any such claim in excess of $100,000.00 so as to bring the claim, adjustment or dispute within the scope and coverage of this section provided, however, that the amount allowed to any such Contractor by the arbitration award shall not exceed $100,000.00. Various damages claimed by the Contractor for a single claim may not be divided into separate proceedings to create claims within the $100,000.00 limit.

(H) The claim shall be submitted to a single arbitrator who shall be selected by the parties from a list of arbitrators furnished by the American Arbitration Association. Each party shall alternately strike names from the list until only one name remains. The parties shall advise the American Arbitration Association that the person whose name thus remained on the list of arbitrators is their first choice but that if that person is not able to serve, the two persons whose names were last stricken are acceptable, with the one whose name was last stricken being the first alternate.

Any alternate procedure that is mutually agreed upon by all parties to the dispute for the selection of the arbitrator may be used, but in the absence of mutual agreement the above selection procedures shall be utilized.

(I) Unless mutually agreed to otherwise, the parties shall select the arbitrator within ten Calendar Days after each has received a copy of the list of arbitrators from the American Arbitration Association. If for any reason the parties do not select the arbitrator in the manner and within the time provided herein, the arbitrator shall be selected in accordance with the procedures of the American Arbitration Association.

(J) Each party to the arbitration shall bear its own costs and fees assessed by the American Arbitration Association which shall be divided equally between the parties to the arbitration. This payment will be accomplished by the Contractor paying in full all costs and fees assessed by the American Arbitration Association for the arbitration and then submit the bill to the Engineer for 50 percent reimbursement.

(K) More than one separate claim may be presented at each arbitration hearing if agreed to by the County, the Contractor, and the Arbitrator.

S-22 (1701) LAWS TO BE OBSERVED (DATA PRACTICES)

The Provisions of Mn/DOT 1701 are supplemented with the following:

S-22.1 Bidders are advised that all data created, collected, received, maintained, or disseminated by the Contractor and any subcontractors in performing the work contained in this Contract are subject to the requirements of MN Statute Chapter 13, the Minnesota Government Data Practices Act (MGDPA). The Contractor shall comply with the requirements of the MGDPA in the same manner as the Department. The Contractor does not have a duty to provide access to public data to the public if the public data are available from the Department, except as required by the terms of the Contract.

S-23 (1701) LAWS TO BE OBSERVED (WET LANDS)

The provisions of MnDOT 1701 are modified and/or supplemented with the following :

S-23.1 If the Contractor operations involve the excavation and/or disposal of material off MnDOT, County, or Township Right of Way, the Contractor is advised of the following:

MN Statutes Sections 103G.2212 and 103G.241 stipulate that an agent or employee of another may not:

1) drain, excavate, or fill a wetland, wholly or partially; or
2) construct, reconstruct, remove, or make any change in any reservoir, dam, or the course, current, or cross-section of any public water;

unless the agent or employee has obtained a signed statement from the property owner stating that any permit or wetland replacement plan required for the work has been obtained, or that a permit or replacement plan is not required; **AND** this statement is mailed to the appropriate office with jurisdiction over the wetland or public water prior to initiating the work.

The "Landowner Statement and Contractor Responsibility For Work in Wetlands or Public Waters" can be found at: http://www.bwsr.state.mn.us/wetlands/forms/Contractor_Responsibility.doc . The Contractor shall provide the Engineer with a copy of the completed "Landowner Statement and Contractor Responsibility for Work in Wetlands or Public Waters" for the excavation and/or disposal site prior to initiating the work.

S-24 (1701) LAWS TO BE OBSERVED (BRIDGE)

The provisions of MnDOT 1701 are modified and/or supplemented with the following:

S-24.1 The Contractor shall use MnDOT approved companies for testing, waste transport and disposal as provided and described in MnDOT's manual "Asbestos and Regulated Waste Manual For Structure Demolition Or Relocations for Construction Projects" available on the following website: http://www.dot.state.mn.us/environment/buildingbridge/index.html. Contact Mark Vogel, Office of Environmental Services, 651.366.3630 with any questions regarding the manual.

The Contractor shall only use MnDOT approved contractors for: building/bridge assessments, asbestos abatement and regulated waste oversight, asbestos removal, regulated waste removal, and regulated waste disposal and recycling (for a list of MnDOT Approved Contractors call 651.366.3630).

The Contractor shall use only MPCA permitted Combined Solid Waste Disposal Facilities to dispose of all solid waste including demolition debris. Demolition debris shall not be disposed of in a permit-by-rule landfill.

S-24.2 The successful bidding Contractor shall:
(A) Comply with the Environmental Protection Agency (EPA) Regulations, 40 CFR pt. 61, subd.M - NATIONAL EMISSION STANDARD FOR ASBESTOS.

(B) Provide the Minnesota Pollution Control Agency (MPCA) and the Project Engineer written notice of intention to demolish or move a structure - see form "Notification of Intent to Perform a Bridge Demolition for MnDOT Operations" at http://www.dot.state.mn.us/environment/buildingbridge/index.html. Such notice shall be provided to the MPCA and the Project Engineer a minimum of 10 working days before any move or demolition.

(C) And if the bridge contains any asbestos, the Contractor shall:
(1) Use a Minnesota Department of Health (MDH) certified oversight contractor to oversee the MDH certified asbestos abatement contractor.
(2) Depending on the amounts and types of asbestos on the premises Submit "Notification of Asbestos Related Work", to the Minnesota Pollution Control Agency and the Mn. Department of Health 10 working days prior to commencement of abatement activities. The Contractor shall submit a copy of the completed notification/s to the Project Engineer at the same time.
(3) Submit all required documentation to the Minnesota Pollution Control Agency and the Mn Department of Health to the respective regulatory agencies and copy the Project Engineer on all submittals. Information on the requirements of MPCA can be found at: http://www.pca.state.mn.us/programs/asbestos_p.html. Information on the requirements of the Department of Health can be found at: http://www.health.state.mn.us/divs/eh/asbestos/index.html.
(4) Transport all asbestos containing waste in compliance with USDOT packaging and transportation requirements. The Contractor shall provide the Project Engineer with all Asbestos Containing Material Transportation shipping papers/manifests. Shipping paper guidance can be found at http://www.dot.state.mn.us/environment/buildingbridge/disposal.html.

(5) Dispose of all asbestos containing waste in a Minnesota Pollution Control Agency permitted mixed municipal solid waste or Industrial landfill (not demolition debris landfills) permitted to accept asbestos containing wastes. Provide the Project Engineer all landfill disposal receipts.

(D) Comply with MnDOT's manual "Asbestos and Regulated Waste Manual For Structure Demolition Or Relocations for Construction Projects" available on the following website: http://www.dot.state.mn.us/environment/buildingbridge/index.html.

S-24.3 The successful Contractor shall comply with all MnDOT policy, laws, regulations and/or rules regarding the removal and recycling/disposal of any regulated wastes including, but not limited to: *see manual for procedures and approved contractors/end sites.*

1. Treated Wood
2. Lead Paint
3. Lead Plates
4. Polychloronatedbiphenols (PCB's)
5. Mercury

The transportation of all the above wastes shall be in compliance with USDOT packaging and transportation requirements. The Contractor shall provide the Project Engineer with all shipping papers or manifests.

The Contractor shall provide the Project Engineer with copies of disposal or recycling records.

S-24.4 FAILURE TO COMPLY WITH NOTIFICATION PROVISIONS WILL BE DEEMED A MATERIAL BREECH OF CONTRACT. IN THE EVENT THAT A REGULATORY AGENCY IMPOSES MONETARY SANCTIONS ON LYON COUNTY THAT ARE BASED, IN WHOLE OR IN PART, UPON THE ACTS OR OMISSIONS OF THE CONTRACTOR, THE CONTRACTOR AGREES TO INDEMNIFY LYON COUNTY AND TO HOLD LYON COUNTY HARMLESS FOR SAME, EXCEPT TO THE EXTENT THAT ANY SANCTIONS WERE CAUSED BY LYON COUNTY'S OWN NEGLIGENCE.

S-25 (1701) LAWS TO BE OBSERVED (CULTURAL RESOURCES – STATE FUNDED)

The provisions of MnDOT 1701 are modified and/or supplemented with the following:

S-25.1 It will be Lyon County's responsibility to obtain a **Cultural Resources Unit (CRU) determination of effect letter** for Lyon County owned or leased Natural Material Resources if listed in the Construction Plan. It will also be Lyon County's responsibility to obtain a CRU determination for all Right of Way needed for this Project.

S-25.2 If the Contractor operations require the excavation and disposal of material off Lyon County Right of Way, the Contractor is advised of the following:

MnDOT CRU will review the proposed excavation/disposal area to determine the effect to historic properties. The MnDOT CRU will obtain Minnesota Historical Society (MHS) comment under the Minnesota Historic Sites Act only when there is a potential to affect historic properties listed in the State or National Registers of Historic Places or to consult with MHS and the Office of the State Archaeologist (OSA) under the Field Archaeology Act of Minnesota when the project has the potential to affect known or suspected archaeological sites or the Minnesota Private Cemeteries Act when human burials are an issue. The Contractor must request a review from the CRU, at Contractor's expense, before any material taken from the area can be used on State Projects or any disposal can be made in the area. Typically, this review may take 15 calendar days after receipt of the request. However, in

some cases the review period may be longer. Any time delays are the responsibility of the Contractor and are not a basis for claim for damages due to delay of Contract.

(A) Required reviews may be obtained by contacting MnDOT's CRU at:
Culturalresources.dot@state.mn.us
Cultural Resources Unit
Office of Environmental Stewardship
Minnesota Department of Transportation
395John Ireland Blvd.
Mail Stop 620
St. Paul, Minnesota 55155
And a request must be filled out with the following form:
http://www.dot.state.mn.us/culturalresources/process/PitForm.doc

(B) The Contractor shall give the Project Engineer a copy of the MnDOT CRU determination of effect letter. If this letter states that there is **no potential to affect properties listed in the State or National Registers of Historic Places or to affect known or suspected archaeological sites**, no further action is required by the Contractor.
HOWEVER

(C) When the MnDOT CRU requires a Cultural Resources Field Survey, The Contractor shall secure professional services to a conduct a survey and prepare a report for the MnDOT CRU.

1. A list of qualified acceptable Archaeologists and/or Historians will be furnished to the Contractor by the MnDOT CRU, upon request.
2. When a cultural resources field survey is required, Contract time will be adjusted in accordance with MnDOT 1806 for any suspension of work required to comply with these requirements. No monetary claims due to delays or loss of time for off-site construction activity will be allowed.
3. The cost of the cultural resources field survey and report are the Contractor's responsibility.

The Contractor will **NOT** be given permission to use the proposed material resources site, disposal site, or embankment/excavation site until such time as the MnDOT CRU grants its permission.

S-26 (1706) EMPLOYEE HEALTH AND WELFARE
The provisions of Mn/DOT 1706 are supplemented with the following:

S-26.1 All construction operations shall be conducted in compliance with applicable laws, regulations and industry standards as described in Mn/DOT 1706. The Contractor shall be considered to be **fully responsible** for the development, implementation and enforcement of all safety requirements on the Project, notwithstanding any actions Lyon County may take to help ensure compliance with those requirements.

S-26.2 The Contractor shall submit a written safety program to the Engineer at the pre-construction conference addressing safety issues for all Project activities. This program shall contain name(s) of person(s) responsible for all safety requirements and this Contractor's Designee(s) shall be available at all times that work is being performed. The Contractor's designee(s) shall be responsible for correcting violations on the Project as observed by the Engineer or his/her representative.

S-26.3 The Contractor shall not use any motor vehicle equipment on this Project having an obstructed view to the rear unless:
(A) The vehicle has a reverse signal alarm which is audible above the surrounding noise level; or
(B) The vehicle is backed up only when an observer signals that it is safe to do so.

S-26.4 **A $500.00 monetary deduction (per incident) will be assessed by Lyon County for violations of safety standards and requirements that have the potential for loss of life and/or limb of Project personnel or the public.** The areas of special concern include, but are not limited to excavation stability protection, fall protection, protection from overhead hazards, vehicle backup protection, confined space safety, blasting operations, and personal safety devices.

S-26.5 None of the monetary deductions listed above shall be considered by the Contractor as allowance of noncompliance incidents of these safety requirements on this Project.

S-27 (1707) PUBLIC CONVENIENCE AND SAFETY
The Provisions of Mn/DOT 1707 are hereby supplemented by the following:

S-27.1 The Contractor shall release and agrees to save harmless the County, its agents and employees, from any and all claims of any kind or character whatsoever arising from damage, injury or death to persons or property caused by or resulting from the work performed on this Contract.

S-27.2 Any traffic control devices that are within the working limits of the Contract and not previously removed by the County, shall be removed by the Contractor and temporarily stored. Stop signs, and other regulatory traffic signs, may be removed for short periods of time only when proper temporary traffic control is provided.

S-27.3 Highway signs removed or relocated, flagmen, or other traffic control, furnished when traffic signs are temporarily removed and/or relocated shall be incidental to the Contract and no direct payment will be made for such work.

S-27.4 The Contractor shall apply water for dust control as necessary for the safe use by forces working on the project and the public. All cost connected with dust control on the project, or on any haul road or detour, shall be considered an incidental expense and no direct compensation will be made for such work.

S-27.5 The Contractor shall maintain reasonable access to all abutting properties while the Contract is in effect.

S-28 (1710) TRAFFIC CONTROL DEVICES
Traffic control shall be provided for in accordance with the Provisions of Mn/DOT 1710 except as modified below:

S-28.1 All traffic control devices and methods shall conform to the Minnesota Manual on Uniform Traffic Control Devices (MN MUTCD), Minnesota Standard Signs Manual, the Traffic Engineering Manual, and the following:

S-28.2 In accordance with the MN MUTCD all sign supports shall be crashworthy. Signs installed on barricades, barricade sign combinations, and all other portable supports shall be crashworthy. This includes all new and used Category I and Category II devices.

S-28.3 The Contractor shall provide the Project Engineer a Letter of Compliance stating that all of the Contractors Category I and II Devices are NCHRP 350 approved as of July 1, 2006. The Letter of Compliance must also include approved drawings of the different signs and devices and shall be provided to the Project Engineer at the Pre-construction meeting.

S-29 (1712) PROTECTION AND RESTORATION OF PROPERTY

Protection and restoration of property will be performed in accordance with the Provisions of Mn/DOT 1712, except as modified below:

S-29.1 The County will not be held responsible for damages done by the Contractor to property located below the ground surface within the Right of Way, even though the existence of such property is not shown on the plans, indicated in the Special Provisions or otherwise brought to his attention before the damage is done.

S-30 (1714) RESPONSIBILITY FOR DAMAGE CLAIMS

The first paragraph of Mn/DOT 1714 is revised to read as follows:

S-30.1 The Contractor shall indemnify and save harmless the State of Minnesota, the County of Lyon, their officers and employees from all suits, action , and claims of any character brought because of injuries or damages received or sustained by any person, persons or property on account of the operations of the said Contractor; or on account of or in consequence of any act or omission, neglect, or misconduct of said Contractor; or because of any claims arising or amounts recovered from infringements of patent, trademark, or copyright, or because of any claims arising or amounts recovered under the Worker's Compensation Act; or under any other law, ordinance or decree.

S-30.2 The Contractor shall not commence work under the Contract until he has obtained the following insurance, and such insurance has been approved by the Lyon County Attorney.

S-30.3 The Contractor shall deposit with the County Auditor certificates of insurance from each insurance company which has issued policies for the Public Liability and Property Damage Insurance and Extended coverage, Worker's Compensation Insurance and Automobile Public Liability Insurance. All certificates shall provide that the policies shall remain in force and effect on ten days written notice to the County Auditor before cancellation. The above-noted insurance certificates shall be submitted at the same time as the Contract and Bond as provided by Mn/DOT 1306. The Contractor shall comply with the provisions of Mn/DOT Specifications 1714 and shall take out and maintain during the life of this Contract such Comprehensive Public Liability Insurance, Property Damage Insurance and Contractor's or Protective Insurance as shall protect him and any subcontractors performing work covered by this Contract from claims for damages for personal injury, including death, as well as from claims for property damages which may arise from operations under this Contract, whether such operations are by himself or by any subcontractor or by anyone directly or indirectly employed by either of them, and the amounts of such insurance shall be as follows:

a. PUBLIC LIABILITY AND PROPERTY DAMAGE INSURANCE

Coverage shall be provided in the amount of not less than $1,500,000.00 combined single limit per occurrence.

For and in behalf of himself, the County of Lyon as joint assured, and with a cross liability endorsement protecting the County of Lyon from claims or damages for personal injuries, including accidental death, as well as for claims for property damage which may arise from operations under the Contract, whether such operations be by the Contractor or by a subcontractor or by anyone directly or indirectly employed by either of them.

Said Public Liability and Public Property Damage Insurance Policy shall provide that the insurance company waives the right to assert the immunity of the County as a defense to any claims made under said insurance.

The amount of such insurance will be as follows:

Public Liability Insurance in an amount of not less than One Million Five Hundred Thousand Dollars ($1,500,000.00) for all damages arising out of bodily injuries to, or death of one person and subject to the same limit for each person in a total amount of not less than One Million Five Hundred Thousand Dollars ($1,500,000.00) on account of one accident and property damage insurance in an amount not less than One Million Five Hundred Thousand Dollars ($1,500,000.00) for all damages to or destruction of property during the policy period.

b. AUTOMOBILE PUBLIC LIABILITY INSURANCE

Coverage shall be provided in the amount of not less than $1,500,000.00 combined single limit per occurrence for each and every motor vehicle engaged in operations within the terms of this Contract.

One Million Five Hundred Thousand Dollars ($1,500,000.00) for all damages arising out of bodily injuries to , or death of one person, and subject to that limit for each person, a total of One Million Five Hundred Thousand Dollars ($1,500,000.00) for any one accident and property damage liability insurance in an amount not less than One Million Five Hundred Thousand Dollars ($1,500,000.00) for all damages to or destruction of property on any one accident and subject to that limit, a total of One Million Five Hundred Thousand Dollars ($1,500,000.00) for all damages to or destruction of property during the policy period, if any motor vehicles are engaged in operations with the term of the contract on this site of work covering the use of all such motor vehicles unless such coverage is included in the insurance provided for under subsection "A" hereof.

c. WORKER'S COMPENSATION INSURANCE

Coverage shall be provided as required by law. In addition, insurance shall be written by a company or companies acceptable to the Department. Certificates shall be provided for all insurance coverages. Certificates shall contain provisions that coverage will not be changed or allowed to expire without at least thirty days prior written notice to the Department.

For all his employees employed at the site of the project and, in case any work is sublet, the Contractor shall require the subcontractor to provide Worker's Compensation Insurance for all his employees.

S-31 (1717) AIR, LAND AND WATER POLLUTION

The provisions of MnDOT 1717 are supplemented and/or modified with the following:

S-31.1 DISCOVERY OF CONTAMINATED MATERIALS AND REGULATED WASTES

If during the course of the Project, the Contractor unexpectedly encounters any of the following conditions indicating the possible presence of contaminated soil, contaminated water, or regulated waste, the Contractor shall immediately stop work in the vicinity, notify the Engineer, and request suspension of work in the vicinity of the discovery area, in accordance with MnDOT 1803.4.

A documented inspection and evaluation will be conducted prior to the resumption of work. The Contractor shall not resume work in the suspected area without authorization by the Engineer.

(A) Indicators of contaminated soil, ground water or surface water include, but are not limited to the following:

(1) Odor including gasoline, diesel, creosote (odor of railroad ties), mothballs, or other chemical odor.

(2) Soil stained green or black (but not because of organic content), or with a dark, oily appearance, or any unusual soil color or texture.

(3) A rainbow color (sheen) on surface water or soil.

(B) Indicators of regulated wastes include, but are not limited to the following:

(1) Cans, bottles, glass, scrap metal, wood (indicators of solid waste and a possible dump)

(2) Concrete and asphalt rubble (indicators of demolition waste).

(3) Roofing materials, shingles, siding, vermiculite, floor tiles, transite or any fibrous material (indicators of demolition waste that could contain asbestos, lead or other chemicals).

(4) Culverts or other pipes with tar-like coating, insulation or transite (indicators of asbestos).

(5) Ash (ash from burning of regulated materials may contain lead, asbestos or other chemicals).

(6) Sandblast residue (could contain lead).

(7) Treated wood including, but not limited to products referred to as green treat, brown treat and creosote (treated wood disposal is regulated).

(8) Chemical containers such as storage tanks, drums, filters and other containers (possible sources of chemical contaminants).

(9) Old basements with intact floor tiles or insulation (could contain asbestos), sumps (could contain chemical waste), waste traps (could contain oily wastes) and cesspools (could contain chemical or oily wastes).

S-31.2 MnDOT 1717.2 A2 is hereby deleted and replaced with the following:

A2 During Construction

The Contractor shall implement the Project's Storm Water Pollution Prevention Plan. The Contractor shall schedule and install temporary and permanent sediment and erosion control measures, construct ponds and drainage facilities, finish earth work operations, place topsoil, establish turf, and conduct other Contract work in a timely manner to minimize erosion and sedimentation. All exposed soil areas with continuous positive slopes that are within 60 m (**200 feet**) of a public water shall have temporary or permanent erosion protection within 24 hours after the construction activity in that portion of the site has temporarily or permanently ceased and connection is established to the public water. All other positive slopes to constructed surface waters, such as permanent storm water treatment ponds, curb and gutter systems, storm sewer inlets, temporary or permanent drainage ditches, or other storm water conveyance systems, shall have temporary erosion protection or permanent cover for the exposed soil areas as soon as practicable but no later than 14 days after construction activity has temporarily or

permanently ceased in that area. For those drainage areas that have a discharge point within 1 mile and flows to an impaired or Special Waters shall have temporary erosion protection or permanent cover for the exposed soil areas as soon as practicable but no later than 7 days after construction activity has temporarily or permanently ceased in that area. Impaired and Special Waters are defined as those listed and referenced in the NPDES Permit.

Positive slopes adjacent to public waters and wetlands will be stabilized at the close of each day when weather forecasts for rain that evening, and/or overnight including weekends. Once work is completed it will be stabilized permanently as soon as practical but no later than seven days. Exposed soil areas do not include; stockpiles or surcharge areas of sand, gravel, aggregate, concrete, bituminous, or road bed and surfacing material. A perimeter sediment barrier may be necessary to minimize loss when these are within the 60 m (**200 feet**) of existing surface waters or the property edge.

The bottom of temporary or permanent drainage ditches or swales constructed to drain water from a construction site must be stabilized with erosion control measures for the last 60 m (**200 feet),** or more when conditions warrant, from the property edge or from the point of discharge to any existing surface water. Stabilization shall be completed within 24 hours after the construction activity in that portion of the ditch has temporarily or permanently ceased. Ditch stabilization will continue concurrently with construction activities but no later than 14 days after construction activities have permanently or temporarily ceased. Any, culvert pipe or storm sewer pipe that is within the cumulative distance is not part of this distance. Ditch checks may be provided where necessary to slow water flow and capture sediment.

Temporary or permanent ditches used as treatment systems will not need to be stabilized but must provide the proper Best Management Practices for the treatment system.

Pipe outlets shall be provided with temporary or permanent energy dissipation within 24 hours of connecting the pipe to any constructed or existing surface waters.

The Contractor shall limit the surface area of erodible soil that can be exposed to possible erosion at any one time when the permanent erosion control features are not completed and operative.

All liquid and solid wastes generated by concrete washout operations must be contained and not have the opportunity to come in contact with the surface waters or ground water. This includes the ditches, slopes to ditches, curb and gutter/stormsewer systems, and ponds. Areas where there are sandy soils, karsts, and high ground water the washout facility must have an impermeable liner. Liquid and solid wastes must be disposed of properly. A concrete washout sign must be installed adjacent to each washout facility to notify personnel.

S-46.3 MnDOT 1717.2E is hereby deleted and replaced with the following:

E Site Plans

The Engineer may require the Contractor to submit a site plan, in writing, detailing proposed erosion control and sediment control measures and a schedule indicating starting and completion times for construction operations working in water bodies and/or in direct proximity to waters of the state.

Contractor shall not start work in the affected areas until the schedule and site plan have been accepted by the Engineer and all materials and equipment for the activity are on site.

S-32 (1717) NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT

Pollution of natural resources of air, land and water by operations under this Contract shall be prevented, controlled, and abated in accordance with the rules, regulations, and standards adopted and established by the Minnesota Pollution Control Agency (M.P.C.A.), and in accordance with the Provisions of Mn/DOT 1717, these Special Provisions, and the following:

S-32.1 By signing the Proposal and completing the NPDES permit application, the Contractor is a co-permitee with the County to ensure compliance with the terms and conditions of the General Storm Water Permit (MN R100001) and is responsible for those portions of the permit where the operator is referenced. This Permit establishes conditions for discharging storm water to waters of the State from construction activities that disturb 0.4 hectares [**1 acre**] or more of total land area. A copy of the "General Permit Authorization to Discharge Storm Water Associated with a Construction Activity Under the National Pollutant Discharge Elimination System (NPDES)/State Disposal System Permit Program" is available at http://www.pca.state.mn.us/water/stormwater/stormwater-c.html or by calling 651-296-3890.

S-32.2 The Contractor shall apply and pay for the NPDES Permit on this Project. Payment for the application shall be incidental to the Contract and no direct compensation will be made. Lyon County will provide the Contractor with the application form with Sections 1 thru 3 and 5 thru 14 completed, as part of the Contract document package. The Contractor shall fill out the Contractor's portion (Section 4 and Section 15) complete the application process, and post the Permit and MPCA's letter of coverage onsite.

~~**A NPDES Permit Declaration form is included in this proposal.**~~
The Permit Declaration will be sent to the contractor upon award authorization.

A copy of the signed permit application and a signed Permit Declaration form must be returned with the Contract and Bond. Submittal of the copy of the signed permit application and Permit Declaration is mandatory for Contract approval. No work which disturbs soil and/or work in waters of the state will be allowed on this Project until the NPDES Permit is in effect and the Department has received the required documentation.

S-32.3 The Contractor shall be solely responsible for complying with the requirements listed in Part II.B and Part IV of the General Permit.

The Contractor shall be responsible for providing all inspections, documentation, record keeping, maintenance, remedial actions, and repairs required by the permit. All inspections, maintenance, and records required in the General Permit Paragraphs IV.E, shall be the sole responsibility of the Contractor. The word "Permitee" in these referenced paragraphs shall mean "Contractor". Standard forms for logging all required inspection and maintenance activities shall be used by the Contractor. All inspection and maintenance forms used on this Project shall be turned over to the Engineer every two weeks for retention in accordance with the permit.

The Contractor shall have all logs, documentation, inspection reports on site for the Engineer's review and shall post the permit and MPCA's letter of coverage on site. The Contractor shall immediately rectify any shortcomings noted by the Engineer. All meetings with the MPCA, Watershed District, WMO, or any local authority shall be attended by both the Engineer and the Contractor or their representatives. No work required by said entities, and for which the Contractor would request additional compensation from Lyon County, shall be started without approval from the Engineer. No work required by said entities and for which the changes will impact the design or requirements of the Contract documents or impact traffic shall be started without approval from the Engineer.

The Contractor shall immediately notify the Engineer of any site visits by Local Permitting Authorities performed in accordance with Part V.H.

S-32.4 Emergency Best Management Practices must be enacted to help minimize turbidity of surface waters and relieve runoff from extreme weather events. It is required to notify the MPCA Regional contact person within 2 days of an uncontrolled storm water release. The names and phone numbers of the MPCA Regional Contact personnel can be found at: http://www.pca.state.mn.us/water/stormwater/stormwater-c.html. The Contractor is reminded that during emergency situations involving uncontrolled storm water releases that the State Duty Office must be contacted immediately at 1-800-422-0798 or 1-651-649-5451.

S-32.5 The Contractor is advised that Section 1 of the NPDES application form makes reference to a Storm Water Pollution Prevention Plan (SWPPP). This Project's SWPPP is addressed throughout Mn/DOT's Standard Specifications for Construction, as well as this Project's Plan and these Special Provisions. The following table identifies NPDES permit requirements and cross-references where this Contract addresses each requirement.

Last revision 2/1/07

NPDES Permit Requirements Cross-Reference within this Contract

NPDES Permit Requirements	Cross-Reference within this Contract
Obtain NPDES Permit; Permit Compliance; Submit Notice of Termination	Mn/DOT 1701, 1702 and 1717 Special Provisions: 1717 (Air, Land &Water Pollution), 1717 (National Pollutant Discharge Elimination System (NPDES) Permit)
Certified Personnel in Erosion / Sediment Control Site management Develop a Chain of Command	Mn/DOT 1506, 1717, and 2573; Special Provisions: 1717 (Air, Land &Water Pollution), 1717 (National Pollutant Discharge Elimination System (NPDES) Permit)
Project / Weekly Schedule (for Erosion/ Sediment Control) Completing Inspection / Maintenance Log/ Records	Mn/DOT 1717 and 2573; Special Provisions: 1717 (Air, Land &Water Pollution), 1717 (National Pollutant Discharge Elimination System (NPDES) Permit); and
Project Specific Construction Staging	The Plans: Mn/DOT 1717; Special Provisions: 1717 (Air, Land &Water Pollution), and 1717 (National Pollutant Discharge Elimination System (NPDES) Permit) 1806 (Determination and Extension of Contract Time)
Temporary Erosion / Sediment Control	The Plans: Mn/DOT 2573 and 2575
Maintenance of Devices / Sediment removal Removal or Tracked Sediment Removal of Devices	The Plans: Mn/DOT 1717 and 2573; Special Provisions: 1514 (Maintenance During Construction) 1717 (Air, Land &Water Pollution), and 1717 (National Pollutant Discharge Elimination System (NPDES) Permit)
Dewatering	Mn/DOT 2105.3B and 2451.3 C; May also require DNR Permit
Temporary work not shown in the Plans	Mn/DOT 1717, 2573, and 2451C;

Grading areas (unfinished acres exposed to erosion)	Special Provisions 1717 (Air, Land &Water Pollution), and 1717 (National Pollutant Discharge Elimination System (NPDES) Permit)
Permanent Erosion /Sediment Control and Turf Establishment	The Plans: Mn/DOT 1717, 2573 and 2575; Special Provisions: 1717 (Air, Land &Water Pollution), and 1717 (National Pollutant Discharge Elimination System (NPDES) Permit)

S-32.6 The Contractor shall review and abide by the instructions contained in the permit package. The Contractor shall hold Lyon County harmless for any fines or sanctions caused by the Contractor's actions or inactions regarding compliance with the permit or erosion control provisions of the Contract Documents.

S-32.7 If the Contractor fails to perform the requirements as listed herein, the Engineer will issue a Work Order detailing the required action. The Contractor shall start the required action within twenty-four (24) hours of receipt of the Work Order and continue the required action until the Project is brought into compliance with the permit. Failure to perform the required action as specified, shall subject the Contractor to a $1000/calendar day deduction.

S-33 TEMPORARY POLLUTION CONTROL

The Contractor shall furnish material, labor and equipment for temporary control measures as shown in the Plans or ordered by the Engineer and shall provide for the acceptable maintenance thereof during the life of the Contract, to effectively prevent water pollution through the use of berms, dikes, dams, sediment basins, filter mats, silt fences, netting, gravel, mulches, grasses, slope drains, and other erosion control devices or methods.

S-33.1 Temporary pollution control may include construction work outside the Right of Way where such work is necessary as a result of borrow pit operations, haul road construction, equipment storage, and plant or waste disposal sites.

S-33.2 The temporary pollution control provisions contained herein shall be coordinated with the permanent erosion control features specified elsewhere in the Contract to the extent practical to assure economical, effective, and continuous erosion control throughout the construction and post construction period.

S-33.3 At the pre-construction conference, or prior to the start of the applicable construction, the Contractor shall submit for acceptance his proposed schedules for accomplishment of temporary and permanent erosion control work as are applicable for clearing and grubbing, grading, construction of bridges and other structures at watercourses, paving, and miscellaneous construction. He shall also submit for acceptance his proposed method of erosion control on haul roads and at borrow pits and his plans for disposal of waste material. No work shall be started until the applicable erosion control schedules and methods of operations have been accepted by the Engineer.

S-33.4 **MATERIALS FOR TEMPORARY CONTROL**

(a) Mulches may be hay, straw, fiber mats, netting, wood cellulose, corn or tobacco stalks, bark, corn cobs, wood chips, or other suitable material acceptable to the Engineer and shall be reasonably free of noxious weeds and other deleterious matter.

(b) Slope drains may be constructed of pipe, fiber mats, rubble, portland cement concrete, bituminous concrete, plastic sheets, or other suitable material acceptable to the Engineer.

(c) Grass shall be quick growing species (such as rye or cereal grasses) suitable to the area, that will provide a temporary cover which will not later compete with the grasses sown for permanent cover.

(d) Fertilizers and soil conditioners shall be a standard commercial grade acceptable to the Engineer.

(e) Other materials as approved for use by the Engineer.

S-33.5 **CONSTRUCTION REQUIREMENTS**

The Engineer shall have authority to limit the surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and fill operations and to direct the Contractors to provide immediate permanent or temporary control measures to prevent contamination of adjacent streams and other water courses, lakes, ponds, and areas of water impoundment. Cut slopes shall be seeded and mulched as the excavation proceeds to the extent considered desirable and practicable.

S-33.6 The Contractor will be required to incorporate all permanent erosion control features into the project at the earliest practicable time as outlined in his accepted schedules. Temporary pollution control measures will be used to correct conditions that develop during construction that were not foreseen during the design state; that are needed prior to installation of permanent erosion that develops during normal construction practices, but are not associated with the permanent control features on the project.

S-33.7 The Engineer will limit the area of excavation, borrow and embankment operations in progress commensurate with the Contractor's capability and progress in keeping the finish grading, mulching, seeding, and other such permanent erosion control measures current in accordance with the accepted schedules. Should seasonal limitation make such coordination unrealistic, temporary erosion control measures shall be taken immediately to the extent feasible and justified.

S-33.8 The Contractor is required to incorporate into his erosion control activities the Best Management Practices "B.M.P.'s" described in the MPCA General Storm Water Permit for Construction Activity (#MNR100001), included in the contract award packet.

S-33.9 In the event of conflict between these requirements and any pollution control laws, rules, or regulations of other Federal and State or local agencies, the more restrictive requirements shall apply.

S-33.10 Where erosion is likely to be a problem, clearing and grubbing operations should be so scheduled and performed that grading operations and permanent erosion control features can follow immediately thereafter if the Project conditions permit; otherwise, temporary erosion control measures may be required between successive construction stages. Under no conditions shall the

surface area of earth material exposed at one time by clearing and grubbing exceed 217,000 square feet without an erosion control plan which is approved by the Engineer.

S-33.11 Under no conditions shall the amount of surface area of erodible earth material exposed at one time by excavation, borrow, or embankment operations within the Right of Way, including temporary easements, exceed 750,000 square feet without prior approval of the Engineer.

S-33.12 The Engineer may increase or decrease the amount of surface area of erodible earth material that may be exposed at one time by clearing and grubbing, excavation, borrow, and embankment operations, as determined by his/her analysis of Project conditions.

S-33.13 **MEASUREMENT AND PAYMENT**
All temporary and permanent erosion and pollution control measures necessitated by the Contractor's operations outside the Right of Way, and all temporary erosion and pollution control measures necessitated by the Contractor's negligence, carelessness, or failure to properly coordinate the installation of permanent controls as part of the work scheduled within the Right of Way, shall be performed as ordered by the Engineer at the Contractor's own expense.

S-33.14 In case of failure on the part of the Contractor to control erosion, pollution, and siltation as ordered, the County reserves the right to employ outside assistance or to use its own forces to provide the necessary corrective measures. All expenses so incurred by the County, including its engineering costs, that are chargeable to the Contract as his obligation and expense, will be deducted from any monies due or coming due the Contractor.

S-33.15 All temporary and permanent erosion and pollution control measures performed as planned work within this Contract shall be paid for under the applicable bid items identified in this Contract for this purpose or as Extra Work if no bid items are provided.

S-34 (1801) SUBLETTING OF CONTRACT
The Provisions of Mn/DOT 1801 are hereby modified in accordance with the following:

S-34.1 The second sentence of the first paragraph of Mn/DOT 1801 is modified to read:

In case consent is given, the Contractor will be permitted to sublet a portion thereof, but the Contractor's organization shall perform work amounting to not less than 40 percent of the total original Contract cost.

S-34.2 The first sentence of the second paragraph of Mn/DOT 1801 is modified to read:

On Contracts with Disadvantaged Business Enterprise (DBE) or Targeted Group Business (TGB) established goals, or both, the Contractor's organization shall perform work amounting to not less than 30% of the total original Contract cost.

S-35 (1806) DETERMINATION AND EXTENSION OF CONTRACT TIME
The Contract Time will be determined in accordance with the Provisions of 1806 and the following:

S-35.1 Construction Operations shall be started on or after **July 1, 2013**. At the request of the Contractor, the Engineer may approve an earlier starting date. However, work may not be started before Contract Approval. Once a start date is determined and work has commenced, all work, including turf establishment and final clean-up shall be completed by **October 16, 2013**.

S-35.2 No work which will restrict or interfere with traffic shall be performed between 12:00 noon on the day preceding and 9:00 A.M. on the day following any consecutive combination of a Saturday, Sunday, and legal holiday without written permission from the Engineer.

(A) If the Contractor chooses not to work at all on the day preceding the holiday period, no working day charges will be assessed.

(B) If the Contractor chooses to work prior to 12:00 noon on the day preceding the holiday period or if the Contractor obtains written permission to work after 12:00 noon on the day preceding the holiday period, working day charges will be assessed only for the actual hours worked.

S-35.3 The provisions of Mn/DOT 1806.1C(3) are modified to the extent that the term "(C) during the inclusive period from November 15 to April 15"; is deleted. A similar phrase set forth in the second paragraph of Mn/DOT 1807.2 is also deleted.

S-35.4 The Contractor shall notify the Engineer of all changes in the following day's work schedule for construction by 1:00 P.M. except on Friday, which will be by 10:00 A.M.

S-36 (1807) FAILURE TO COMPLETE THE WORK ON TIME.
Liquidated damages for failure to complete the work on time will be assessed in accordance with the Provisions of Mn/DOT 1807.

S-36.1 Liquidated damages will be assessed based on the **FULL** amount **of each respective project** in accordance with Table 1807-1.

S-37 (1809) EMERGENCY CANCELLATION OF CONTRACT
The first paragraph of Mn/DOT 1809 is revised to read:

S-37.1 The Department may, by written notice, terminate the Contract or any portion thereof when it is deemed in the best public, County, or national interest to do so; or after finding that for reasons beyond the Contractor's control he is prevented from proceeding with or completing the Contract work within a reasonable period of time.

S-38 (1901) MEASUREMENT OF QUANTITIES
The provisions of Mn/DOT 1901 are supplemented by the following:

S-38.1 The Contractor shall provide automated weighing devices when materials are paid for by mass (weight) and hauled in trucks.

S-38.2 The (P) designation referred to herein will be shown only in the "Statement of Estimated Quantities" in the Plans and in the Proposal. In the absence of such designation, quantities for those items defined in the Standard Specifications as "plan quantity" items will be recomputed. Unless otherwise directed by the Contract, the methods of measurement indicated in the specifications for these items will be used, disregarding any reference to plan quantity.

S-38.3 **Automated Weighing Device**
Automated weighing devices shall be integrated with a ticket printer. The ticket shall contain the date, project number, pay item number, truck or tractor and trailer identification, truck tare and net

mass (weight). The Contractor shall provide the truck driver with a copy of the weigh ticket. The truck driver shall give the ticket to the inspector on the project.

S-38.4 All quantities paid by the "ton" shall be weighed using a certified platform scale.

S-38.5 The use of a loader scale may be used by the Contractor for items less than 5000 tons, excluding plant-mixed bituminous. The Engineer may approve the use of the loader for quantities greater than 5000 tons if requested by letter from the Contractor.

S-38.6 **Uniform Load**
In the event that the Contractor requests the use of Uniform Loads, the method of arriving at uniform loading must be approved by the Engineer. Automated weighing devices will be required when belt scales are used in Uniform Load determinations. Periodic Spot checks will be required. Trucks will be stopped and required to be run over a commercial scale.

S-39 (1903) INCREASED OR DECREASED QUANTITIES
Lyon County reserves the right to increase or decrease the quantities of any item without adjustments in the contract unit prices and the provisions of 1903 shall not apply.

S-40 (1904) EXTRA AND FORCE ACCOUNT WORK
The provisions of MnDOT 1904 are supplemented and/or modified with the following:

S-40.1 The Contractor is required to submit force account work itemized statements of costs in accordance with MnDOT 1904 to the Engineer on MnDOT form TP-21659 (Summary of Daily Force Account). Copies of this form can be obtained from the Engineer.

S-40.2 The following sentence shall be added to the second paragraph of MnDOT 1904:

"Under no circumstance will the negotiated unit price for Extra Work which is performed by a subcontractor include a Prime Contractor allowance which exceeds that provided for in 1904(4), Paragraph 3."

S-41 (1905) ELIMINATION OF WORK
Work shall be accomplished in accordance with the Provisions of 1905, except as modified below:

S-41.1 Lyon County reserves the right to delete any item without adjustment in the Contract price.

S-42 (1906) PARTIAL PAYMENTS
Partial payments will be made in accordance with the Provisions of Mn/DOT 1906, except as modified below:

S-42.1 From the amounts ascertained as payable on each partial estimate, five (5) percent will be retained to protect the Department's interests.

S-42.2 Payment for materials on hand <u>will not</u> be made under this Contract.

S-42.3 Partial payments will be made out the first week of the month for work completed in the previous month.

S-43 (1908) FINAL PAYMENT

Before final payment is made for the work on this project, the Contractor must make a satisfactory showing that he has complied with the Provisions of Minnesota Statutes 290.92, requiring the withholding of State Income Tax for wages paid employees on this project. Receipt of a certificate of compliance from the Commissioner of Taxation will satisfy this requirement. The Contractor is advised that before such certificate can be issued, he must first place on file with the Commissioner of Taxation an affidavit that he has complied with the Provisions of MN 290.92. The required affidavit form will be supplied by the Commissioner of Taxation, Centennial Building, St. Paul, MN, on request.

S-43.1 Before final payment is made for work on this project, the Contractor must make a satisfactory showing that he has made a settlement with the owner or owners of the gravel, sand, binder soil, borrow soil, sod or rock deposits for which the Contractor selects the source of the material.

S-44 (2021) MOBILIZATION

The provisions of MnDOT 2021 are hereby deleted and replaced with the following:

2021.1 DESCRIPTION

Mobilization shall consist of preparatory work and operations, including, but not limited to, those necessary for the movement of personnel, equipment, supplies and incidentals to the Project site; for the establishment of all Contractor's offices and buildings or other facilities necessary for work on the Project. Mobilization may include bonding, permit, and demobilization costs. When the proposal does not have a lump sum item for Mobilization, all costs incurred by the Contractor for Mobilization shall be incidental to other work.

2021.2 BLANK

2021.3 BLANK

2021.4 BLANK

2021.5 BASIS OF PAYMENT

Based on the lump sum Contract price for mobilization, partial payments will be made as follows: Mobilization Partial Payments

% of Original Contract Amount Completed1		Pay Lesser of the Two
% of Mobilization		% of Original Contract Amount
5	50	3
15	75	5
25	100	5

S-45 (2051) MAINTENANCE AND RESTORATION OF HAUL ROADS

The Provisions of Mn/DOT 2051 are modified with the following:

S-45.1 The Contractor shall make all necessary arrangements concerning the use of all roads, except Trunk Highways, and shall be fully responsible to the road authority in control for any damages caused by his hauling operations as well as for any other conditions created or imposed. The Contractor shall provide a list of all haul roads to the department prior to work commencing.

S-45.2 The Contract shall safely maintain all public and private accesses affected by work on the Contract.

S-45.3 Payment for Item 2051.501, Maintenance and Restoration of Haul Roads, at the Contract lump sum shall be considered to be compensation in full for all costs of maintenance and restoration of all haul roads that have been officially designated and used in conjunction with the Contract work.

S-45.4 The Contractor will be required to water all aggregate haul roads while using them. Water used and placement of water on the haul roads will be considered incidental to 2051.501, Maintenance and Restoration of Haul Roads.

S-45.5 The County will require the Contractor to contact and obtain approval from the proper jurisdictional agency (Township or County) for haul roads to be used for this work. This must be accomplished through documentation submitted to the Engineer prior to the use of any haul road. A standard form for this procedure may be obtained from the office of the County Engineer. The Contractor must also submit a written release of haul roads to the County Engineer before final payment.

S-45.6 The Engineer can require the Contractor to furnish any material or equipment the Engineer determines is needed for the safe use of haul roads, detours, etc., both on or off the project. All cost for repair of the haul road including bituminous patching, gravel, etc., shall be included in the bid item 2051.501 Maintenance and Restoration of Haul Roads.

S-45.7 In addition to the amount the Contractor bids for Item 2051.501 (Maintenance and Restoration of Haul Roads), the State agrees to reimburse the Contractor at the predetermined unit prices set forth below for materials ordered by the Engineer. All materials ordered by the Engineer for the Maintenance and Restoration of haul roads will be measured as set forth in the applicable section of the Standard Specifications.

Each of the following materials measured as provided above, will be paid for at the following predetermined unit prices: 2118.501	Aggregate Surfacing, Class 1	$6.62/t	**$6.00/ton**
2130.501	Water	$2.50/m3	**$10.00/1000 gal.**
2131.502	Calcium Chloride Solution	$0.14/liter	**$0.50/gal.**
2211.501	Aggregate Base, Class 5	$6.62/t	**$6.00/ton**
2360.501	Type SP 12.5 Wearing Course Mixture (4, B)	$27.50/t	**$24.95/ton**

S-46 (2104) REMOVING PAVEMENT AND MISCELLANEOUS STRUCTURES

Abandoned structures and other obstructions shall be removed from the Right of Way and disposed of in accordance with the Provisions of Mn/DOT 2104, except as modified below:

S-46.1 Measurement and payment for the removal and disposal of materials will be made only for those items of removal work specifically included for payment as such in the Proposal and as listed in the Plans. The removal of any unforeseen obstruction requiring in the opinion of the Engineer equipment or handling substantially different from that employed in excavation operations, will be paid for as Extra Work as provided in Mn/DOT 1403.

S-47 (2105) EXCAVATION AND EMBANKMENT

Roadway excavation and embankment construction shall be performed in accordance with the provisions of MnDOT 2105, except as modified below:

S-47.1 MnDOT 2105.2A2 Rock Excavation is revised to read as follows:
Rock excavation shall consist of all materials that cannot, in the Engineer's opinion, be excavated without drilling and blasting or without the use of rippers, together with all boulders and other detached rock each having a volume of 1 cubic meter (**1 cubic yard**) or more, but exclusive of those quantities that are to be paid for separately under the item of rock channel excavation.

S-47.2 The last paragraph in MnDOT 2105.3B Preparation of Embankment Foundation, is revised to read as follows:
Before backfilling depressions within the roadway caused by the removal of foundations, basements, and other structures, the Contractor shall enlarge the depressions as directed by the Engineer.

S-47.3 The first and second sentences in the second paragraph in MnDOT 2105.3D Disposition of Excavated Material, are revised to read as follows:
When the soils are so varied that selection and placement of uniform soils is not practical, the Contractor shall use disks, plows, graders or other equipment to blend and mix suitable soils to produce a uniform soil texture, moisture content and density; except that, all soils that contain 20 percent or more particles passing the 75 *u*m (**#200**) sieve shall be blended, mixed and dried with a disk, within the entire upper 2 meters (**6 feet**) of embankment. The disk shall meet the requirements of 2123 N, Disk Harrow. A disk is also to be used below the upper 2 meters (**6 feet**) of the embankment fill area, if in the opinion of the Engineer, the Contractor is not producing a uniform soil texture.

S-47.4 The fifth paragraph in MnDOT 2105.3D Disposition of Excavated Material, is revised to read as follows:
Peat, muskeg, and other unstable materials that are not to be used in the roadbed embankments shall be deposited in the areas indicated in the Plans or elsewhere as approved by the Engineer. All other material that is considered unsuitable for use in the upper portion of the roadbed shall be placed outside of a 1:1 slope down and outward from the shoulder lines on fills under 10 m (**30 feet**) in height or outside of a 1 vertical to 1.5 horizontal slope down and outward from shoulder lines on fills over 10 m (**30 feet**) in height, or used to flatten the embankment slopes, or disposed of elsewhere as approved by the Engineer.

S-47.5 The second sentence in the eighth paragraph of MnDOT 2105.3D Disposition of Excavated Material, is revised to read as follows:
No stones exceeding 150 mm (**6 inches**) in greatest dimension will be permitted in the upper 1 m (**3 feet**) of the roadbed embankment.

S-47.6 The fourth to last paragraph in MnDOT 2105.3D Disposition of Excavated Material, which begins with "All combustible debris materials (stumps, roots, logs, brush, etc.) together with all..." is hereby deleted and replaced with the following:
All noncombustible materials other than soils (oversized rock, broken concrete, metals, plastic pipe, etc.) shall be disposed of in accordance with 2104.3C.

S-47.7 The ninth paragraph of MnDOT 2105.5 is hereby deleted and replaced with the following:
If the Proposal fails to include a bid item for rock excavation or rock channel excavation, and material is uncovered that is so classified, excavation of the rock will be paid for separately at the Contract price for common excavation or common channel excavation, plus an additional $26.00 per cubic meter (**$20.00 per cubic yard**) . If no bid item is provided for common channel excavation, excavation of materials classified as rock channel excavation will be paid for at the Contract price for common excavation plus an additional $28.00 per cubic meter (**$21.50 per cubic yard**). Such stipulated prices for rock excavation will apply up to a maximum of 200 m3 (**260 cubic yards**) of excavation per item or to such quantity as may be performed by mutual consent prior to execution of an Extra Work agreement.

S-47.8 The eleventh paragraph of MnDOT 2105.5 is hereby deleted and replaced with the following:
(a) That portion of the additional excavation that is removed from below a plane parallel to and 5 m (**15 feet**) below the natural ground surface will be measured in 2 m (**5 foot**) depth zone increments and paid for separately at adjusted unit prices. The adjusted unit price will be equal to the Contract bid price for muck excavation plus $0.39 per cubic meter (**$0.30 per cubic yard**) for the additional excavation within the 5-7 m (**15-20 foot**) depth zone and an additional $0.26 per cubic meter (**$0.20 per cubic yard**) for each additional 2 m (**5 foot**) increment of depth beyond 7 m (**20 feet**).

S-47.9 Compaction of all embankment construction, including culvert backfills, shall be obtained by the "Quality Compaction" method described in MnDOT 2105.3F.

S-47.10 No compensation will be made for the construction of the impervious soil seals.

S-47.11 Excess soils and rock not used on the Project shall become the property of the Contractor and shall be disposed of outside of the Right of Way. No direct compensation will be paid for the preparation of an acceptable Disposal Plan or for Off-Project disposal of excess materials. Disposal sites shall be left in a well graded condition with all solid wastes and boulders adequately covered.

S-47.12 No disposal shall occur in those areas defined below as "environmentally sensitive" unless the Contractor can document that: 1) non-sensitive areas are not available; or that 2) the material can be used to benefit an "environmentally sensitive" area. All necessary permits for the disposal operations shall be obtained by the Contractor and approval from the appropriate State and Federal Agencies shall be included in the Contractor's Disposal Plan.
(A) No disposal shall occur in the following "environmentally sensitive" area:
(1) Wetlands, as described in "Wetlands of the United States", Circular 39, published by the U.S. Department of Interior, Fish and Wildlife Service;
(2) 100-year frequency flood plains;
(3) Archaeological or historic sites – See Section S-1701 (LAWS TO BE OBSERVED (CULTURAL RESOURCES - _____ FUNDED)) of these Special Provisions for specific requirements;
(4) Areas with stability or settlement problems;

(5) Areas with artesian conditions;
(6) Unique animal or plant communities;
(7) Landscapes or geologic formations with exemplary, unique, rare or threatened/endangered characteristics.

(B) Any environmentally sensitive areas shown in the Plan are approximate only. If it is anticipated that said areas may be affected by disposal site usage and/or any of the Contractor's operations, the Engineer will determine exact limits on an "as needed basis".

(C) Prior to the disposal of any excess grading materials, concrete rubble, bituminous materials, or any other materials requiring disposal, the Contractor shall have on file a written Disposal Plan with written approval by the Engineer. The written Disposal Plan must reflect not only the above requirements, but also the following points:

(1) That legal permission from the property owner has been obtained;
(2) That all required local and county disposal permits have been obtained;
(3) That the MPCA has reviewed and granted permits as necessary for solid waste disposal;
(4) That the disposal area and Plan meet with requirements of the U.S. Fish and Wildlife Service as noted in Executive Order 11990 and Circular 39, as verified by field review. In this regard, the Contractor shall give notice sufficient to permit the Engineer and a representative from the MnDOT Office of Environmental Services to conduct a site review; and
(5) That the limits of the disposal area will be staked by the Contractor so as to accommodate the site review and aid the Contractor in limiting disposal operations so that encroachments do not inadvertently occur.

The Contractor is required to present his/her Disposal Plan in detail at the Pre-construction Conference.

S-48 (2105) SALVAGED AGGREGATE BASE (PLACED FROM STOCKPILE)

Aggregate shouldering courses shall be constructed in accordance with the provisions of Mn/DOT 2221 except as modified below:

S-48.1 Compaction shall be achieved by the "Quality Compaction Method" described in Mn/DOT 2211.3C.

S-48.2 Aggregate shouldering material shall be delivered to the project at a minimum rate of 200 tons/hour. Failure to comply will result in a $300/day penalty.

S-48.3 The following is hereby inserted after the first paragraph of Mn/COT 2221.3C Spreading and Compacting:

Water shall be applied to the material during the mixing and spreading operations so that at the time of compaction the moisture content is not less than 5 percent of the dry weight.

S-49 (2111) TEST ROLLING

Test rolling shall be performed in accordance with the provisions of MnDOT 2111 except as modified below:

S-49.1 The first and second sentences of the second paragraph in MnDOT 2111.3 Construction Requirements, are revised to read as follows:

The test rolling shall be performed by making two passes over each strip covered by the width of a tire. Unrolled areas between tire paths shall not be wider than 300 mm (**12 inches**).

S-50 (2123) EQUIPMENT RENTAL

The provisions of MnDOT 2123 are modified and/or supplemented with the following:

S-50.1 The following is added to MnDOT 2123.3 SPECIFIC REQUIREMENTS:

N Disk Harrow

The disk harrow shall be of sufficient size and mass to manipulate the soils to a depth of approximately 300 mm [**12 inches**] and shall meet the approval of the Engineer.

S-50.2 The following is added to MnDOT 2123.5 BASIS OF PAYMENT:

2123.610 Disk Harrow.....hour

S-51 (2211) AGGREGATE BASE

Aggregate base courses shall be constructed in accordance with the Provisions of Mn/DOT 2211 except as modified below:

S-51.1 Cl. 5M Virgin Aggregate Base is modified so 6%-12% shall pass the 200 sieve.

S-51.2 Compaction shall be achieved by the "Quality Compaction Method" described in Mn/DOT 2211.3C.

S-51.3 The second sentence in Mn/DOT 2211.1 DESCRIPTION, is revised to read as follows:

The aggregate base shall be produced and placed under the Contractor's quality control program in accordance with the Mn/DOT Grading and Base Manual.

Contractor Quality Control (QC) Testing
Test according to the Mn/DOT 2013 Schedule of Materials Control.

Certify materials on Form G&B-104, "Certification of Aggregate and Granular Materials". Attach all required aggregate test results to Form G&B-104.

Agency Verification (Acceptance) Field Testing
Test according to the SALT Schedule of Materials Control.

S-51.4 The first sentence in Mn/DOT 2211.3F1 Gradation Control, is revised to read as follows:

The Contractor and/or aggregate producer shall be responsible for maintaining a gradation control program in accordance with the random sampling acceptance method described in the Mn/DOT Grading and Base Manual.

S-51.5 Mn/DOT 2211.3F2(d) under Acceptance Testing is hereby deleted and replaced with the following:

(d) Samples for gradation testing will be taken randomly by the Engineer prior to compaction, in accordance with the random sampling method described in the Grading and Base Manual.

S-51.6 Mn/DOT 2211.3F2(j) under Acceptance Testing, is revised to read as follows:

(j) One gradation sample will be taken from each sublot and tested. Payment will be based on the average results from the four sublot samples for each specified sieve.

S-51.7 The third paragraph after Mn/DOT 2211.3F2(k) under Acceptance Testing is revised to read as follows:

A 5% price reduction will be assessed to both individual or averaged test lots for each test result that fails to meet specified gradations for sieve sizes not listed in Tables 2211-B and 2211-C by more than 2%. These price reductions are cumulative and shall be analyzed both separately and averaged by lot when applicable.

S-51.8 Table 2211-B in Mn/DOT 2211.3F2 Acceptance Testing, is hereby deleted and replaced with the following:

Table 2211-B
AGGREGATE BASE PAYMENT SCHEDULE
(4 Sublots/4 Samples)
% Passing Outside Specified Limits*

4.75 mm (#4), 2.00 mm (#10) And 425 µm (#40) Sieves	75 µm (#200) Sieve	Acceptance Schedule (Price Reduction)
1	0.1	5%
-----	0.2	6%
-----	0.3	9%
-----	0.4	11%
-----	.05	14%
2	.06	15%
>2	>0.6	Corrective Action

*Based on average of 4 tests
Price reductions for more than one failing sieve size shall be Cumulative. The compensation due to the Contractor for the Quantity of material represented by the failing test results shall be Reduced by the sum of the respective percentages.
The Contractor does not have the option of taking a price reduction In lieu of complying with the Specifications.

S-51.9 The following is added to Table 2211-C in Mn/DOT 2211.3F2 Acceptance Testing:

Substantial compliance will be applied to no more than one test failure. Substantial compliance will be eliminated when two or more test failures occur and test failures meeting substantial compliance will be subject to the next higher price reduction. One sieve failure = one test failure. Test failures for each material type will be treated separately.

S-51.10 The following is added to Table 2211-D in Mn/DOT 2211.3F2 Acceptance Testing:

Substantial compliance will be applied to no more than one test failure. Substantial compliance will be eliminated when two or more test failures occur and test failures meeting substantial compliance will be subject to the next higher price reduction. Test failures for each material type will be treated separately.

S-51.11 Aggregate base shall be delivered to the project at a minimum rate of 200 tons/hour. Failure to comply will result in a $300/day penalty.

S-52 (2221) AGGREGATE SHOULDERING CL 5M

Aggregate shouldering courses shall be constructed in accordance with the provisions of Mn/DOT 2221 except as modified below:

S-52.1 Cl. 5M Virgin Aggregate Shouldering is modified so 6% - 12% shall pass the 200 sieve.

S-52.2 Compaction shall be achieved by the "Quality Compaction Method" described in Mn/DOT 2211.3C.

S-52.3 Class 7 Aggregate Shoulder shall not be substituted for Class 5M.

S-52.4 Aggregate shouldering material shall be delivered to the project at a minimum rate of 200 tons/hour. Failure to comply will result in a $300/day penalty.

S-52.5 The second sentence in Mn/DOT 2221.1 DESCRIPTION, is revised to read as follows:

The aggregate shall be produced and placed under the Contractor's quality control program in accordance with the Mn/DOT Grading and Base Manual.

Contractor Quality Control (QC) Testing
Test according to the Mn/DOT 2013 Schedule of Materials Control.

Certify materials on Form G&B-104, "Certification of Aggregate and Granular Materials". Attach all required aggregate test results to Form G&B-104.

Agency Verification (Acceptance) Field Testing
Test according to the SALT Schedule of Materials Control.

S-52.6 The following is hereby inserted after the first paragraph of Mn/COT 2221.3C Spreading and Compacting:

Water shall be applied to the shouldering material during the mixing and spreading operations so that at the time of compaction the moisture content is not less than 5 percent of the dry weight.

S-53 (2331) FULL DEPTH RECLAMATION (FDR)

This work shall consist of pulverizing and blending the inplace bituminous pavement and a portion of the underlying aggregate material to produce a uniform graded aggregate base.

This work will include spreading, watering, compacting, shaping and maintaining the blended reclaim material to the specified profile and cross-section or as directed by the Engineer.

S-1.1 MATERIALS

A Gradation Requirements

The reclaim material shall meet the following gradation

Sieve Size	Percent Passing (by weight)
75 mm (**3.0"**)	99 % - 100 %
50 mm (**2.0"**)	97 – 100 %

Additional aggregate material as required shall consist of MnDOT 3138 Aggregate Base, Class 5, virgin aggregates.

B Contractor's Gradation Quality Control (QC)

The Contractor shall be responsible for gradation control by testing the reclaim material at a rate of 1 test per 5,000 m^2 (**6,000 square yards**), with a minimum of 1 test per day. The Contractor shall provide gradation test results to the Engineer within the first 500 feet of production and within 500 feet of a failing gradation. The Contractor is responsible for adjusting production to maintain gradation control. The Contractor must produce acceptable material prior to completion of the next 500 feet of production from the site of the failing test.

Reclaim sections represented by the Contractor's failed gradation will require corrective action.

The Contractor's Quality Control tester shall be certified by MnDOT. The Contractor's test equipment shall be calibrated in accordance with the latest version of the MnDOT Laboratory Manual, at the beginning of each construction season and as needed.

C Agency Gradation Quality Assurance (QA)

The Agency is responsible for the Quality Assurance process. The QA process shall include:

(1) Conducting Quality Assurance sampling and testing.
(2) Maintaining records of production quantities and associated test results.
(3) Communicating all records to the Contractor in a timely manner.

The assurance testing rate of the reclaim mixture shall be1 test per 10,000 m^2 (**12,000 square yards**), with a minimum of 1 test per day.

Assurance gradation samples of the reclaim mixture shall be obtained after spreading and prior to compaction.

The Contractor shall perform the corrective work at no cost to the Agency when corrective action is required in accordance with Table 2331-1. The Contractor shall remove the unacceptable material and replace it with acceptable material, or correct the unacceptable material on the road. The Engineer may allow the Contractor to accept a price reduction in lieu of corrective action or replacement. The Contractor may qualify for full payment by correcting the failing material.

Upon completion of any corrective action, the corrected material shall be sampled and tested by the Contractor. The Agency will sample and test the reclaim material for Assurance only after the Contractor has provided acceptable test results.

Reclaimed material that fails to meet the gradation requirements shall be subject to corrective action or the Engineer may allow (in the best interest of the Agency) the Contractor to accept a price reduction in lieu of corrective action. Acceptance for non-complying material will be made in accordance with Table 2331-1.

Table 2331-1
FULL DEPTH RECLAMATION PAYMENT SCHEDULE
(Individual Test)

50 mm (**2"**) & 75 mm (**3"**) Sieve % Passing Outside Specified Limits	Price Reduction Schedule
2%	Substantial Compliance
3%	5%
4%	10%
5%	15%
> 5%	**Corrective Action**

Price reductions for more than one failing sieve size shall be cumulative.

The compensation due to the Contractor for the quantity of material represented by the failing test results shall be reduced by the sum of the respective percentages; however, the reduction will not exceed 50 percent.

Substantial Compliance is to be applied to occasional failure. Material that consistently fails to meet specification requirements shall be subject to a price reduction or corrective action, as determined by the Engineer.

S-1.1 CONSTRUCTION REQUIREMENTS

A Equipment Requirements

A1 Reclaiming Machine

The road reclaimer shall be a self-propelled machine designed to pulverize the inplace bituminous pavement structure to the specified maximum particle size. It shall be capable of uniformly blending the pulverized material with the underlying aggregate base material to the depths shown in the Plan. The machine shall have a control system to automatically control the elevation of the cutting head to the specified depth. The machine shall be approved by the Engineer prior to the start of the pulverizing operation.

A2 Rollers

The following requirements shall apply:

A2. (a) Pneumatic-Tired Roller

Pneumatic-tired roller shall be self-propelled and have weight a minimum 22.7 metric tons (**25 tons**) or 111 kg/cm (**616 pounds/inch**) of rolling width. The tire arrangement shall be such that compaction will be obtained over the full width of the roller with each pass.

A2. (b) Pads Foot Vibratory Roller

The pad foot roller shall weigh at least 11,300 kg (**25,000 pounds**) and be allowed for use on a performance basis in accordance with MnDOT 1805.

A2. (c) Vibratory Rollers

The vibratory rollers will be allowed for use on a performance basis in accordance with MnDOT 1805.

B Pulverizing Operation

All vegetation and topsoil that is adjacent to the surface (mainline or shoulder) that is to be reclaimed shall be removed prior to the start of pulverization, as directed by the Engineer. This work is considered incidental to the Bituminous Pavement Reclamation pay item.

The inplace bituminous pavement and aggregate material shall be pulverized and blended to the width and depth shown on the Plans to produce a uniformly blended reclaim mixture.

No direct compensation will be made for occasional variations in the bituminous pavement thickness.

Any bituminous pieces larger than 75 mm (3 inches), which are visible on the grade during the reclamation process, shall be removed from the grade. The Engineer may require corrective action when there are excessive oversize bituminous pieces.

Disposal of the oversize bituminous pieces, within the Right-of-Way, will not be permitted. The Agency will assess a $500.00 monetary deduction each time the Contractor's personnel are observed disposing of oversize bituminous material in Right-of-Way. Any oversize bituminous pieces found in the Right-of-Way shall be removed by the Contractor and at the Contractor's expense.

All pulverize material shall be blended, spread, watered, compacted, and shaped, by the end of the workday.

The Contractor shall take care to avoid disturbing or damaging any existing drainage or utility structures on the Project. The Contractor shall repair damage to any structure resulting from the pulverization operation at no expense to the Agency.

Additional aggregate material shall be uniformly spread across the roadway surface prior to being incorporated into the reclaim mixture.

During the pulverization operation the Contractor shall physically dig down, approximately every 300 m (**1,000 feet**) (each pass), to check the blending depth and visually verify the full depth of pavement structure has been blended without contamination from the subgrade.

C Spreading and Compaction

The reclaim material for each layer shall be spread and compacted to the required profile, cross–section, and density before placing the next layer of reclaim material.

The reclaim material shall be constructed in layers not more than 75 mm (**3 inches**) in compacted thickness. The reclaim layer may be increased to a maximum of 150 mm (**6 inches**), when approved by the Engineer and additional compaction requirements are met.

Each individual lift of the reclaim material shall be of uniform thickness. When additional aggregate material is required to attain the Plan profile and/or cross-section, this material shall be incorporated during the reclamation process to produce a uniform reclaim mixture.

Water shall be applied to the reclaim material during the blending and spreading operations so that at the time of compaction the moisture content is not less than 3 percent nor more than 7 percent based on the dry weight.

A minimum 22.7 metric ton (**25 ton**) pneumatic-tired roller or 11,300 kg (**25,000 pound**) pads foot vibratory roller shall be used for rolling when the lift thickness is 75 mm (**3 inches**) or less.

The reclaim layer may be increased to 150 mm (**6 inches**) maximum when approved by the Engineer and both the 22.7 metric ton (**25 ton**) pneumatic-tired roller and the 11,300 kg (**25,000 pound**) pad foot vibratory roller are being used concurrently for the initial and intermediate rolling.

C1. Modified Penetration Index Method

1. Contractor's Quality Control (QC)

The Contractor is encouraged to test the reclaim mixture with the Dynamic Cone Penetrometer (DCP) to monitor the progress of the placement and compaction of the reclaim mixture.

2. Agency Quality Assurance (QA)

Compaction of the reclaim mixture shall be obtained by the Modified Penetration Index Method, as follows:

The full thickness of each reclaim layer shall be compacted to achieve a penetration index value less than or equal to 10 mm (**0.4 inch**) per blow and a seating value less than or equal to 40 mm (**1.5 inches**), as determined by the MnDOT standard Dynamic Cone Penetrometer (DCP) device (MnDOT Grading & Base Manual 5-692.255). Layer thickness for test purposes will be considered 100 mm (**4 inches**) minimum and 150 mm (**6 inches**) maximum in compacted thickness.

Two passing Dynamic Cone Penetrometer tests shall be required at selected sites within each 5,000 m^2 (**6,000 square yards**) of constructed reclaim course. No more than one retest will be conducted in a selected area, within 1 foot from the failing test.

Areas represented by two failing tests shall be recompacted and retested for compaction compliance.

D Workmanship and Quality

The Contractor shall place the reclaim material to conform to the profile and cross-section shown in the Plans or as directed by the Engineer. Minor undulations in the existing surface profile shall be removed during the spreading operation to promote a smooth finished profile of the reclaim surface to the satisfaction of the Engineer.

The Agency (or Contractor, if contractor staking is required) will provide staking only to re-establish centerline. Cross slopes shall be constructed to the typical sections as shown in the Plan. Super-elevations and transitions shall be constructed at the locations shown in the Plans.

The grading tolerance of the final profile of the reclaim surface, immediately prior to bituminous paving, shall be as follows:

The surface shall not deviate more than 15 mm (**0.05 feet**) in a 15 m (**50 foot**) distance. The Contractor will be required to regrade the areas found to be out of tolerance at no additional cost to the Agency. The Contractor will not be compensated for any delays caused by the above tolerancing requirements.

The Contractor shall be responsible for maintaining the finished surface of the reclaim material in a smooth compacted condition, free of ruts, raveling, and distortions. The application of water may be required to maintain the reclaim material surface. All necessary maintenance shall be performed at no additional cost to the Agency.

Reclaim material with a "wash board" surface condition shall be scarified to a depth below that lowest surface of the wash boarded area and recompacted immediately prior to paving. This work shall be performed at no additional cost to the Agency .

Unstable areas encountered during the reclamation process shall be corrected at the direction of the Engineer and be paid as extra work.

S-1.1 METHOD OF MEASUREMENT

Full Depth Reclamation will be measured by the Square Meter (**Square Yard**) of the completed length and width for each depth shown in the Plan.

Payment for additional aggregate material will be made only for quantities specified in the Plans or ordered by the Engineer.

Additional aggregate material required by the Plans or Engineer will be measured by mass or oose volume.

S-1.1 BASIS OF PAYMENT

Payment for Full Depth Reclamation at the Contract bid price will be compensation in full for all labor, equipment, and material costs required to construct the reclaim material as specified including the costs of trenching, scarifying, pulverizing, blending, spreading, watering, compacting, and shaping of inplace bituminous pavement and aggregate material. Costs associated with the movement of the reclaim material to meet the required profile and cross-section is included in the Bituminous Pavement Reclamation bid price.

Additional aggregate ordered by the Engineer will be paid for separately under Pay Items 2211.501 (Aggregate Base Class 5) or 2211.502 (Aggregate Base (LV) Class 5). If not included in the Contract as a pay item, it will be paid for as extra work.

Reclaim material from other locations on the Project may be utilized to attain the Plan profile or cross-section as directed by the Engineer. The Contractor will be paid for loading and hauling the reclaim material on the Project only as directed by the Engineer. All costs for loading, hauling, and placing the excess material will be paid for in cubic meters (**cubic yards**), LV, at point of delivery. This work will be paid for under Item 2331.607 (Haul Bituminous Pavement Reclamation (LV)). If this work is not included in the Contract as a pay item, it will be paid as extra work.

No direct compensation will be made for water used in conjunction with the operations associated with pulverizing, blending, placing, compacting, shaping, and maintaining the reclaim material finished surface.

ITEM NO.	ITEM	UNIT
2331.604	Bituminous Pavement Reclamation	square meter (**square yard**)
2331.607	Haul Bituminous Pavement Reclamation (LV)	cubic meter (**cubic yard**)

S-54 **(2360) PLANT MIXED ASPHALT PAVEMENT (LOCAL AGENCY) (2013 version)**
MnDOT 2360 is hereby deleted from the MnDOT Standard Specifications and replaced with the attached **2360 (Plant Mixed Asphalt Pavement) Specification.**

S-54.1 **Smoothness and ALR will NOT be evaluated on SAP 042-607-026 and SAP 042-607-027. NO PROFILOGRAPHING WILL BE REQUIRED. However, both jobs are subject to the 10 ft [3.05 m] straightedge requirements.**

S-54.2 **There will be no incentive or disincentive payments for surface smoothness for 2360 Plant Mixed Asphalt Pavement on either job.**

S-54.3 Mix Designation Numbers for the bituminous mixtures on this Project are as follows:

Type SP 12.5 Wearing Course SPWEB340C (15% RAP)

S-54.4 All RAP must be crushed or screened to 100% passing 1.5" before being used in the bituminous mixture.

S-54.5 The sentence "In addition to the list the above pavement surface must meet requirements of 2399 (Pavement Surface Smoothness) requirements." is deleted from **2360.3.E Surface Requirements** of the attached **2360 (Plant Mixed Asphalt Pavement) Specification**. The requirements of 2360.3.E Surface Requirements **will** apply.

The first paragraph of 2360.3.D.1 of the attached **2360 (Plant Mixed Asphalt Pavement Specification** is hereby deleted and replaced with the following:

D.1 Maximum Density
Compact the pavement to at least the minimum required maximum density values in accordance with Table 2360-19, "Required Mimimum Lot Density (Mat)".

Table 2360-20 Longitudinal Joint Density Requirement of the attached **2360 (Plant Mixed Asphalt Pavement) Specification** is hereby deleted.

2360.3.D.1.h Mat Density Cores of the attached **2360 (Plant Mixed Asphalt Pavement) Specification** is hereby deleted and replaced with the following:

D.1.h Mat Density Cores
Obtain four cores in each lot. Take two cores from random locations as directed by the Engineer. Take the third and fourth cores, the companion cores, within 1 ft [0.3 m] longitudinally from the first two cores. Submit the companion cores to the Engineer immediately after coring and sawing. If the random core location falls on an unsupported joint, at the time of compaction, (the edge of the mat being placed does not butt up against another mat, pavement surface, etc.) cut the core with the outer edge of the core barrel 0.3 meters [**1 foot**] away (laterally) from the edge of the top of the mat (joint). If the random core location falls on a confined joint (edge of the mat being placed butts up against another mat, pavement surface, curb and gutter, or fixed face), cut with the outer edge of the core barrel 150 mm ± 12.5 mm [**6 inches ± 0.5 inch**] from the edge of the top of the mat (ex. center of 100 mm [**4 inch**] core barrel 200 mm ± 12.5 mm [**8 ± 0.5 inches**] from the edge of the top of the mat). Cores will not be taken within 300 mm [**1 foot**] of any unsupported edge. The Contractor is responsible for maintaining traffic, coring, patching the core holes, and sawing the cores to the paved lift thickness before density testing.

The Engineer may require additional density lots to isolate areas affected by equipment malfunction, heavy rain, or other factors affecting normal compaction operations.

2360.3.D.1.j Companion Core Testing of the attached **2360 (Plant Mixed Asphalt Pavement) Specification** is hereby deleted and replaced with the following:

The Department will select at least one of the two companion cores per lot to test for verification.

2360.3.D.1.n Longitudinal Joint Density of the attached **2360 (Plant Mixed Asphalt Pavement) Specification** is hereby deleted.

2360.3.D.1.p Shoulders of the attached **2360 (Plant Mixed Asphalt Pavement) Specification** is hereby deleted.

Table 2360-24 Payment Schedule for Longitudinal Joint Density (SP Non-Wear and SP Shoulders, 4% Void) of the attached **2360 (Plant Mixed Asphalt Pavement) Specification** is hereby deleted.

Table 2360-25 Payment Schedule for Longitudinal Joint Density (SP Non-wear and SP Shoulders, 3% Void) of the attached **2360 (Plant Mixed Asphalt Pavement) Specification** is hereby deleted.

2360.3.D.1.r Pay Factor Determination of the attached **2360 (Plant Mixed Asphalt Pavement) Specification** is hereby deleted.

S-54.6 BASIS OF PAYMENT

Payment for the accepted quantities of asphalt mixture used in each course at the Contract prices per unit of material shall be compensation in full for all costs of constructing the asphalt surfacing as specified, including the costs of furnishing and incorporating any asphalt binder, mineral filler, hydrated lime, or anti-stripping additives that may be permitted or required.

In the absence of Contract items covering shoulder surfacing and other special construction, the accepted quantities of material used for these purposes will be included for payment with the wearing course materials.

The Contractor is responsible to complete yield checks and monitor thickness determinations so that the constructed dimensions correspond with the required Plan dimensions throughout the entire length of the Project. The tolerances for lift thickness shown in 2360.7A and B, Thickness and Surface Smoothness Requirement is for occasional variations and not for continuous over-running or under-running, unless ordered or authorized by the Engineer.

S-55 (2399) PAVEMENT SURFACE SMOOTHNESS (2013 version)

The following is hereby added to the MnDOT Standard Specifications:

S-55.1 **Smoothness and ALR will NOT be evaluated on SAP 042-607-026 and SAP 042-607-027. NO PROFILOGRAPHING WILL BE REQUIRED. However, both jobs are subject to the 10 ft [3.05 m] straightedge requirements.**

S-55.2 **There will be no incentive or disincentive payments for surface smoothness for 2360 Plant Mixed Asphalt Pavement on either job.**

2399.1 DESCRIPTION

This work consists of measuring the smoothness of the final concrete or bituminous surface.

A Definitions

The Department defines "Smoothness" as the Mean Roughness Index (MRI) value per 0.1 mi [0.16 km] segment. The Department defines "Areas of Localized Roughness" (ALR) as areas greater than or equal to the limiting criteria for a continuous MRI calculation with a 25 ft [7.62 m] interval, as calculated using the FHWA's Profile Viewing and Analysis (ProVAL) software.

2399.2 MATERIAL REQUIREMENTS

A Inertial Profiler (IP)

Provide a Department certified, calibrated, and documented IP meeting the requirements of ASTM E 950, Class 1 and procedures maintained by the MnDOT Pavement Engineering Section. Refer to the procedures maintained by the MnDOT Pavement Engineering Section or to the MnDOT Smoothness website for the required settings for individual certified profilers.

Provide an IP capable of producing a profilogram and exporting raw profile data in an unfiltered electronic Engineering Research Division (ERD) file format. Produce ERD filenames in the YYMMDD-T-N-D-L-B-E.ERD standardized format in accordance with Table 2399-1:

Table 2399-1
Standardized Naming Convention for ERD Files

Abbreviation	Definition
YY	Two-digit year
MM	Month (include leading zeros)
DD	Day of month (include leading zeros)
T	Route type (I, MN, US, CSAH, etc.)
N	Route number (no leading zeros) and auxiliary ID (if applicable, for example E, W, etc.)
D	Primary route direction (I or D)
L	Lane number (1 for driving lane, increasing by one for each lane to the left)
B	Beginning station
E	End station

B Profile Analysis Software

Use ProVAL software to conduct a profile analysis to determine Smoothness and ALR. Report IRI values in units of in per mi to one digit right of the decimal [m per km to two digits right of the decimal] in accordance with conventional rounding procedures.

C Operator Certification

Provide an operator, trained in the operation of the particular IP in accordance with 2399.2.A, "Inertial Profiler," and knowledgeable in the use of the required profile analysis software in accordance with 2399.2.B, "Profile Analysis Software." Ensure profiler operators pass a proficiency test and possess a current certification issued by the Department. The Contractor operator certification to the Engineer.

D Submittals

D.1 Before Profiling

Provide the Engineer with current, valid documentation, issued by the Department, indicating both IP and the operator certification.

D.2 Day of Profiling

Submit a printout containing the IP's settings, each segment's left and right International Roughness Index (IRI) values, and the signature of the operator to the Engineer on the same day of the profiling.

Submit electronic files in ERD format representing the raw data from each pass on the same day of the profiling.

If the Contractor fails to submit actual data to the Engineer on the day of profiling, the Department will require the Contractor to reprofile the measured segments.

D.3 Upon Completion of Pavement Placement

Within 5 calendar days after all pavement placement and before beginning corrective work, submit a paper ProVAL summary report for each lane, indicating the results of the "Smoothness Assurance" analyses. Use the ERD filenames in accordance with 2399.2.A, "Inertial Profiler" to create ProVAL summary reports.

If the summary reports indicate no ALR, submit a final spreadsheet summary in accordance with 2399.2.D.5, "After Corrective Work."

D.4 Before Corrective Work

If the summary reports indicate any ALR, submit a written corrective work plan to the Engineer locations planned for correction in the corrective work plan. Do not begin corrective work

If the Engineer elects to assess a monetary deduction for ALR in accordance with Table 2399-7 instead of requiring corrective work, submit a final spreadsheet summary in accordance with 2399.2.D.5, "After Corrective Work."

D.5 After Corrective Work

After reprofiling, submit a paper summary ProVAL report for each lane, indicating the results of updated "Smoothness Assurance" analyses to the Engineer. Submit a spreadsheet summary in tabular form, with each 0.1 mi [0.16 km] segment occupying a row to the Engineer. The Contractor may access an acceptable spreadsheet summary template in electronic form on the MnDOT Smoothness website.

2399.3 CONSTRUCTION REQUIREMENTS

Using an IP, measure the final pavement surface for MRI unless otherwise excluded in Table 2399-3.

Unless otherwise approved by the Engineer, perform all profiling in the presence of the Engineer. Schedule profiling with the Engineer. Reprofile any pavement profiled in the absence of the Engineer as directed by the Engineer at no additional cost to the Department.

The Engineer will use a 10 ft [3.05 m] straightedge to evaluate areas excluded from surface testing with the IP in accordance with Table 2399-3.

A Pavement Surface Testing

Remove objects and foreign material from the pavement surface before performing the pavement surface evaluation. Provide traffic control required for testing and performing corrective work on the final pavement surface.

Run the IP in the direction of traffic. Measure profiles in the left and right wheel paths of each lane.

Test and evaluate each lane separately. The Engineer will determine the length in miles [kilometers] of each mainline traffic lane. Operate the IP at the optimum speed as recommended by the manufacturer.

Separate each lane into segments 0.1 mi [0.16 km] in length. Evaluate the remainder segment less than 0.1 mi [0.16 km] in each lane as an independent segment. The Engineer will prorate pay adjustments for length.

Make each pass continuously, regardless of length, and end passes before exclusions in accordance with Table 2399-3, "Areas Excluded from Smoothness and ALR Evaluation." Begin each subsequent pass 50 ft [15.24 m] before, and including, construction headers and end-of-day work joints. In concrete pavements, evaluate terminal headers tying into existing portland cement concrete pavement.

For percent improvement projects, measure Smoothness before the beginning of construction and after the completion of construction. Use the same stationing for the final profiling as the stationing used for the initial profiling to allow for a direct comparison of Smoothness when calculating the percent improvement. Measure the Smoothness Before Paving and the Smoothness After Paving values with the same IP.

The Engineer will use a 10 ft [3.05 m] straightedge to measure for surface deviations greater than ¼ in [6.35 mm] in 10 ft [3.05 m]. The Engineer will evaluate transverse joints by centering the straightedge longitudinally across the transverse joint.

B Exclusions

Table 2399-2 indicates areas that are excluded from Smoothness evaluation, but still require measurement with an IP, and are subject to evaluation for ALR and the 10 ft [3.05 m] straightedge. Table 2399-3 indicates areas that are excluded from surface testing with the IP, but are subject to evaluation with the 10 ft [3.05 m] straightedge

Table 2399-2 Areas Excluded from Smoothness Evaluation
For All Pavements
Paving in areas with a posted vehicle speed less than or equal to 45 mph [73 km/hr]
Ramps and loops
Acceleration and deceleration lanes less than or equal to 1,000 ft [304.80 m] in length
Projects less than 1,000 ft [304.80 m] in length
Bridge decks and approach – the occurrence of bridges shall not interrupt the continuity determination
For Bituminous Pavements
Single lift overlays over concrete
For Concrete Pavements
Intersections constructed under traffic – begin and end exclusion 100 ft [30.48 m] from the intersection radius

Table 2399-3 Areas Excluded from Smoothness and ALR Evaluation
For All Pavements
Paving in areas with a posted vehicle speed less than 30 mph [48 km/hr]
Turn lanes, crossovers
10 ft [3.05 m] on either side of obstructions in lane that

obstruction is located
Side streets, side connections
150 ft [45.72 m] before intersections that end at a stop sign or yield signs at a roundabout
For Bituminous Pavements
Paved shoulders
Intersections where mainline profiles are merged or blended into the cross street profile – begin and end exclusion 100 ft [30.48 m] from the intersection radius
For Concrete Pavements
Undoweled shoulders less than or equal to 10 ft [3.05 m] in width
Headers adjacent to colored concrete

C Calculations

C.1 Smoothness

Obtain the Smoothness values in an individual lane using the ProVAL "Smoothness Assurance" analysis with the 250 mm filter.

For percent improvement projects, use the Smoothness Before Paving and Smoothness After Paving values to calculate the percent ride improvement.

C.2 Areas of Localized Roughness

Identify ALR using the ProVAL "Smoothness Assurance" analysis, calculating MRI with a continuous short interval of 25 ft [7.62 m] with the 250 mm filter.

D Pay Adjustments

D.1 Smoothness

Evaluate Smoothness requirements using the equations and criteria in accordance with the following tables:

(1) Table 2399-4 for bituminous pavements,
(2) Table 2399-5 for concrete pavements, and
(3) Table 2399-6 for percent improvement projects.

The Engineer will base pay adjustments on the segment Smoothness value (or percent improvement value, for percent improvement projects) measured at the completion of surface pavement, unless corrective work is required by the summary report results. If a segment is less than 100 ft [30.48 m] in length and Table 2399-4, Table 2399-5, or Table 2399-6 requires corrective work, the Engineer will waive the corrective work requirement for the segment and instead assess a prorated disincentive. The Department will still subject the segment to ALR analysis in accordance with Table 2399-7

For segments requiring corrective work, reprofile the entire 0.1 mi [0.16 km] segment after performing corrective work as directed by the Engineer and enter the reprofiled Smoothness

D.1.a Bituminous Pavements

Table 2399-4 contains pay adjustments for bituminous pavements. See Section 2360, "Plant Mixed Asphalt Pavement" of the Special Provisions for the ride equation requirement.

Table 2399-4
Smoothness Pay Adjustments and Corrective Work for Bituminous Pavements

Equation	Smoothness in/mi [m/km]	Pay Adjustment $/0.1 mi [0.16 km]
HMA-A	< 30.0 [0.47]	400.00
	30.0 – 75.0 [0.47 – 1.18]	850.00 – 15.000 × Smoothness [850.00 – 957.450 × Smoothness]
	> 75.0 [1.18]	Corrective Work to ≤ 56.7 in/mi [0.89 m/km]
HMA-B	< 33.0 [0.52]	270.00
	33.0 – 85.0 [0.52 – 1.34]	600.00 – 10.000 × Smoothness [600.00 – 638.950 × Smoothness]
	> 85.0 [1.34]	Corrective Work to ≤ 60.0 in/mi [0.94 m/km]
HMA-C	< 36.0 [0.57]	180.00
	36.0 – 95.0 [0.57 – 1.50]	414.00 – 6.500 x Smoothness [414.00 – 410.500 x Smoothness]
	> 95.0 [1.50]	Corrective Work to ≤ 63.7 in/mi [1.01 m/km]

For bituminous projects, the Engineer will not pay any positive Total Pay Adjustments if greater than 25 percent of all mainline density lots for the project fail to meet the minimum density requirements in accordance with 2360, "Plant Mixed Asphalt Pavement."

D.1.b Concrete Pavements

For concrete pavements, the Engineer will use equation PCC-A. For concrete pavement rehabilitation projects or concrete grinding, the Engineer will use equation PCC-B if the Contract requires pay adjustments for concrete grinding.

Table 2399-5
Smoothness Pay Adjustments and Corrective Work for Concrete Pavements

Equation	Smoothness in/mi [m/km]	Pay Adjustment $/0.1 mi [0.16 km/
PCC-A	< 50.0 [0.79]	890.00
	50.0 – 90.0 [0.79 – 1.42]	2940.00 – 41.000 × Smoothness [2940.00 – 2597.800 × Smoothness]
	> 90.0 [1.42]	Corrective Work to ≤ 71.7 in/mi [1.13 m/km]
PCC-B	< 50.0 [0.79]	450.00
	50.0 – 71.2 [0.79 – 1.12]	1511.30 – 21.226 × Smoothness [1511.30 – 1344.900 × Smoothness]
	71.3 – 90.0 [1.13 – 1.42]	0.00
	> 90.0 [1.42]	Corrective Work to ≤ 71.3 in/mi [1.13 m/km]

D.1.c Percent Improvement Projects

The Engineer will base pay adjustments on the segment percent improvement values. The Engineer will not require corrective work and will not assess a negative pay adjustment if the improvement is greater than zero. The Engineer will calculate the percent improvement in accordance with the following equation:

$$\%I = \frac{SmoothnessBeforePaving - SmoothnessAfterPaving}{SmoothnessBeforePaving} \times 100$$

Determine the Smoothness Before Paving value before patching or other repair. Determine the Smoothness After Paving value after the completion of paving and any corrective work.

Table 2399-6
Smoothness Pay Adjustments and Corrective Work for Percent Improvement Projects

Equation	Percent Improvement (%I)	Pay Adjustment, per $/0.1 mi [$/0.1609 km] segment
PI	> 64.0	180.00
	33.0 to 64.0	−295.00 + 7.420 × (%I)
	< 33.0	Corrective work to %I of at least 39.8

For bituminous percent improvement projects, the Engineer will not pay any positive Total Pay Adjustments if greater than 25.0 percent of all mainline density lots for the project fail to meet minimum density requirements in accordance with 2360, "Plant Mixed Asphalt Pavement."

Correct segments with a percentage improvement of less than 33.0 percent at no additional cost to the Department as required by the Engineer.

D.2 Areas of Localized Roughness

The Engineer will evaluate ALR in accordance with Table 2399-7, "ALR Monetary Deductions and Corrective Work Requirements."

Table 2399-7
ALR Monetary Deductions and Corrective Work Requirements

Equation	25 ft [7.62 m] Continuous MRI, in/mi [m/km]	Corrective Work or Monetary Deduction, per linear 1.0 ft [0.30 m]
HMA-A or HMA-B, and a posted vehicle speed > 45 mph [73 km/hr]	< 125.0 [1.97]	Acceptable
	≥ 125.0 [1.97] to < 175.0 [2.76]	Corrective Work or $10.00, as directed by the Engineer
	≥ 175.0 [2.76] to < 250.0 [3.94]	Corrective Work or $25.00, as directed by the Engineer
	≥ 250.0 [3.94]	Corrective Work or $100.00, as directed by the Engineer
PCC-A or PCC-B, and a posted vehicle speed > 45 mph [73 km/hr]	< 125.0 [1.97]	Acceptable
	≥ 125.0 [1.97] to < 175.0 [2.76]	Corrective Work or $10.00, as directed by the Engineer
	≥ 175.0 [2.76] to < 250.0 [3.94]	Corrective Work or $25.00, as directed by the Engineer
	≥ 250.0 [3.94]	Corrective Work as directed by Engineer
HMA-C, PI, ramps. loops, concrete intersections constructed under traffic, or any paving with a posted vehicle speed ≤ 45 mph [73 km/hr]	< 175.0 [2.76]	Acceptable
	≥ 175.0 [2.76] to < 250.0 [3.94]	$10.00
	≥ 250.0 [3.94]	$25.00

The Engineer will consider ALR acceptable if the retested segment contains no ALR. The Department will reduce payment for ALR remaining after retesting as determined by the Engineer and in accordance with Table 2399-7, "ALR Monetary Deductions and Corrective Work Requirements."

D.3 Straightedge Evaluation

The Engineer will allow variations less than or equal to ¼ in [6.35 mm] within the span of the straightedge in the longitudinal or transverse direction to remain in place without correction or penalty.

The Engineer will require corrective work on surface deviations greater than ¼ in [6.35 mm] within the span of the straightedge in any direction. For corrected variations, the Engineer will accept deviations less than or equal to ¼ in [6.35 mm] within the span of a 10 ft [3.05 m] straightedge in any direction.

E Corrective Work

Notify the Engineer at least 24 hr before beginning corrective work. Do not begin corrective work before the Engineer approves the methods and procedures in writing.

Perform corrective work using a surface diamond grinding device consisting of multiple diamond blades, unless otherwise approved by the Engineer. Fog-seal diamond ground bituminous surfaces as required by the Engineer and at no additional cost to the Department. Repair and replace joint sealant damaged by diamond grinding on concrete pavement as directed by the Engineer and at no additional cost to the Department.

The Contractor may correct bituminous pavements by overlaying the area or replacing the area by milling and inlaying as approved by the Engineer. If milling and inlaying or overlaying, perform work in accordance with 2399, "Pavement Surface Smoothness," over the entire length of the correction. If milling and inlaying or overlaying, use a transverse saw cut to begin and end the surface correction.

Perform corrective work across the entire lane width. Maintain the pavement cross slope through corrective areas.

Perform coring to determine if diamond grinding corrective work results in thin pavements, as directed by the Engineer. Provide additional coring for thickness verification at no additional cost to the Department. The Department may reduce the payment for thin pavement sections after diamond grinding. Handle residue and excess water resulting from diamond grinding in accordance with 1717, "Air, Land, and Water Pollution."

Perform surface corrections before placing permanent pavement markings. Replace permanent pavement marking damaged or destroyed by corrective work at no additional cost to the Department.

Reprofile segments containing corrected areas with the same certified IP in accordance with 2399.2.A, "Inertial Profiler" within 5 calendar days after the completion of corrective work required by the Engineer.

F Retesting

Perform retesting as directed by the Engineer and within 30 days of the original profiling.

If the retested Smoothness values differ from the original Smoothness values by greater than 10 percent, the Engineer will use the retested values as the basis for acceptance and pay adjustments. If the retested values differ from the original values by greater than 10 percent, the Department will not pay for the cost of retesting.

If the retested Smoothness values differ by less than or equal to 10 percent of the original Smoothness values, the Engineer will use the original values. If the Engineer verifies the accuracy of the original results, the Department will pay for retesting as directed by the Engineer, except for retesting required after corrective work, at $100.00 per lane mi [$62.14 per lane km] retested or $500.00, whichever provides the greater amount.

2399.4 METHOD OF MEASUREMENT — (BLANK)

2399.5 BASIS OF PAYMENT
The Department will include the cost of the IP, testing, and traffic control in the relevant Contract unit price for wearing course mixture for bituminous pavements, concrete pavement for concrete pavements, or for concrete grinding.

S-56 (2573) STORM WATER MANAGEMENT
The Provisions of Mn/DOT 2573 are supplemented and/or modified with the following:

S-56.1 **Erosion Control Supervisor**
The second paragraph of Mn/DOT 2573.3A1 Erosion Control Supervisor, is revised to read as follows:

The Erosion Control Supervisor shall be a responsible employee of the prime Contractor and/or duly authorized by the prime Contractor to represent the prime Contractor on all matters pertaining to the NPDES construction stormwater permit compliance. The Erosion Control Supervisor shall have authority over all Contractor operations which influence NPDES permit compliance including grading, excavation, bridge construction, culvert installation, utility work, clearing/grubbing, and any other operation that increases the erosion potential on the project. In addition, the Erosion Control Supervisor shall be available to be on the Project within 24 hours at all times from initial disturbance to final stabilization.

No measurement will be made of the various duties that the Erosion Control Supervisor performs or of the number of hours required, but all such work will be construed to be included in the single Lump Sum Payment under Item 2573.601 (Erosion Control Supervisor). Upon satisfactory completion of at least half of the anticipated project duration time, the Engineer may authorize partial payment not exceeding 50 percent of the Contract bid price. Project duration time is estimated as the time between the actual project start date and the project completion date. The remaining percentage will be paid upon completion of the project.

S-56.2 **The second paragraph of MnDOT 2573.3 A5, Vehicle Tracking Onto Paved Surfaces, is revised to read as follows:**

The Contractor is responsible for insuring paved streets are clean at the end of each working day or more often as necessary to provide safety to the traveling public. Tracked sediment on paved surfaces must be removed by the Contractor within 24 hours of discovery, in accordance with 1717.2. Payment for street

sweeping to provide safe conditions for the traveling public, environmental reasons or regulatory requirements shall be as provided in accordance with 1514.

S-56.3 The first sentence of Mn/DOT 2573.3E2 is revised to read as follows:

The bioroll shall be installed and anchored with wood stakes. The stakes shall be at a minimum nominally 25 mm x 50 mm **(1 inch x 2 inch)** and a minimum of 400 mm **(16 inches)** long with a pointed end.

S-56.4 The first paragraph of Mn/DOT 2573.3J Filter Log Installation, is revised to read as follows:

J Filter Log Installation
Filter logs shall be placed in accordance with the Plan. Straw and wood fiber filter logs shall be staked in place with wood stakes. Wood stakes shall be at a minimum 25 x 51 mm **(1 x 2 inch)** nomimal size by 400 mm **(16 inches)** long. The stakes shall be driven through the back half of the log at an angle of approximately 45 degrees with the top of the stake pointing upstream. When more than one log is needed for length, the ends shall be overlapped 150 mm **(6 inches)** with both ends staked. Staking shall be every 0.3 m **(1 foot)** along the log unless precluded by paved surface or rock.

S-56.5 Mn/DOT 2573.5 Basis of Payment, is revised to read as follows:

Payment for storm water management and sediment control items will be compensation in full for all labor, materials, equipment, and other incidentals necessary to complete the work as specified, including the costs of maintenance and removal as required by the Contract. The Contractor will receive compensation at the appropriate Contract prices, or in the absence of a Contract bid price, according to the following unit prices, or in the absence of a Contract price and unit price, as Extra Work. In the absence of a Contract item for Erosion Control Supervisor, this work shall be considered incidental. The provisions of 1903 are modified to the extent that the Department will not make a price adjustment in the event of increased or decreased quantities of temporary erosion control items.

S-57 (2575) TURF ESTABLISHMENT

Turf establishment shall be performed in accordance with the Provisions of Mn/DOT 2575, except as modified below:

S-57.1 The following is added to Mn/DOT 2575.2:

M Hydraulic Soil Stabilizer.....3884

S-57.2 Mn/DOT 2575.3F4 is deleted and the following substituted therefore:

When Type 1 mulch is to be oversprayed with Type 5 hydraulic soil stabilizer, the target application rate for the Type 1 mulch shall be 3.4 metric tons per hectare (1.5 tons per acre) and the target application rate for the Type 5 hydraulic soil stabilizer shall be 840 kilograms per hectare (750 pounds per acre). Seeding and fertilizing shall be done prior to mulching, not in conjunction with Type 5 hydraulic soil stabilizer placement. Disk anchoring will not be required.

S-57.3 The Contractor shall furnish the seed.

S-57.4 Seed mixtures 250 and 270 are approved for use in this Contract, and shall be sown in accordance with the requirements of Specifications 2575.502.

S-57.5 Until final inspection and acceptance of all permanent erosion control and turf establishment items are made, all necessary maintenance, replacement and repair work shall be performed by and at the expense of the Contractor. These items will generally be accepted in area increments conforming to sub-watershed boundaries as defined by the Engineer. Acceptance of these items by the Engineer will relieve the Contractor of his responsibility for any further maintenance and repair.

S-57.6 This work shall be performed in accordance with the plans and provisions of 2575 and supplemented by the following:

S-57.7 Mulch Type I shall be grain straw only.

S-57.8 All disturbed areas for temporary by-passes and stockpiling of excavated material for the convenience of the Contractor, will be seeded and will be considered incidental to the Contract. All CRP acres shall be seeded.

S-57.9 Straw Blanket 2S Category 3 shall be placed as directed by the Engineer in accordance with the plans. The unit price shall be all costs for placement and furnishing of the straw blanket.

S-57.10 Silt fence for protection around tile intakes shall be considered incidental to the placement of the tile intake.

S-57.11 Until final inspection and acceptance of all permanent erosion control and turf establishment items are made, all necessary maintenance, replacement and repair work shall be performed by and at the expense of the Contractor. These items will generally be accepted in area increments conforming to sub-watershed boundaries as defined by the Engineer. Acceptance of these items by the Engineer will relieve the Contractor of his responsibility for any further maintenance and repair. Turf establishment shall be performed in accordance with the Provisions of Mn/DOT 2575, except as modified below:

S-57.12 The following is added to Mn/DOT 2575.2:

M Hydraulic Soil Stabilizer.....3884

S-57.13 Mn/DOT 2575.3F4 is deleted and the following substituted therefore:

When Type 1 mulch is to be oversprayed with Type 5 hydraulic soil stabilizer, the target application rate for the Type 1 mulch shall be 3.4 metric tons per hectare (1.5 tons per acre) and the target application rate for the Type 5 hydraulic soil stabilizer shall be 840 kilograms per hectare (750 pounds per acre). Seeding and fertilizing shall be done prior to mulching, not in conjunction with Type 5 hydraulic soil stabilizer placement. Disk anchoring will not be required.

S-57.14 The Contractor shall furnish the seed.

S-57.15 Seed mixture 250 Modified is approved for use in this Contract, and shall be sown in accordance with the requirements of Specifications 2575.502.

S-57.16 Until final inspection and acceptance of all permanent erosion control and turf establishment items are made, all necessary maintenance, replacement and repair work shall be performed by and at the expense of the Contractor. These items will generally be accepted in area increments conforming to sub-watershed boundaries as defined by the Engineer. Acceptance of these items by the Engineer will relieve the Contractor of his responsibility for any further maintenance and repair.

S-57.17 This work shall be performed in accordance with the plans and provisions of 2575 and supplemented by the following:

S-57.18 Mulch Type I shall be grain straw only.

S-57.19 All disturbed areas for temporary by-passes and stockpiling of excavated material for the convenience of the Contractor, will be seeded and will be considered incidental to the Contract. All CRP acres shall be seeded.

S-57.20 Straw Blanket 2S Category 3 shall be placed as directed by the Engineer in accordance with the plans. The unit price shall be all costs for placement and furnishing of the straw blanket.

S-57.21 Silt fence for protection around tile intakes shall be considered incidental to the placement of the tile intake.

S-57.22 Until final inspection and acceptance of all permanent erosion control and turf establishment items are made, all necessary maintenance, replacement and repair work shall be performed by and at the expense of the Contractor. These items will generally be accepted in area increments conforming to sub-watershed boundaries as defined by the Engineer. Acceptance of these items by the Engineer will relieve the Contractor of his responsibility for any further maintenance and repair.

S-58 (2582) PERMANENT PAVEMENT MARKINGS (HIGH-BUILD LATEX PAINT) (2013 version)

The provisions of MnDOT 2582 are hereby modified and/or supplemented with the following:

S-58.1 The language below applies to the permanent pavement markings for this Project that are to be High-Build Latex pavement markings, utilizing Latex Paint. Refer to MnDOT 3591 and Section S-3591 (HIGH SOLIDS WATER BASED TRAFFIC PAINT (FOR HIGH BUILD PAINT)) of these Special Provisions for more details on the appropriate chemical composition.

S-58.2 The pavement marking material utilized for this project must be listed within **High Build Latex Paint** category on the MnDOT Approved/Qualified Products Lists.

S-58.3 The provisions of MnDOT 2582.2 are hereby deleted and replaced with the following:

A High Solids Water-Based Traffic Paint.....3591
B Drop-On Glass Beads.....3592

Qualified materials can be found on MnDOT's Qualified Products List (QPL) on the Office of Traffic, Safety and Technology website. The Pavement Marking Materials QPL can be found at http://www.dot.state.mn.us/products/pavementmarkings/pmmaterials.html. Other materials may be used on a provisional basis as detailed in the QPL process and as approved by the Engineer. Type of material used will be as specified by Contract Documents.

S-58.4 The high-build latex pavement markings are to be applied at a wet film thickness of at least 25 mils. If the Paint markings are to be installed in the same location where there are existing

pavement markings, including interim or temporary, the removal of the existing pavement markings shall be incidental to and included within the Paint pay item. The Contractor may remove the existing marking in a simultaneous operation.

S-58.5 MnDOT 2582.3A2 is hereby deleted.

S-58.6 MnDOT 2582.3G is hereby deleted and replaced with the following:

Construction Striper Operations Daily Log

Contractors applying pavement markings for MnDOT under a contract **are required** to fill out the "Construction Striper Operations Daily Log" form which can be found on the Office of Traffic, Safety and Technology website and as approved by the Engineer.

S-58.7 The provisions of MnDOT 2582.5 are hereby deleted and replaced with the following:

2582.5 BASIS OF PAYMENT

Payment for pavement markings installed at Contract prices per unit of material shall be compensation in full for all costs incurred in materials, traffic control, installation, surface preparation, use of primers, in accordance to Contract documents or as approved by the Engineer.

ITEM NO.	ITEM	UNIT
2582.502	6" SOLID LINE WHITE – PAINT.....	.....LIN FT
2582.502	4" SOLID LINE YELLOW – PAINT.....	.....LIN FT
2582.502	4" BROKEN LINE YELLOW – PAINT.....	.....LIN FT

S-59 (3126) FINE AGGREGATE FOR PORTLAND CEMENT CONCRETE (2013 version)

MnDOT 3126 shall be deleted and replaced with the following:

3126.1 SCOPE

Provide fine aggregate for use in portland cement concrete.

3126.2 REQUIREMENTS

A General

Provide fine aggregate consisting of clean, sound, durable particles, uniform in quality and free from wood, bark, roots and other deleterious material.

The Engineer may consider the following as the basis for acceptance of fine aggregate for portland cement concrete:

(1) Results of laboratory tests,

(2) Behavior under natural exposure conditions,

(3) Behavior of other portland cement concrete with aggregate from the same or similar geological formations or deposits, and

(4) Any other tests or criteria as deemed appropriate by the Engineer in conjunction with the Concrete Engineer.

B Composition

Provide fine aggregate from natural sand. If producing fine and coarse aggregates simultaneously from natural gravel deposits during the same operation, the Contractor may provide fine aggregate containing particles of crushed rock.

C Washing

Wash the fine aggregate.

D Deleterious Material

Provide fine aggregate containing a cumulative quantity of deleterious materials in accordance with Table 3126-1.

Table 3126-1 Deleterious Materials	
Quality Test	**Maximum Percent by Weight**
Shale, Alkali, Mica, and Soft and Flaky Particles, Cumulative Total	2.5
Coal and Lignite, Cumulative Total	0.3

E Organic Impurities

Provide fine aggregate free of injurious quantities of organic impurities. The Engineer will reject aggregates that produce a color darker than the standard color when tested in accordance with AASHTO T 21, unless the mortar specimens pass the mortar strength requirements specified in 3126.2.F, "Structural Strength."

F Structural Strength

The Engineer will test the structural strength of fine aggregate in mortar specimens in accordance with AASHTO T 71 and Table 3126-2. The Engineer will prepare control mortar specimens using Ottawa sand with a Fineness Modulus (FM) from 2.30 to 2.50.

Table 3126-2 Structural Strength in Fine Aggregate	
Mortar Specimens Containing:	**Compressive Strength**
Type I/II Portland Cement	≥ 90% of control at 7 days
Type III Portland Cement	≥ 90% of control at 3 days

G Gradation Requirements

Produce fine aggregate in accordance with the gradation requirements in Table 3126-3.

Table 3126-3 Fine Aggregate Gradation Requirements	
Sieve Size	**Percent Passing***
⅜ in [9.50 mm]	100
No. 4 [4.75 mm]	95 – 100
No. 8 [2.36 mm]	80 – 100
No. 16 [1.18 mm]	55 – 85
No. 30 [600 µm]	30 – 60
No. 50 [300 µm]	5 – 30
No. 100 [150 µm]	0 – 10
No. 200 [75 µm]	0 – 2.5
* Percent passing by weight through square opening sieves.	

H Requirements for Uniformity of Grading

The uniformity of grading is determined by the Fineness Modulus (FM) of the fine aggregate. Both the Engineer and Contractor will determine the FM of fine aggregate by adding the cumulative percent passing the following sieves, dividing by 100, and subtracting from 7:
(1) ⅜ in [9.50 mm],
(2) No. 4 (4.75 mm],
(3) No. 8 [2.36 mm],
(4) No. 16 [1.18 mm],
(5) No. 30 [600 µm],
(6) No. 50 [300 µm], and
(7) No. 100 [150 µm].
Do not allow the material to deviate from the FM by greater than 0.20. Contact the Engineer, in conjunction with the Concrete Engineer, for an adjustment if the FM approaches the tolerance limit.

3126.3 SAMPLING AND TESTING

Provide fine aggregates in accordance with Table 3126-4.

Table 3126-4
Preliminary Fine Aggregate Testing

Aggregate	Notification and Testing Required
New source	Notify the Engineer at least 1 month before use. Perform new source concrete aggregate testing.
Previously tested aggregate	Notify the Engineer at least 2 weeks before use. Perform additional testing as required by the Engineer in conjunction with the Concrete Engineer.

Sample and test fine aggregate in accordance with Table 3126-5.

Table 3126-5
Fine Aggregate Test Methods

Test	Testing Method
Sampling	Concrete Manual
Sieve analysis	Concrete Manual

Table 3126-5
Fine Aggregate Test Methods

Test	Testing Method
Deleterious substances	Laboratory Manual Method 1207
Quantity of material passing the No. 200 [75 µm] sieve	Concrete Manual
Organic impurities (color	AASHTO T 21

plate)	
Structural strength	AASHTO T 71
Specific gravity and absorption	Laboratory Manual Method 1205
Alkali silica reactivity	Laboratory Manual Method 1222

S-60 **(3137) COARSE AGGREGATE FOR PORTLAND CEMENT CONCRETE**

(2011 Version (Rev. 4/27/11))

MnDOT 3137 shall be deleted and replaced with the following:

3137.1 SCOPE

Provide coarse aggregate for use in portland cement concrete.

3137.2 REQUIREMENTS

A General

Provide coarse aggregate consisting of clean, sound, durable particles, uniform in quality, and free from wood, bark, roots, and other deleterious material.

The Engineer, in conjunction with the Concrete Engineer, may consider the following as the basis for acceptance of coarse aggregate for portland cement concrete:

(1) Results of laboratory tests,
(2) Behavior under natural exposure conditions,
(3) Behavior of other portland cement concrete with aggregate from the same or similar geological formations or deposits, and
(4) Any other tests or criteria as deemed appropriate by the Engineer, in conjunction with the Concrete Engineer.

B Classification

Provide coarse aggregate meeting the requirements of one of the following classifications:

(1) Class A: Crushed quarry rock including quartzite, gneiss, and granite, or mine trap rock including basalt, diabase, gabbro, and other igneous rock types. Class A aggregate may contain no greater than 4.0 percent non-Class A aggregate. The Department will not allow the intentional blending or adding of non-Class A aggregate.
(2) Class B: All other crushed quarry or mine rock types including carbonates, rhyolite, and schist.
(3) Class C: Natural or partly crushed gravel obtained from a natural gravel deposit.
(4) Class D: Mixture of at least two classes of coarse aggregate. The Engineer, in conjunction with the Concrete Engineer, will determine the suitability of the Class D aggregate for the proposed use including proportioning.
(5) Class R: Aggregate obtained from recycling concrete. The Engineer, in conjunction with the Concrete Engineer, will determine the suitability of the Class R aggregate for the proposed use including proportioning.

C Washing

Wash Class B, Class C, Class D, and Class R coarse aggregate. Wash Class A aggregate as needed to comply with the requirements of Table 3137-1.

D Quality

Quality requirements are based on each individual aggregate fraction unless otherwise allowed by the Engineer, in conjunction with the Concrete Engineer with the exception of the following:

(1) When 100 percent of the fractions from a single source pass the 1 in [**25 mm**] sieve, quality requirements are based on the composite value of the combined aggregates.

(2) When less than 100 percent of the fractions from a single source pass the 1 inch [**25 mm**] sieve:

  (a) Those fractions passing the 1 inch [**25 mm**] sieve are combined and based on the composite value;

  (b) The fractions greater than or equal to 1 inch [**25 mm**] are based on each individual aggregate fraction.

D1 Coarse Aggregate for General Use

Provide coarse aggregate for general use concrete in accordance with Table 3137-1.

Table 3137-1
Coarse Aggregate for General Use

	Quality Test	Maximum Percent by Weight
(a)	Shale:	
	Fraction retained on the ½ in [**12.5 mm**] sieve	0.4
	Fraction retained on the No. 4 [**4.75 mm**] sieve, as a percentage of the total material	0.7
(b)	Soft iron oxide particles (paint rock and ochre)	0.3
(c)	Total spall materials*:	
	Fraction retained on the ½ in [**12.5 mm**] sieve	1.0
	Fraction retained on the No. 4 [**4.75 mm**] sieve, as a percentage of the total material	1.5
(d)	Soft particles‖	2.5
(e)	Clay balls and lumps	0.3
(f)	Sum of (c) total spall materials, (d) soft particles, and (e) clay balls and lumps†	3.5
(g)	Slate	3.0
(h)	Flat or elongated pieces‡	15.0
(i)	Quantity of material passing No. 200 [**75 µm**] sieve:	
	Class A and Class B aggregates#	1.5
	Class C and Class D aggregates§	1.0
(j)	Los Angeles Rattler, loss on total sample	40.0
(k)	Soundness of magnesium sulfate**	15.0

* Includes the percentages retained by shale and soft iron oxide particles, plus other iron oxide particles, unsound cherts, pyrite, and other materials with similar characteristics.
‖ Exclusive of shale, soft iron oxide particles, and total spall materials.
† Sum of the total spall materials, soft particles, and clay balls and lumps. For total spall materials, use the percent in the total sample retained on the No. 4 [**4.75 mm**] sieve.
‡ Thickness less than 25 percent of the maximum width. Length greater than 3 times the maximum width.
# Each individual fraction at the point of placement consists of dust from the fracture and free of clay or shale.
§ For each individual fraction at the point of placement.
** Loss at 5 cycles for any fraction of the coarse aggregate. Do not blend materials from multiple sources to obtain a fraction meeting the sulfate soundness requirement.

D2 Coarse Aggregate for Bridge Superstructure

Provide coarse aggregate in accordance with 3137.2D1 except as modified by Table 3137-2 for use in the following:

(1) Bridge superstructure (deck, railing, posts, curbs, sidewalks, and median strips);
(2) Approach panels; and
(3) Precast concrete panel facings for Mechanically Stabilized Earth walls.

Table 3137-2 Coarse Aggregate for Bridge Superstructure		
Quality Test		**Maximum Percent by Weight**
(a)	Shale:	
	Fraction retained on the ½ in [**12.5 mm**] sieve	0.2
	Fraction retained on the No. 4 [**4.75 mm**] sieve as a percentage of the total material	0.3
(b)	Soft iron oxide particles (paint rock and ochre)	0.2
(c)	Total spall materials*:	
	Fraction retained on the No. 4 [**4.75 mm**] sieve as a percentage of the total material	0.5
(d)	Soft particles‖	2.5
(e)	Clay balls and lumps	0.3
(f)	Sum of (c) total spall materials, (d) soft particles, and (e) clay balls and lumps, use the percent in the total sample retained on the No. 4 [**4.75 mm**] sieve	3.0
(g)	Absorption for Class B aggregate	1.10
(h)	Carbonate in Class C and Class D aggregates by weight	30.0
*	Includes the percentages retained by shale and soft iron oxide particles, plus other iron oxide particles, unsound cherts, pyrite, and other materials with similar characteristics.	
‖	Exclusive of shale, soft iron oxide particles, and total spall materials.	
†	Sum of the total spall materials, soft particles, and clay balls and lumps. For total spall materials, use the percent in the total sample retained on the No. 4 [**4.75 mm**] sieve.	

D3 Coarse Aggregate for Concrete Pavement

Provide coarse aggregate in accordance with 3137.2D1, except as modified by Table 3137-3, for use in the following:

(1) Concrete pavement, and
(2) Concrete pavement rehabilitation.

Table 3137-3 Coarse Aggregate for Concrete Pavement		
Quality Test		**Maximum Percent by Weight**
(a)	Absorption for Class B aggregate	1.75
(b)	Carbonate in Class C aggregate by weight	30.0

E Gradation

Provide coarse aggregate in accordance with Table 3137-4 including all sizes within the specified limits. The Department defines coarse aggregate as the uniform product of the producing plant, unless some sizes are removed to meet the gradation requirements. Do not use broken or noncontinuous gradations.

If the coarse aggregate has less than 100 percent passing the 1 in [**25 mm**] sieve, proportion the coarse aggregate using at least two fractions. Gradation requirements are based on the composite value of the combined coarse aggregates.

Table 3137-4
Coarse Aggregate Designation for Concrete,
percent by weight passing square opening sieves

Aggregate	2 in [50 mm]	1½ in [37.5 mm]	1¼ in [31.5 mm]	1 in [25.0 mm]	¾ in [19.0 mm]	⅝ in [16.0 mm]	½ in [12.5 mm]	⅜ in [9.5 mm]	No.4 [4.75 mm]
CA-00	—	—	—	100	95 – 100	—	—	—	0 – 10
CA-15	100	95 – 100	—	—	35 – 65	—	—	5 – 25	0 – 7
CA-25	100	95 – 100	—	—	50 – 80	—	—	20 – 40	0 – 7
CA-35	—	100	95 – 100	—	55 –85	—	—	20 – 45	0 – 7
CA-45	—	—	100	95 – 100	65 – 95	—	—	25 – 55	0 – 7
CA-50	—	—	—	100	85 – 100	—	—	30 – 60	0 – 12
CA-60	—	—	—	—	100	85 – 100	—	40 – 70	0 – 12
CA-70	—	—	—	—	—	100	85 – 100	50 – 100	0 – 25
CA-80*	—	—	—	—	—	—	—	100	55 – 95

* Do not allow greater than 5 percent to pass the No. 50 [300 µm] sieve.

If producing Class R aggregate, remove reinforcing steel from the concrete and any concrete material passing the No 4 [**4.75 mm**] sieve.

3137.3 SAMPLING AND TESTING

Sample and test coarse aggregate fractions separately in accordance with Table 3137-5.

Table 3137-5
Preliminary Coarse Aggregate Testing

Aggregate	Notification and Testing Requirement
New source	Notify the Engineer at least 1 month before use. Perform new source concrete aggregate testing in accordance with the procedure on the Department's website.
Previously tested aggregate	Notify the Engineer at least 2 weeks before use. Perform additional testing as directed by the Engineer, in conjunction with the Concrete Engineer.

Sample and test coarse aggregate in accordance with Table 3137-6.

Table 3137-6
Coarse Aggregate Test Methods

Test	Testing Method
Sampling	MnDOT Concrete Manual
Sieve analysis	MnDOT Concrete Manual
Shale test	MnDOT Laboratory Manual 1207
Quantity of material passing the No. 200 [**75 µm**] sieve	MnDOT Concrete Manual
Specific gravity and absorption	MnDOT Laboratory Manual 1204
Density	AASHTO T 19 or MnDOT Laboratory Manual 1211
Los Angeles Rattler loss	AASHTO T 96
Void content	AASHTO T 19* or MnDOT Laboratory Manual 1211
Deleterious materials	MnDOT Laboratory Manual 1209
Soundness; magnesium sulfate	MnDOT Laboratory Manual 1219
Soft particles	MnDOT Laboratory Manual 1218
Flat or elongated pieces	ASTM D 4791
Clay balls or lumps	MnDOT Concrete Manual

* Base the void content on an oven-dry and compacted-by-rodding condition of the aggregate and a value of 62.4 lb per cu. ft [**1,000 kg per cu. m**] for water.

S-61 **(3138) AGGREGATE FOR SURFACE AND BASE COURSES**

The provisions of MnDOT 3138 are hereby modified as follows:

The second paragraph of MnDOT 3138.2B Gradation Tables 3138-1 and 2, is revised to read as follows:

If Class 7 is substituted for Classes 1, 3, 4, 5, or 6, it shall meet the gradation requirements of the substituted class (Table 3138-1); except that, for Class 5 and 6, up to 5 percent by mass (**weight**) of the total composite mixture may exceed 25.0 mm (**1 inch**) sieve but 100 percent must pass the 37.5 mm (**1.5 inch**) sieve. Surfacing aggregate mixtures containing salvaged materials shall meet the gradation requirements of the materials specified in the Plan. All gradations will be run on the composite mixture before extraction of the bituminous material.

TABLE 3138-1 in MnDOT 3138.2B Gradation Tables 3138-1 and 2, is hereby deleted and replaced with the following:

TABLE 3138-1
BASE AND SURFACING AGGREGATE
Total Percent Passing

Sieve Size	Class 1 (A)	Class 2	Class 3 (A)	Class 4 (A)	Class 5 (A) (B)	Class 6 (A) (B)
75 mm (3 inches)	--	--	--	--	--	--
50 mm (2 inches)	--	--	100	100	--	--
37.5 mm (1½ inches)	--	--	--	--	--	--
25.0 mm (1 inch)	--	--	--	--	100	100
19.0 mm (3/4 inch)	100	100	--	--	90-100	90-100
9.5 mm (3/8 inch)	65-95	65-90	--	--	50-90	50-85
4.75 mm (No. 4)	40-85	35-70	35-100	35-100	35-80	35-70
2.00 mm (No. 10)	25-70	25-45	20-100	20-100	20-65	20-55
425 µm (No. 40)	10-45	12-30	5-50	5-35	10-35	10-30
75 µm (No. 200)	8.0-15.0	5.0-13.0	5.0-10.0	4.0-10.0	3.0-10.0	3.0-7.0

(A) When salvaged materials are substituted for another class of aggregate, it shall meet the gradation requirements of the class being replaced except as amended in 3138.2 B.

(B) The gradation requirements for aggregates containing 60% or more crushed quarry rock may be amended with the concurrence of the Project Engineer and the Grading and Base Engineer.

S-61.1 The first paragraph of MnDOT 3138.3 Sampling and Testing, is hereby deleted and replaced with the following:

Samples for testing to determine compliance with the aggregate gradation specifications for base and shoulder surfacing shall be obtained from the roadway at a time when the material is ready for compaction. However, Class 1, 2, and 7 shoulder surfacing aggregates may be sampled from a stockpile, tested, and accepted before roadway placement, provided that:

(a) No more than 25 percent of the stockpile samples fail to meet gradation requirements.

(b) The average of all stockpile tests meet requirements.

(c) The Contractor mixes the material during placement to the satisfaction of the Engineer.

The fifth paragraph of MnDOT 3138.3 Sampling and Testing, is revised to read as follows:

The stockpile shall be sampled at the rate of one field gradation test per 1,000 metric tons (**tons**) of aggregate used on the Project.

S-62 **(3139) GRADED AGGREGATE FOR BITUMINOUS MIXTURES**

Mn/DOT 3139 is hereby deleted and replaced with the following:

3139 Graded Aggregate for Bituminous Mixtures

3139.1 Scope

Provide graded aggregate for use in bituminous mixtures.

3139.2 PLANT MIXED ASPHALT Requirements

A Composition

Provide graded aggregate composed of any combination of the following sound durable particles as described in 3139.2B.

Do not use graded aggregate containing objectionable materials including:

(1) Metal,
(2) Glass,
(3) Wood,
(4) Plastic,
(5) Brick, or
(6) Rubber.

Provide coarse aggregate free of coatings of clay and silt.

Do not add soil materials such as clay, loam, or silt to compensate for a lack of fines in the aggregate.

Do not blend overburden soil into the aggregate.

Feed each material or size of material from an individual storage unit at a uniform rate.

Do not place blended materials from different sources, or for different classes, types, or sizes together in one stockpile unless approved by the Engineer as a Class E aggregate.

B Classification

B.1 Class A

Provide crushed igneous bedrock consisting of basalt, gabbro, granite, gneiss, rhyolite, diorite, and andosite. Rock from the Sioux Quartzite Formation may contain no greater than 4.0 percent non-Class A aggregate. Do not blend or add non-Class A aggregate to Class A aggregate.

B.2 Class B

Provide crushed rock from other bedrock sources such as carbonate and metamorphic rocks (Schist).

B.3 Class C
Provide natural or partly crushed natural gravel obtained from a natural gravel deposit.

B.4 Class D
Provide 100 percent crushed natural gravel produced from material retained on a square mesh sieve with an opening at least twice as large as Table 3139-2 allows for the maximum size of the aggregate in the composite asphalt mixture. Ensure the amount of carryover, material finer than the selected sieve, no greater than 10 percent of the Class D aggregate by weight.

B.5 Class E
Provide a mixture consisting of at least two of the following classes of approved aggregate:
(1) Class A,
(2) Class B, and
(3) Class D.

B.6 Steel Slag
Steel slag cannot exceed 25% of the total mixture aggregate and be free from metallic and other mill waste. The Engineer will accept stockpiles if the total expansion is no greater than 0.5 percent as determined by ASTM D 4792

B.7 Taconite Tailings
Obtain taconite tailings from ore mined westerly of a north-south line located east of Biwabik, Minnesota (R15W-R16W) or from ore mined in southwestern Wisconsin.

B.8 Recycled Asphalt Shingles (RAS)
Provide recycled asphalt shingles manufactured from waste scrap asphalt shingles (MWSS) or from tear-off scrap asphalt shingles (TOSS). Consider the percentage of RAS used as part of the maximum allowable Recycled Asphalt Pavement (RAP) percentage. See Table 3139-3.

B.8.A RAS Gradation ..... Mn/DOT Laboratory Procedure 1801
Provide RAS in accordance with the following gradation requirements:

Table 3139-1
RAS Gradation

Sieve size	Percent passing
½ in [12.5 mm]	100
No. 4 [4.75 mm]	90

B.8.B Binder Content
Determine the binder content using chemical extraction meeting the requirements of Mn/DOT Lab Procedure 1851 or 1852.

B.8.C Bulk Specific Gravity
The Contractor may use an aggregate bulk specific gravity (Gsb) of 2.650 in lieu of determiming the shingle aggregate Gsb in accordance with Mn/DOT Lab Procedure 1205.

B.8.D Waste Materials

Do not allow extraneous materials including metals, glass, rubber, nails, soil, brick, tars, paper, wood, and plastics greater than 0.5 percent by weight of the graded aggregate as determined by material retained on the No. 4 [4.75 mm] sieve as specified in Mn/DOT Laboratory Procedure 1801.

B.8.E Stockpile

Do not blend an RAS stockpile with other salvage material. Do not blend MWSS and TOSS. The Contractor may blend virgin sand material with RAS to minimize agglomeration if the Contractor accounts for the blended sand in the final mixture gradation.

B.8.F Certification

Ensure the processor provides RAS certification on the following Department form "Scrap Asphalt Shingles from Manufacture Waste" or "Tear-Off Scrap Asphalt Shingles" at www.dot.state.mn.us/materials/bituminous.html

B.9 Crushed Concrete and Salvaged Aggregate

The Contractor may incorporate no greater than 50 percent of crushed concrete and salvaged aggregate in non-wear mixtures. Do not use crushed concrete in wearing courses.

B.10 Ash

Sewage sludge ash and waste incinerator ash are allowed as an aggregate source at a maximum of 5% of the total weight of the mixture. Only use sewage sludge ash meeting the requirements of the Tier II hazard evaluation criteria as approved by the Engineer with concurrence with Mn/DOT's Environmental Assessment Engineer in the mixture. Only use waste incinerator ash sources approved by the Engineer with concurrence with Mn/DOT's Environmental Assessment Engineer.

B.11 Recycled Asphalt Pavement (RAP)

B.11.A Aggregate Angularity

Provide combined RAP and virgin aggregates that meet the composite coarse and fine aggregate angularity for the mixture being produced.

B.11.B Objectionable Material

Do not use RAP containing objectionable materials including metal, glass, wood, plastic, brick, or rubber.

B.11.C Asphalt Binder Content

Determine the asphalt binder content using the Mn/DOT Lab Manual Method 1851 and 1852.

B.11.D Bulk Specific Gravity

Determine the bulk specific gravity in accordance with Mn/DOT Laboratory Procedure 1205 or 1815.

C Quality

C.1 Los Angeles Rattler Test ..... Mn/DOT Laboratory Procedure 1210

Ensure a coarse aggregate loss no greater than 40 percent.

C.2 Soundness (Magnesium Sulfate)..... Mn/DOT Laboratory Procedure 1219

Maximum loss after 5 cycles on the coarse aggregate fraction (material retained on No. 4 [4.75 mm] sieve for any individual source within the mix) as follows:

(1) Percent passing the ¾ in [19 mm] sieve to percent retained on the ½ in [12.5 mm] sieve, ≤ 14%,

(2) Percent passing the ½ in [12.5 mm] sieve to percent retained on the ⅜ in [9.5 mm]sieve, ≤18%,

(3) Percent passing the ⅜ in [9.5 mm] sieve to percent retained on the No. 4 [4.75 mm] sieve, ≤ 23%,

(4) For the composite if all three size fractions are tested, the composite loss ≤ 18%, and acceptance will be granted if:

(4.1) If the Contractor meets the composite requirement, but fails to meet at least one of the individual components, the Engineer may accept the source if each individual component is no greater than 110 percent of the requirement for that component.

(4.2) If the Contractor meets each individual component requirement, but fails to meet the composite, the Engineer may accept the source if the composite is no greater than 110 percent of the requirement for the composite.

Coarse aggregate that exceeds the requirements in this section for material passing the No. 4 [4.75 mm] sieve cannot be used.

C.3 Spall Materials and Lumps..... Mn/DOT Laboratory Procedure 1219

Stop asphalt production if the percent of spall or lumps measured in the stockpile or cold feed exceeds the values listed in Table 3139-3. Determine lump compliance by dry batching.

C.4 Insoluble Residue Test..... Mn/DOT Laboratory Procedure 1221

If using Class B carbonate materials ensure the portion of the insoluble residue passing the No. 200 [75 µm] sieve is no greater than 10 percent.

Blending of sources and/or beds with an insoluble residue up to 15% is allowed to meet the 10% insoluble residue requirement. Individual beds thinner than 150 mm [**6 inches**] up to 5% of the total face height, are exempt from the 15% maximum insoluble residue requirement. However, the aggregate producer shall practice good quality control at all times and exclude poor quality stone to the extent practical, regardless of the bed thickness and/or pocket size and location.

No carbonate quarry rock from the Platteville Geological Formation is allowed.

D Gradation

Ensure the aggregate gradation broad bands meet the following requirements in accordance with AASHTO T-11 (passing the No. 200 [75 µm] wash) and AASHTO T-27.

Table 3139-2
Aggregate Gradation Broad Bands (percent passing of total washed gradation)

Sieve size	A	B	C	D
1 in [25.0 mm]	—	—	100	—
¾ in [19.0 mm]	—	100*	85 – 100	—
½ in [12.5 mm]	100*	85 – 100	45 – 90	—
⅜ in [9.5 mm]	85 – 100	35 – 90	—	100
No. 4 [4.75 mm]	25 – 90	30 – 80	30 – 75	65 – 95
No. 8 [2.36 mm]	20 – 70	25 – 65	25 – 60	45 – 80
No. 200 [0.075 mm]	2.0 – 7.0	2.0 – 7.0	2.0 – 7.0	3.0 – 8.0

* The Contractor may reduce the gradation broadband for the maximum aggregate size to 97 percent passing for mixtures containing RAP, if the oversize material originates from the RAP source. Ensure the virgin material meets the requirement of 100 percent passing the maximum aggregate sieve size.

Table 3139-3 Mixture Aggregate Requirements				
Aggregate Blend Property	**Traffic Level 2**	**Traffic Level 3**	**Traffic Level 4**	**Traffic Level 5**
20 year Design ESAL's	<1 million	1 - 3 million	3 - 10 million	10 – 30 million
Min. Coarse Aggregate Angularity (ASTM D5821) (one face / two face), %- Wear (one face / two face), %- Non-Wear	 30/- 30/-	 55 / - 55 / -	 85 / 80 60/ -	 95 / 90 80 / 75
Min. Fine Aggregate Angularity (FAA) (AASHTO T304, Method A) %-Wear %-Non-Wear	 40 40	 42 40	 44 40	 45 40
Flat and Elongated Particles, max % by weight, (ASTM D 4791)	-	10 (5:1 ratio)	10 (5:1 ratio)	10 (5:1 ratio)
Min. Sand Equivalent (AASHTO T 176)	-	-	45	45
Max. Total Spall in fraction retained on the #4 [4.75mm] sieve – Wear Non-Wear	 5.0 5.0	 2.5 5.0	 1.0 2.5	 1.0 2.5
Maximum Spall Content in Total Sample – Wear Non-Wear	 5.0 5.0	 5.0 5.0	 1.0 2.5	 1.0 2.5
Maximum Percent Lumps in fraction retained on the #4 [4.75mm] sieve	0.5	0.5	0.5	0.5
Class B Carbonate Restrictions				
Maximum% -#4 [-4.75mm] Final Lift/All other Lifts	100/100	100/100	80/80	50/80
Maximum% +#4 [+4.75mm] Final Lift/All other Lifts	100/100	100/100	50/100	0/100
Max. allowable scrap shingles– MWSS[(1)] Wear/Non Wear	5/5	5/5	5/5	5/5
Max. allowable scrap shingles – TOSS[(1)] Final Lift/All other Lifts	5/5	5/5	0/5	0/0

(1) MWSS is manufactured waste scrap shingle and TOSS is tear-off scrap shingle.

3139.3 Permeable Asphalt Stabilized Stress Relief Course (PASSRC) and Permeable Asphalt Stabilized Base (PASB) Requirements

A Restrictions

Do not use recycled materials including glass, concrete, bituminous, shingles, ash, and steel slag.

B Gradation

The Gradation limits are also considered the Job Mix Formula (JMF) limits.

B.1 PASB

Table 3139-4
PASB Aggregate Gradation

Sieve Size	Percent Passing
1 ½ inch [37.5 mm]	100
1 inch [25.0 mm]	95 - 100
¾ inch [19.0 mm]	85 – 95
3/8 inch [9.5 mm]	30 – 60
No. 4 [4.75 mm]	10 – 30
No. 8 [2.36 mm]	0 – 10
No. 30 [600 µm]	0 – 5
No. 200 [75 µm]	0 - 3

B.2 PASSRC

Table 3139-5
PASSRC Aggregate Gradation

Sieve Size	Percent Passing
5/8 inch [16.0 mm]	100
1/2 inch [12.5 mm]	85 – 100
3/8 inch [9.5 mm]	50 – 100
No. 4 [4.75 mm]	0 – 25
No. 8 [2.36 mm]	0 – 5

C Quality

Requirements will meet all of 3139.2.C.

D Mixture Quality Requirements

Table 3139-6 Mixture Aggregate Requirements for PASSRC & PASB	
Aggregate Blend Property	
Coarse Aggregate Angularity (ASTM D5821) (one face/two face) % PASSRC [1] PASB [1]	 95/- -/65
Fine Aggregate Angularity (FAA) (AASHTO T304, Method A) %	NA
Flat and Elongated Particles, max(2) % by weight, (ASTM D 4791)	NA
Clay Content (2) (AASHTO T 176)	NA
Total Spall in fraction retained on the 4.75mm [#4] sieve	3.0
Maximum Spall Content in Total Sample	5.0
Maximum Percent Lumps in fraction retained on the 4.75mm [#4] sieve	0.5

(1) Carbonate Restrictions: If Class B (as defined in 3139.2.B.2), crushed carbonate quarry rock (limestone or dolostone), is used in the mixture, or if carbonate particles in the material retained on the 4.75 mm [**No. 4**] sieve exceeds 55 percent, by weight, the minus 0.075 mm [# **200**] sieve size portion of the insoluble residue shall not exceed 10 percent.

3139.4 Ultra Thin Bonded Wearing Course (UTBWC) Requirements.

A. Restrictions

Do not use recycled materials including glass, concrete, bituminous, shingles, ash, and steel slag.

B. Coarse Aggregate

Provide a Class A aggregate, as defined in 3139.2.B.1, in accordance with the following requirements:

Table 3139-7 UTBWC Coarse Aggregate Requirements		
Tests	**Mn/DOT Laboratory Manual Method**	**Limit, %**
Flat and elongated ratio at 3:1	1208	≤ 25
Los Angeles Rattler Test (LAR)	1210	≤ 40
Bulk Specific Gravity	1204	

C. Fine Aggregate

Provide fine aggregate, passing the No. 4 [4.75 mm] sieve in accordance with the following requirements:

Table 3139-8
Fine Aggregate Requirements

Tests	Method	Limit, %
Sand equivalent*	AASHTO T 176	≥ 45
Uncompacted void content	Mn/DOT Laboratory Manual 1206	≥ 40
Bulk Specific Gravity	Mn/DOT Laboratory Manual 1205	

3139.5 SAMPLING AND TESTING

Perform sampling, sieve analysis, lumps, crushing, and shale testing meeting the requirements of the Mn/DOT Laboratory Manual.

S-63 **(3591) HIGH SOLIDS WATER BASED TRAFFIC PAINT (FOR HIGH BUILD PAINT)**

(2013 version)

The provisions of MnDOT 3591 are hereby modified and/or supplemented as follows:

S-63.1 The provisions of MnDOT 3591.2 B are hereby deleted and replaced with the following:

B Properties of Finished Paint

The exact composition of the paints shall be left to the discretion of the manufacturer, provided the finished paint meets the requirements of this specification.

Wgt per gal, 25 °C (77 °F), lbs, min 12.0
Viscosity, Krebs Stormer, 77 °F, K.U. 83 – 98
Grind, Hegman, minimum 3
Total Solids, % by weight, minimum 73
Non-volatile vehicle, % by weight, minimum 43
Pigment, % by weight 45 - 62
Titanium Dioxide, white paint, lbs/gal, min. 1.0
Laboratory Dry Time, ASTM D 711 15 mil, minutes, max 10
Laboratory Dry Time, ASTM D 711 25 mil, minutes, max 25
Dry Through, @ 90 % RH, minutes, max 150
Daylight Directional Reflectance, white, min. 83
Daylight Directional Reflectance, yellow, min. 50
Contrast Ratio, minimum 0.98
Bleeding Ratio, minimum 0.97
Flexibility and Adhesion No cracking or flaking
Water Resistance No blistering or loss of adhesion
Settling Rating of 6 or better
Skinning, 48 hrs None
Track Free Time, minutes, maximum 3
pH, minimum 9.6
Lab Retro-reflectivity, white, min., mcd/m2/lux 300
Lab Retro-reflectivity, yellow, min., mcd/m2/lux 200

S-63.2 The provisions of MnDOT 3591.2 C1 are hereby deleted and replaced with the following:
The acrylic emulsion polymer used in the manufacture of the paint shall be Rohm & Haas HD-21, Dow DT400 or equal.

S-63.3 The following is hereby added to MnDOT 3591.2 C:
C5 Glass beads shall be applied immediately after application of a paint line at a rate of at least 960 gram per Liter (**8 pounds per gallon**). Beads shall be evenly distributed on pavement. All material shall be placed in a workmanlike manner, which shall result in a clearly defined line that has been adequately reflectorized with glass beads. The amount of beads applied shall be sufficient to meet or exceed initial retroreflectivity requirements called for in 2582.3 C3.

S-64 (3592) DROP-ON GLASS BEADS

The provisions of Mn/DOT 3592.3 are hereby deleted and replaced with the following:

S-64.1 SPECIFIC REQUIREMENTS
Glass beads shall meet the requirements of AASHTO M247, Type I, "standard gradation" except the beads will have a minimum of 80 percent true spheres. The dual treated beads will meet the moisture resistant requirements of AASHTO M 247 Section 4.4.2 and pass the adherence treatment Dansyl Chloride Test. The moisture resistant silicone treated beads will meet AASHTO M 247 Section 4.2.2.

S-65 (3876) SEED

The provisions of MnDOT 3876 are supplemented and/or modified with the following:

S-65.1 The second paragraph of MnDOT 3876.1 is hereby deleted and replaced with the following:
Pure live seed (PLS) is the percent of seed germination plus dormant and/or hard seed times the percent of seed purity of each species divided by 100.

S-65.2 MnDOT 3876.2A General Requirements is hereby deleted and replaced with the following:

A General Requirements

All seed lots shall conform to the latest seed law of the State (Minnesota Statutes 21.80-21.91, last revised 8/2/06), and any applicable federal regulations, including those governing labeling and weed seed tolerances. Seed lots sold or offered for sale in the state of Minnesota are subject to inspection, sampling, and testing for verification of label claims and compliance with the Minnesota Seed Law by the Department of Agriculture (M.S. 18J.04). Tolerances for germination and purity factors will be applied as established in Rules 1510.0050, 1510.0060, 1510.0070, 1510.0080, 1510.0090 and 1510.0100 to seed lots sampled and tested by official methods. For all seed used in MnDOT mixes or projects, tests for viability (including germination and TZ tests) are valid for 12 months from the test date, exclusive of the month the test was completed. Seed shall be installed while tests are still valid.

All legume seed, including native legumes, shall have been pre-inoculated with the proper bacterial culture for the species being inoculated and with the bacteria culture designed for this purpose (pre-inoculation), in the manner and within the time specified by the manufacturer.

A1 Labeling

Contractor shall supply seed that is labeled according to the labeling requirements for agricultural seed as set forth in the Minnesota Seed Law, section 21.82. The Contractor shall supply seed that also contains the following information:

a) County of genetic origin for each native component (List at least two counties for germplasm comprising accessions from multiple counties)
b) PLS percent for each mix component (Purity x Total Germination and Hard or Dormant Seed/100) for each mix component **(For PLS component of mix's)**
c) Total PLS weight for the bag. The tag shall identify this as the pay item. **(For PLS component of mix's)**
d) Total bulk weight for the bag
e) Area covered by the amount of seed in the bag when applied at the rate specified for the mix
f) All information pertaining to individual components in a mix is required for all components, including those that constitute less than 5% of the total mix.

Tags must not be hand written. If any of the above mentioned information is not included on the tag the material will be subject to specification 1503. When multiple bags are required to keep certain species or groups of species separate for the purpose of seeding those bags may be placed inside of a larger bag as long as each bag is labeled separately and the outer bag is labeled with the name of the mix.

Each package of seed must include a "Certified Vendor" tag that is issued by MnDOT Erosion Control unit. This will indicate that the seed has come from a MnDOT Approved Seed Vendor as described in 3876.3.

A2 Seed Cleaning

Contractor shall use seed that has been cleaned to an extent sufficient to allow its passage through appropriate seeding equipment. Seed of introduced species must be suitable for use in conventional seeders. Seed of native species must be suitable for use in native seed drills without plugging up the boxes, drop tubes, or planting units of the seed drills. Contractor shall not use seed that has been conditioned so much that it suffers reduced viability as a result.

A3 Substitutions

Alternate species or germplasm may only be used by requesting permission from the Office of Environmental Services Turf and Erosion Control Engineering Unit. Requests for permission must include written proof from three potential suppliers that the specified germplasm is not available. Approved substitutions will be named in a memo at the time they are approved. All currently approved substitutions will be posted on the Office of Environmental Services Erosion Control Unit website. Use of germplasm not listed herein will be considered unacceptable and will be subject to 1503.

S-66 FINAL CLEANUP

All disturbed areas shall be worked to a reasonably smooth surface. All rocks and debris shall be disposed of in accordance with governing specifications. All final cleanup shall be completed by August 9, 2013.

S-67 FINAL ESTIMATE AND FINAL PAYMENT

The following provisions shall apply to preparation of the Final Estimate and execution of Final Payment under this Contract:

S-67.1 FINAL ESTIMATE

State Law provides that the final estimate will be made within 90 days after completion of all work required under this Contract. If, however, the total value of the Contract exceeds $2,000,000.00, the 90 day requirement will not apply and the time allowed for making such final estimate shall be 180 days after the work under this Contract has been, in all things, completed to the satisfaction of the Commissioner.

S-67.2 FINAL PAYMENT

If this Contract contains a "Disadvantage Business Enterprise or Targeted Group Business" goal, the following requirement shall apply:

"Before final payment is made, the Contractor shall also complete an affidavit showing the total dollar amounts of work performed by disadvantaged business enterprise (DBE) and targeted group business (TGB) and/or veteran-owned small business."

SPECIAL PROVISIONS

DIVISION SB

BRIDGE 42567

SPECIAL REQUIREMENTS

SB -1. (1404) MAINTENANCE OF TRAFFIC

The road will be closed and thru traffic will be diverted from the Project during the period of construction operations. The Contractor shall be responsible for traffic control and work zone security within the immediate limits of the bridge construction project.

Additional work zone security devices may include but are not limited to barricades, warning signs, snowfence, flashers, cones and drums, as required and sufficient barricade weights to maintain barricade stability.

The contractor's methods and materials shall be subject to approval by the engineer and in accordance with MnDOT (1710). The contractor shall be responsible for insuring that all barricades and snowfence are in place and all flashers are working and the site is secure prior to leaving the project each night. The names, addresses and telephone numbers of at least two local individuals who will be available during non-working hours for maintenance or replacement of devices, shall be furnished to the Engineer.

All of the work described above shall be considered incidental to other price bid items for this bridge.

SB -2. (1706) EMPLOYEE HEALTH AND WELFARE

The provisions of Mn/DOT 1706 are supplemented as follows:

The Contractor shall submit a plan, at the preconstruction conference, for providing all OSHA required safety equipment (safety nets, static lines, false decks, etc.) for all work areas whose working surface is 1.8 meters (**6 feet**) or more above the ground, water, or other surfaces. Submittal of this plan will in no way relieve the Contractor of his/her responsibility for providing a safe working area.

All safety equipment, in accordance with the Contractor's plan, must be inplace and operable in adequate time to allow Mn/DOT personnel to perform their required inspection duties at the appropriate time. No concrete shall be placed in any areas affected by such required inspection until the inspection has been completed.

The installation of safety lines, safety nets, or other systems whose purpose is to reduce the hazards of bridge work may require the attachment of anchorage devices to beams, girders, diaphragms, bracing or other components of the structure. Clamp type anchorage systems which do not require modification of structural members may be used provided they do

not interfere with proper execution of the work; however, if the Contractor desires to use an anchorage system which requires modification of structural members, s/he shall request approval, in writing, for plan modification as provided in Mn/DOT Specifications. Requests to install systems which require field welding or drilling of primary stress carrying members of a bridge will not be approved. The Contractor shall indicate any portions of anchorage devices which will remain permanently in the structure.

On both ends of each pier cap extending 1.8 meters (**6 feet**) or more above the ground, the Contractor shall install an insert or other suitable anchorage to which safety lines can be attached. Any portion of said device extending outside the finished lines of the pier cap shall be removed unless otherwise approved by the Engineer. Any void or cavity resulting from the installation or removal of this device shall be repaired or sealed to prevent the ponding or entry of water as directed by the Engineer.

Approved anchorage systems shall be furnished, installed, and removed at no increased cost to the State for materials, fabrication, erection, or removal of the bridge component or anchorage system.

SB -3. (1717) AIR, LAND AND WATER POLLUTION

The provisions of 1717 are supplemented as follows:

The Contractor's attention is hereby directed to MPCA Rule 7011.0150 as it relates to sandblasting and/or concrete removal operations (http://www.pca.state.mn.us/index.cfm).

The Contractor shall contain waste materials on the project site and provide for their handling, storage, transportation and disposal in accordance with Minnesota Pollution Control laws and regulations. The Contractor shall document the storage, transfer and disposal of waste materials in accordance with the Mn/DOT Environmental Services publication titled "Removing Paint from Bridge Steel Structures", a current copy of which is available at http://www.dot.state.mn.us/environment then go to publications, then into "Removing Paint (Dry Abrasive Blasting) from Bridge Steel Structures". Waste materials are defined as paint overspray and drippings, used paint pails, rags, spent solvents, cleaning solutions, and other related debris from cleaning operations including spent abrasive materials or paint chips. Painting, and all work associated therewith, shall be so conducted as to preclude waste materials from falling upon public waters.

It is the responsibility of the Contractor to provide the following safeguards at all times during cleaning and painting operations. All safeguards shall be in place and operable before cleaning and painting operations begin.

A. Primary safeguards such as containment (curtains and floor coverings), together with adequate structural support such as scaffolding or rope nets, shall be utilized to contain waste materials in the work area. Catchment systems shall be emptied as often as necessary to maintain their structural integrity.

B. Safeguards such as floating booms, mats of absorbent material, skimmers, or similar systems shall be placed in streams to avoid nuisance conditions in the stream caused by cleaning or painting operations.

C. Locked storage of cleaning and painting materials to prevent access by vandals.

Cleaning and painting operations shall be suspended during periods when unfavorable weather conditions may reduce the effectiveness of the above noted safeguards. In situations where use of some of the safeguards listed are not feasible, other innovative safeguards shall be employed. Emphasis shall be placed on containment of waste materials rather than placing reliance on safeguards such as booms, straw dams, skimmers, or absorbent mats. These shall be considered backup systems to guard against water pollution which may result from the failure of primary safeguards.

Materials such as paint chips and sand which are readily recoverable from bridge decks or stream banks, empty paint pails, and rags and debris from cleaning operations shall be disposed of in a proper manner. Paint chips and spent sand shall be removed from the bridge deck on a daily basis and in an approved manner. Recoverable sand and paint chips from blasting operations may be recycled, but the ultimate disposal shall be to an appropriate waste facility. Spent aqueous cleaning solutions shall be discharged to a recognized sewage collection and treatment system. Spent solvents and cans or pails containing waste paint shall be taken to an incinerator approved by the MPCA for disposal, or to an MPCA approved hazardous waste storage area.

In the event of an accidental loss of painting or cleaning materials or debris into public waters, the Contractor shall take immediate action to recover the lost materials, and the incident shall be promptly reported by telephone to the State Duty Officer at 1-800-422-0798 followed by a written report addressed to MPCA, Water Quality Division, Compliance and Enforcement Section, 520 Lafayette Road, St. Paul, Minnesota, 55155.

Unless otherwise provided in these special provisions, construction, demolition and/or removal operations conducted over or in the vicinity of public waters shall be so controlled as to prevent materials from falling into the water. Any materials which do fall into the water, or onto areas where there is a likelihood that they will be picked up by rising water levels, shall be retrieved and stored in areas where such likelihood does not exist.

SB -4. (2104) REMOVAL OF ASBESTOS AND REGULATED WASTE (BRIDGE)

This work shall consist of the removal and disposal of any regulated waste found on existing bridges or from the utilities located on the bridge, in accordance with the applicable MnDOT Standard Specifications and the following:

SB-4.1 If during the course of removal or renovation of utility or bridge, additional asbestos materials or regulated wastes, other than that noted in the Assessment Summary are encountered, the Contractor shall notify the MnDOT Project Engineer who shall suspend work and the Contractor shall furnish a documented inspection and evaluation by a MnDOT approved certified MDH contractor prior to the resumption of work. The work, as outlined in this paragraph, will be paid for as Extra Work.

SB-4.2 All asbestos and/or regulated waste shall be disposed of in accordance with MnDOT's manual. Only those listed in this manual as pre-approved for asbestos and/or regulated waste will be allowed to work on this Project. The Contractor's shall use MnDOT approved companies for testing, waste transport and disposal as provided and described in MnDOT's manual "*Asbestos and Regulated Waste Manual For Structure Demolition Or Relocations for Construction Projects*" available on the following website: http://www.dot.state.mn.us/environment/regulated-materials/index.html. Contact Mark Vogel, MnDOT Office of Environmental Services, 651-366-3630 with any questions regarding the manual.

SB-4.3 All material shall be removed, identified, and disposed of in accordance with Section S-1701 (LAWS TO BE OBSERVED (BRIDGE)) of these Special Provisions. The Contractor will not receive permission to begin the regulated waste removals, with the exception of material needed for hazardous and regulated waste assessment or testing, until the Engineer has copies of all required notices.

SB-4.4 The Contractor will not be allowed to proceed with the demolition or renovation of bridges until the Engineer has received copies of all required notifications as indicated in Section S-1701 (LAWS TO BE OBSERVED (BRIDGE)) of these Special Provisions.

The Contractor shall be responsible to notify any utility owners at least three (3) days prior to the removal of any regulated waste which may affect the utility allowing the utility owner time to have a representative on site.

SB-4.5 See the attached "Asbestos and Regulated Waste Assessment Summary" for information on whether or not asbestos or regulated waste was detected in the bridge to be removed or renovated.

The assessment summary included with the Plan or Special Provisions are intended for informational purposes. Quantity, type and analysis of any asbestos or regulated waste containing material are estimates intended as a general guide.

SB-4.6 No measurement will be made of any portion of the asbestos or regulated waste material removal, but the complete removal thereof as specified shall be construed to be included in the single lump sum for which payment is made under Item 2104.601 (Remove Regulated Waste Material (Bridge)).

SB -5. (2401) CONCRETE BRIDGE CONSTRUCTION

The provisions of Mn/DOT 2401 are modified and/or supplemented with the following:

Delete the first sentence of the first paragraph of 2401.3G:

Cure newly placed concrete by providing protection against rapid loss of moisture,

freezing temperatures, high temperatures, abrupt temperature changes, vibration exceeding a normal or reasonable limit as described in the Bridge Construction Manual chapter .362, shock waves, and prematurely applied loads.

Add the following to the end of the second paragraph of 2401.3G:

All sections not included in superstructures.....45

SB-5.1 Concrete Aggregate for Bridges

The provisions of 2401.2A shall apply except as modified herein:

Delete the second paragraph of 2401.2A and substitute the following therefor:

Class A Coarse Aggregate, as defined in 3137.2B, shall be used in all concrete for bridge superstructures, except that coarse aggregate requirements for precast concrete members fabricated under 2405 shall be as specified in 2461.2D.

SB-5.2 False work and Forms and Bridge Slab Placement

Delete paragraphs 2, 3 and 4 of 2401.3B2 and substitute the following:

At least six weeks before starting construction of the superstructure falsework, the Contractor shall supply the Engineer with three copies of the detailed Plans and Specifications and two copies of the associated calculations of the proposed system for constructing the superstructure falsework and forms. Design of the falsework and forms shall be in accordance with AASHTO "Guide Design Specifications for Bridge Temporary Works". The Plans and Specifications shall be prepared by an engineer, thoroughly checked by a second engineer for completeness and accuracy, and certified by one of the aforementioned professional engineers licensed in the State of Minnesota. The documents shall include sufficient details so that construction of the proposed system can be completed solely by reference to the Plans and Specifications. The design criteria shall be shown on the first sheet of the Plans.

As a minimum, falsework plans shall contain the following:

(1) The size of all load-supporting members and all transverse and longitudinal bracing. Connection details for load-supporting members must be included. For box girder structures, the drawings must show the falsework members supporting sloping exterior girders, deck overhangs and any attached construction walkways.

(2) All design-controlling dimensions must be shown, including beam length and spacing; post location and spacing; overall height of falsework bents; vertical distance between connectors in diagonal bracing; and similar dimensions critical to the design.

(3) The location and method by which the falsework will be adjusted to final grade must be shown.

(4) Unless a concrete placing schedule is specified in the Contract, the falsework plans must include a superstructure placing diagram showing the proposed concrete

placing sequence and/or the direction of pour, whichever one is applicable, and the location of all construction joints. (For relatively simple structures, this requirement may be satisfied by a note on the plans.)

Add the following to 2401.3B4:

The Contractor will not be permitted to place the concrete for the superstructure until (1) Plans and Specifications meeting the above requirements have been provided to the Engineer; (2) the engineer who has certified plans and specifications for the falsework and forms has inspected the falsework after erection; and (3) the engineer inspecting the as-constructed falsework certifies in writing that all details are approved.

Add the following to 2401.3F3b(1):

At least two weeks in advance of casting Bridge Slab concrete, the Contractor shall provide the Engineer with detailed plans for placing the concrete, including the Contractor's scheme for supporting screed rails for the Bridge Slab and schedules setting forth the rate of concrete delivery. The minimum rate of concrete placement shall be 30 cubic yards per hour.

If concrete is cast by means of a pumping operation, the Contractor shall maintain a standby pump or crane capable of delivering an uninterrupted flow of concrete in case of a pump breakdown.

SB-5.3 Placement of Concrete

The second paragraph of 2401.3C1 is hereby deleted and the following substituted therefore:

All concrete shall be cast under the direct observance of a Department representative. The Engineer shall be notified at least 24 hours in advance of the scheduled casting of concrete so that s/he can make proper arrangements for the necessary inspection of forms, reinforcement bars, materials, and equipment. No concrete shall be placed until this inspection has been made and permission has been given to proceed with placement. The State's inspection personnel will be reassigned to other work and the Contractor shall reschedule the casting of concrete if for any reason the concrete cannot be placed within 2 hours after the scheduled time.

SB-5.4 Joint Filler and Sealing

The provisions of 2401.3J1 are modified as follows:

Prior to installation of sealing materials, concrete curing shall be completed. A minimum of 7 days drying is required prior to application of sealers. Sawcut joints shall be sandblasted and blown clean and the concrete surfaces shall be dry at the time sealer is installed.

Preformed joint shall be as detailed in the Plans and in conformance with the following requirements.

1. Bituminous felt shall comply with AASHTO M33, modified to the extent that the load required to compress the test specimen to 50 percent of its thickness before test shall be not more than 8274 kPa (**1200 psi**).

2. Cork shall comply with Mn/DOT 3702 and AASHTO M153 Type II.

3. Polystyrene shall comply with the following:

Type	Minimum Compressive Strength (5 percent deflection)	Characteristics
A	207 kPa (**30 psi**)	Closed Cell Expanded Polystyrene
B	69 kPa (**10 psi**)	Molded Polystyrene

Testing for compressive strength of polystyrene shall be in accordance with ASTM D 1621. The Contractor shall, if requested by the Engineer, furnish evidence that the material meets these requirements.

The quantity of preformed cork joint filler material given in the Plans is for the Contractor's convenience only. Any additional joint filler required shall be furnished by the Contractor with no additional compensation.

SB-5.5 Curing Bridge Deck Slabs

Delete the first sentence of the 12th paragraph of 2401.3G and substitute the following:

After completion of the tine texturing for bridge deck slab and after free water has disappeared from the surface, the Contractor shall apply a membrane curing compound meeting the requirements of Mn/DOT specification 3754, section B (Requirements for Concrete Pavement Membrane Curing Compound). The curing compound shall be applied with approved power-operated spray equipment. The Contractor shall place the membrane cure material homogeneously to provide a uniform solid white opaque coverage on all exposed concrete surfaces (equal to a white sheet of paper). The membrane cure shall be placed within 30 minutes of concrete placement unless otherwise directed by the Engineer. Failure to comply with this provision will result in a price reduction for the concrete item involved in accordance with Mn/DOT Spec. 1503. The curing compound is not a substitute for the cure specified below, but is required for moisture retention until the conventional wet curing material can be placed. Conventional wet curing shall be applied as soon as the concrete can be walked on with insignificant damage. The deck slab surface shall be kept continuously wet with clean fresh water for an initial curing period of at least 7 days. The Contractor must provide adequate personnel to ensure that the deck surface is maintained in a wet condition on weekends and/or holidays.

Delete the entire section of 2401.3K.

SB-5.6 Finish of Concrete

A. Finishing Roadway Faces and Tops of Barrier Railings

1. The roadway faces and tops of barrier railings, if conventionally formed, shall be finished in accordance with 2401.3F2d except as follows:

a) Concrete placement, form removal, and finishing operations shall be planned and executed so that the surface finishing can be started immediately after forms are removed. The roadway face forms may be removed as soon as the concrete can retain its molded shape. However, in no case shall the elapsed time between concrete placement and initial surface finishing exceed 24 hours.

b) After completion of the 14 day curing period, the roadway faces and tops of the barrier railings shall be painted with an approved acrylic paint conforming to 3584. The color of the acrylic paint shall conform to Federal Std. No. 595 B No. 26622 (pearl gray). The paint shall be applied at an approximate rate of 7.4 m^2 per L (**300 ft^2 per gallon**). The painting operation may commence when the air and surface temperature is at least 10°C (**50°F**) with temperature rising, and shall be suspended when the air and surface temperature is falling and reaches 13°C (**55°F**).

2. The roadway faces and tops of barrier railings, if slipformed, shall be finished in accordance with the following:

a) The railing shall be lightly broomed immediately after passage of the slipformer.

b) After completion of the 14 day curing period, the roadway face and top of the barrier railing shall be painted with an approved acrylic paint as described above for the conventionally formed railing.

B. Basis of Payment

The surface preparation and painting described above are considered an incidental expense to the concrete mix for this construction, and no additional compensation will be made for this work.

SB -6. (2402) STEEL BRIDGE CONSTRUCTION

This work shall be performed in accordance with the provisions of MnDOT 2402 except as modified below:

Delete the first paragraph of 2402.3D and substitute the following:

At least six weeks before starting construction of the structural steel erection falsework, the Contractor shall supply the Engineer with three copies of the detailed

Plans and Specifications and two copies of the associated calculations of the proposed system for constructing the falsework. Design of the falsework shall be in accordance with AASHTO "Guide Design Specifications for Bridge Temporary Works". The Plans and Specifications shall be prepared by an Engineer, thoroughly checked by a second Engineer for completeness and accuracy, and certified by one of the aforementioned professional Engineers licensed in the State of Minnesota. The documents shall include sufficient details so that construction of the proposed system can be completed solely by reference to the Plans and Specifications. The design criteria shall be shown on the first sheet of the Plans.

Delete the first paragraph of 2402.3F and substitute the following:

Structural steel members shall be erected in a manner that will provide safety to the workers, inspectors, and the public, at all times, as well as reasonable assurance against damage to the steel members. Prior to placement of diaphragms, the primary members, such as beams and girders, shall be temporarily anchored, braced, and stabilized as they are erected so as to preclude sliding, tipping, buckling, or other movement that may otherwise occur.

If active vehicular or railroad traffic will be permitted to travel beneath beams prior to complete erection of all the beams and diaphragms in a span, the Contractor shall submit an erection plan prepared by an engineer, thoroughly checked by a second engineer for completeness and accuracy, and certified by one of the aforementioned professional engineers licensed in the State of Minnesota which details all temporary works necessary to brace and stabilize beams. Struts, bracing, tie cables, and other devices used for temporary restraint shall be of a size and strength that will ensure their adequacy. Plans shall specify the required bolt tension and number of bolts to be installed in permanent diaphragm connections and in other bracing necessary to stabilize the beams. The Contractor shall arrange the work schedule so that at least two adjacent girders will be erected (including diaphragms and bolts fully tightened) and braced in any one span before operations are suspended for the day.

The last sentence of 2402.3F, paragraph (3), is hereby modified to read as follows:

Connections for primary members, diaphragms, and other secondary members shall have a sufficient number of holes filled with erection pins and bolts so that the plates are drawn into full contact and so that the holes are properly matched prior to placing the permanent connectors.

SB -7. (2442) REMOVAL OF EXISTING BRIDGES

The provisions of Mn/DOT Specification 2442 shall apply except as supplemented herein.

The Lyon County Highway Department has completed an Asbestos and Regulated Waste Inspection of the Existing Bridge. A copy of the report has been attached. Asbestos containing materials was identified on this structure. This is addressed above in "SB-4 (2104)

Removal of Asbestos and Regulated Waste (Bridge). The Contractor shall complete a "Minnesota Pollution Control Agency Notification of Intent to Perform a Bridge Demolition" form, with submittal to the MPCA and the County at least 10 working days in advance of demolition operations. A copy of this form is attached to these provisions.

Disposal of materials by the Contractor shall be in accordance with 1506, 2104.3C, 2442, Mn/DOT "Asbestos and Regulated Waste Manual for Structure Demolition or Relocations for Construction Projects" and the following: The Contractor shall furnish written information to the Engineer as to disposal of steel bridge components coated with lead paint. This information shall include method of stabilization and disposal; name, address, and telephone number of disposal site; certification that Contractor has notified disposal site of presence of lead paint; acknowledgment by Contractor of OSHA requirements relating to lead; and certification that Contractor is familiar with proper handling and disposal of materials with lead-based paint systems. All lead paint that has been identified as peeling must be stabilized by coating with a paint or similar material that will prevent the peeling paint from flaking during demolition, or must be scraped. This must all be completed as per the Mn/DOT "Asbestos and Regulated Waste Manual for Structure Demolition or Relocations for Construction Projects". The form supplied in this special provision shall consist of the signature of the authorized Superintendent verifying that the information is correct.

The superstructure and substructure of the existing bridge are composed of creosote-treated timber, which must be handled as a regulated waste in accordance with the manual. Attached to these provisions is a Notification Form on Transfer/Ownership of Treated Wood. A copy of this form shall be completed and provided to the County prior to transfer from the site. The form supplied in this special provision shall consist of the signature of the authorized Superintendent verifying that the information is correct.

No Salvage of Materials from the existing bridge is required.

Delete the first sentence of 2442.5 Basis of Payment and substitute the following:

Except as otherwise provided in the Contract, payment of the lump sum amount will be compensation in full for all operations necessary or incidental to bridge removal, including reporting, excavation, stabilization, removal, disposal and backfill and grading of the work area.

SB -8. (2451) STRUCTURE EXCAVATIONS AND BACKFILLS

The provisions of Mn/DOT 2451 are modified and/or supplemented with the following:

SB-8.1 Structure Excavation

The item Structure Excavation shall include all excavation, sheeting and shoring and/or other protection, preparation of foundation, and placing of backfill necessary for construction of Bridge No. 42513, which is not specifically included in the grading portion of the Contract. This work includes all excavation required to complete the bridge approach treatment

utilizing select granular borrow located at the bridge abutments. It shall also include the disposal of surplus material.

No measurement will be made of the excavated or backfill material. All work performed as specified above will be considered to be included in a single lump sum for which payment is made under Item No. 2401.601, "STRUCTURE EXCAVATION".

For purposes of partial payments, the portion of the lump sum Structure Excavation at each substructure unit will be defined as follows:

Each Abutment 50 %

SB-8.2 Select granular borrow shall be placed and compacted (Quality Compaction Method) to the lines and limits indicated in the plans. Payment will be made separately under Item No. 2105.522 "Select Granular Borrow Mod. 10%" on a compacted volume basis.

SB -9. SLOPE PREPARATION

The Contractor shall excavate and/or construct embankment as necessary, and dress the slopes between the new abutments to the slope lines and limits noted in the Plans, in accordance with the applicable provisions of MnDOT 2105.

Surplus excavated material shall be disposed of on the approach roadway inslopes as directed by the Engineer. Disposal shall include shaping and leveling the material.

The Contractor shall blend new berm slopes to the natural channel slopes at the outer limits of this work.

Payment for Item No. 2401.601 "Slope Preparation" at the Contract price per lump sum shall be compensation in full for performing all of the work described above. Excavation for placement of riprap and filter material is not included in this item and will be paid for under the provisions of 2511.

SB -10. (2452) PILING

2452.1 DESCRIPTION

This work consists of providing and driving piling as required by the contract.

2452.2 MATERIALS

A Timber Piling.....3471

B Preservative Treatment.....3491

C Steel H-Piles.....3372

D Cast-in-place (CIP) Concrete Piles

D.1 CIP Steel Pile Shells.....3371

D.2 Concrete Pile Fill, Mix No. 1C62.....2461

E Reinforcement Bars.....3301

2452.3 CONSTRUCTION REQUIREMENTS

A Delivery and Inspection of Piling

If the contract requires test piles, provide the number and lengths of piles as shown in the contract, unless otherwise directed by the Engineer. The Engineer may designate that piles authorized for one unit of a structure be driven in another unit of the same structure or any unit of another structure constructed under the same contract.

If test piles are not specified in the contract, provide the number and lengths of piles as shown in the contract.

Before delivery, establish the quality of the material in steel H-piles and in steel shells for cast-in-place concrete piles. Submit the mill test reports and mill shipping papers in accordance with 3371, "Steel Shells for Concrete Piling," and 3372, "Steel Piling," to the Engineer.

The Contractor may request the Engineer's written approval to use small quantities (less than 5 percent in a substructure unit) of piling from the Contractor's surplus of cut-offs and overruns. Certify the small quantities of piling as remaining quantities of materials previously submitted with accompanying mill test reports and approved for use on other projects. The Department will not pay for pile splices used to make up approved piles for the Contractor's convenience. Splices made for the Contractor's convenience are not eligible for extra compensation in accordance with 2452.5.B, "Piling Delivered."

Do not drive piling before the Engineer accepts the material on the basis of mill test reports.

The Engineer will visually inspect piling at the site before driving to verify the quality of welds and to determine the piles contain no physical defects that would cause the pile to fail during driving and are capable of performing as intended.

B Handling, Transportation and Storage

Handle, transport, and store piling without damaging piles intended for use in the completed structure.

C Equipment for Driving

C.1 Requirements for Pile Hammers

Use pile driving equipment approved by the Engineer. The Engineer will use the contractor-provided Driving System Submittal (C.1.1) as the basis for approval of equipment. Acceptance of the pile driving equipment does not relieve the Contractor of the responsibility to properly install the piling. If in the opinion of the Engineer the accepted driving system fails to perform satisfactorily during actual driving, the Engineer reserves the right to revise the driving criteria and/or require change of equipment.

C.1.1 Driving System Submittal

The driving system submittal must be sealed and signed by a professional engineer, licensed in the State of Minnesota. Allow 10 business days for the Department's review. Allow an additional 10 business days for the review of any resubmittals. No variations in the driving system will be permitted without the Engineer's written approval. Submit a Revised Driving System Submittal if the hammers or other driving system components change from those shown in the original approved submittal. Use the same pile hammer to drive test piles and to drive the piles authorized by the Engineer based on the results of the test pile driving. Any variation needs to be authorized by the engineer.

For the Driving System Submittal, perform drivability studies as follows for each hammer and pile type:

1. Model the proposed driving system including hammers, striker plate, hammer cushion, helmet, and pile cushions based on a wave equation analysis.

2. Include in the analysis pile length variation to account for driven length variation, stickup length, and other considerations appropriate to construction requirements. As appropriate, include soil parameter variations to account for geotechnical uncertainties at the project site as well as possible range of hammer energy.

3. Use an authorized computer program (GRLWEAP or similar program).

4. When a follower is used, include (1) an analysis of the driving system with the follower and (2) an analysis of the driving system without the follower.

Include in the Driving System Submittal:

1. Results of the drivability analysis showing that all proposed driving systems will install piles to the specified tip elevation or nominal pile bearing resistance shown on plans. The system should be adequate to overcome the greatest expected driving resistance or a minimum of 155% of the factored design load and account for end of initial driving and restrike conditions, as appropriate. Driving systems must generate sufficient energy to drive the piles with compressive and tensile stresses not more than 90 percent of the yield strength of a steel pile as driven.

2. The Engineer will only accept pile driving equipment, as determined by the wave equation analysis, capable of operating from 30 blows per ft to 180 blows per ft [10 blows per 0.1 m to 60 blows per 0.1 m] at the above conditions.

3. Include with relevant ranges when applicable scaled graphs depicting:
   3.1 Pile compressive stress versus blows per foot.
   3.2 Pile tensile stress vs. blows per foot.
   3.3 Nominal driving resistance vs. blows per foot for expected typical and range of driving energy.

4. Complete description of:
   4.1 Soil parameters used for pile tip and skin, including soil quake and damping coefficients, skin friction distribution, and ratio of shaft resistance to total resistance.
   4.2 Assumptions made regarding the formation of soil plugs, drilling through the center of open ended steel shells, pre-augering, pre-boring, jetting, use of vibratory or other systems to advance the pile other than impact hammers, and the use of closure plates, shoes, and other tip treatment.

5. List of all hammer operation parameters assumed in the analysis, including fuel settings, stroke limitations, and hammer efficiency.

6. Copies of all test results from any previous pile load tests, dynamic monitoring, and all driving records used in the analyses.

7. Completed Pile and Driving Data Form along with manufacturer's specifications for pile driving system components. Driving system components will be confirmed by the Engineer upon delivery of the hammer to the project site.

8. An electronic copy of the WEAP input files.

C.2 Pile Driving Caps

Equip the top of the pile with a driving cap in the size and type, as approved by the Engineer, to protect the pile against damage during driving. Use a shock block of the type and size as approved by the Engineer on the upper side of the driving cap, when driving conditions warrant. Provide drive caps and shock blocks as recommended by the pile hammer manufacturer.

C.3 Pile Driver Leads

Provide pile driver leads meeting the following requirements and characteristics:

(1) Capable of holding the pile and the pile hammer in alignment during driving operations,
(2) Long enough to preclude the use of punches or chasers, and
(3) Meeting the requirements of the pile hammer manufacturer.

C.4 Water Jets

Provide jets capable of delivering water in the volume and pressure required to freely erode the material adjacent to the pile. Provide a water source capable of maintaining at least 100 psi [690 kPa] of pressure at two jet nozzles, ¾ in [19 mm] in diameter.

D Pile Driving

Notify the Engineer at least 24 h before beginning pile driving operations. The Engineer will reestablish the working points for each substructure unit after the Contractor completes the excavation for that unit. Stake the pile locations.

Excavate to the bottom of footing elevation as shown on the plans before driving foundation piles or test piles in any substructure. During pile driving operations, keep the water level in the excavation below the top of the pile. Do not perform underwater pile driving unless a concrete foundation seal is required to dewater cofferdam.

For each foundation pile, perform continuous pile driving operations unless otherwise directed by the Engineer.

Sharpen timber piles to a square point with dimensions at least 5 in [127 mm] at the tip. Provide timber piles with blunt ends for soils with SPT below counts less than 20 as shown in plan borings or for piles having point bearing on hard stratum.

Do not use punches or chasers for pile driving if the contract requires a concrete foundation seal in a cofferdam. If driving piles in a cofferdam, provide the extra length of piling to drive the piles to the cutoff elevation, at no additional cost to the Department. Accurately locate and space the piling as shown in the bridge plans with tolerances per 2452.3.D.4, "Foundation Piles," 2452.3.D.5, "Pile Bents," and 2452.3.F.2, "Pile Bents."

Provide pile material and appurtenances capable of withstanding driving to substantial refusal defined in accordance with 2452.3.E.1, "General." The Department considers failure of piles during pile driving operations to include buckling, bending, kinking, splitting, or rupturing that will impair the strength of the pile or reduce the effectiveness of the energy delivered by the pile hammer, as determined by the Engineer.

If the Engineer determines that the piling material and appurtenances cannot withstand driving to substantial refusal, discontinue pile driving and correct or change the pile driving operations, equipment, or material as approved by the Engineer.

If failure of the pile occurs after the Engineer directs the Contractor to continue driving after obtaining substantial refusal, the Department will pay for the cost of the failure.

D.1 Jetting and Preboring

The Contractor may perform water jetting if needed, or as required by the contract, to aid in driving displacement type piles. Do not perform jetting in embankments or in areas where the jetting may damage the existing soils. Before reaching a preset depth approved by the engineer but not less than 5 ft [2 m] of the final tip elevation, withdraw the jets and drive the piles with the hammer to secure the final penetration. Control and dispose of jet water, as approved by the Engineer.

Perform preboring for displacement type piles driven through embankments if the embankment depth, measured below the bottom of the footing, is greater than 8 ft [2.4 m]. Perform preboring through the depth of the embankment. Continue preboring through shallow, dense crust at the surface of the original ground as directed by the Engineer.

Perform preboring through embankments less than 8 ft [2.4 m] if the material may damage the piles during driving, as directed by the Engineer. Perform preboring for displacement type piles if the material below the bottom of a footing precludes driving to a penetration of 10 ft [3.0 m] below the bottom of the footing without damaging the piles, as directed by the Engineer. If the pile does not penetrate greater than 0.03 in [0.75 mm] per blow for each 1000 foot pounds [1,356 J] of rated energy, the Engineer will consider this, the weight of the ram, and the type and size of the piles to determine the probability of damage.

Make prebored holes of a diameter that will admit the largest cross-sectional diameter of the pile without creating friction between the faces of the pile and the prebored hole.

D.2 Test Piles

Provide test piles as required by the contract. Drive test piles at the locations shown on the plans unless otherwise approved or directed by the Engineer.

Place full lengths of test piles in the leads and continuously drive, unless otherwise approved by the Engineer. The Contractor may perform sectional driving if the Engineer determines from the survey sheet or from previous pile driving in the area that the test piles can be driven in sections without the danger of "set-up" during the splicing period.

Assist the Engineer in obtaining data (examples: lay pile in a safe location, marking pile with 10 blow count, attach gauges as instructed) for bearing for the full length of the pile driving. Redrive the test piles as required by the Engineer and in accordance with 2452.3.D.8, "Pile Redriving."

If the Engineer determines that steel test piles have not developed adequate bearing capacity per 2452.3.E.1, "Penetration and Bearing, General," provide additional lengths and splice as directed by the Engineer.

D.3 Static Pile Load Tests

Provide Axial Static Compressive Load Testing (ASTM D1143M) , Axial Static Tension Load Testing (ASTM D3689), Lateral Static Load Testing (ASTM D3966), Quasi-Static Load Testing (ASTM D7383), O-Cell Load Testing, or similar testing for evaluation of either axial or lateral compressive or tensile load and deformation analysis.

a) Coordinate test program with Construction, Bridge, and Materials offices.

b) Provide materials, furnish labor, and conduct the test program as required by the contract. Install temporary and permanent instrumentation as required by the contract or as directed by the Engineer.

c) Analyze and report data both in hard-copy format and electronic format in a timely manner.

d) Adjust test program as directed by the Engineer based on conditions encountered in the field.

e) If the test program is used for construction control, provide appropriate analysis and field inspectors' charts, as described in section K, for assessment of the capacity of foundation piling.

D.4 Foundation Piles

Guide piles during driving. Complete pile driving with piles having the required batter or plumbness within ½ in per ft [40 mm per m], and having a final position within 6 in [150 mm] of plan location within the footing area. The Engineer may reject or reduce payment for improperly positioned piles, as determined by the Engineer.

If the Engineer determines that some piles in a unit have heaved during the driving of other piles in the unit, redrive the piles as directed by the Engineer to complete the pile driving.

D.5 Pile Bents

The Department defines pile bents as piles meeting the following characteristics and requirements:

(1) Driven in single rows,
(2) Capped with timber, steel, or concrete caps, and
(3) Driven to closer tolerances than for general pile driving, as described below.

Guide piles during driving. Complete pile driving with piles having the required batter or plumbness within ¼ in per ft [20 mm per m], and having a final position within 3 in [75 mm] of plan location within the bent. The Contractor is responsible for any increase in pile cap dimensions or reinforcing caused by inaccurately placed piles. The Engineer may reject or reduce payment for improperly positioned piles, as determined by the Engineer. For timber pile bents, select piles having a uniform diameter.

D.6 Cast-in-Place Concrete Piles

Equip the bottom of each pile with a driving shoe meeting the following requirements:

(1) Welded watertight, and
(2) Dimensions no greater than ¼ in [6 mm] larger than the dimensions of the periphery of the pile shell.

Provide pile points, if required by the contract, at specified locations or as directed by the Engineer. Provide the pile points for cast-in-place concrete piles in lieu of flat driving shoes. Equip the bottom of each shell with a commercially manufactured conical pile point of cast steel welded watertight, as approved by the Engineer. Attach the conical pile point to the pile as recommend by the manufacturer.

Inspect each pile with the Engineer after driving, for depth to the driving shoe and for condition of the shell. Notify the Engineer upon observation of impairment or damage. The Engineer, considering the bearing requirements and driving conditions, will determine the acceptability of the pile. Provide a light for a visual inspection of the full length of pile.

The Department will not require the Contractor to provide reinforcement bars unless otherwise shown on the plans.

Vibrate concrete in the portion of pile shells containing reinforcement cages.

Do not perform pile driving and other operations that will cause detrimental vibrations near concrete-filled piles until the concrete has been in place for at least 3 calendar days. Refer to 2401.3.G, "Concrete Curing and Protection," for vibration limits on newly placed concrete.

Do not place concrete for footings and caps until the day after concrete placement for the piles.

Protect concrete in the piles against freezing temperatures for at least 3 calendar days after placement. If placing concrete in piles during freezing temperatures, provide 30 percent additional cement to the concrete mix for concrete above 10 ft [3 m] below the ground line or waterline.

D.7 Steel H Piles

Provide pile tip protection, if required by the contract, at the specified locations or as directed by the Engineer. Provide H-pile tip protectors listed on the Approved/Qualified Products List. Attach the cast steel points to the piles as recommended by the manufacturer.

The Contractor may provide thick wall pipe on a performance basis and meeting the following requirements and characteristics in lieu of steel H piling as approved by the Engineer:

(1) Meeting the requirements of ASTM A252 Grade 3,
(2) Wall thickness of at least ½ in [13 mm],
(3) Tensile properties of at least 110,000 psi [760 MPa],
(4) Cross-sectional area at least equal to H piling,
(5) Section modulus at least equal to the weakest axis of the H piling,
(6) Diameter at least equal to the H pile depth less 3 in [75 mm],
(7) Driven open ended and filled with granular material or 1C62 concrete mix.

The Engineer will consult with the Regional Bridge Construction Engineer or Metals Quality Engineer for special welding requirements.

D.8 Pile Redriving

Redrive of test or foundation piles determines the capacity that can be obtained by including pile "set up." "Set up" is the time-dependent increase in pile resistance.

If the contract includes a pay item for "Pile Redrive," perform pile redrive at the direction of the Engineer a minimum of 24 h after initial driving unless otherwise required by the contract. If driving conditions allow, continue to drive test pile to the length shown on the plans and in accordance with 2452.3.E.1, "Penetration and Bearing, General." Redrive additional foundation piles to verify the bearing capacity as determined and directed by the Engineer.

Do not drive other piles in the same substructure during the waiting period. Perform redriving with a warm pile hammer. Apply at least 20 blows to a previously driven pile or timber mats to warm the pile hammer before using it for the redrive. When redriving, do not strike each pile with greater than 20 blows. When using MPF12 as field control, mark the penetration of every blow and measure penetration using the average of the first 5 blows in which the hammer has good energy. Do not trim piles to the cut-off elevation shown on the

plans until the Engineer has determined the need for redriving. Do not fill CIP concrete piles in any substructure unit with concrete until the Engineer determines that the driven piles in the unit meet the required bearing resistance shown on the plans and the pile shells were trimmed to the cut-off elevation.

Weld extensions to piles authorized and subsequently driven or drive additional piles as directed by the Engineer.

E Penetration and Bearing

E.1 General

The Department calculated the nominal pile bearing resistances as shown on the plans using design loadings. The Department will use the nominal pile bearing resistance as determined by 2452.3.E.2, "Determination of Nominal Bearing Resistance," to establish the minimum criteria for pile acceptance in which the driving resistance is not less than the required nominal bearing resistance as shown on the plans. If necessary, drive the foundation piles beyond the resistance shown on the plans until the piles reach the required penetration as shown on the plans or until the piles have been driven to the penetration determined by the Engineer and based on the test pile results.

Drive the test pile full length unless substantial refusal is encountered at a lesser penetration. If the test pile has been driven full length and if the test pile has not attained 115 percent of the nominal resistance for the foundation piles as shown on the plans, drive the test pile further as directed by the Engineer and in accordance with 2452.3.D.2, "Test Piles," and 2452.4.A, "Test Piles." Perform pile redriving as shown on the plans with the penetration and time delays in accordance with 2452.3.D.8, "Pile Redriving."

The Engineer will consider that substantial refusal is attained, in accordance with 2452.3.D, "Pile Driving," when the penetration rate equals 0.05 in [1.3 mm] per blow.

E.2 Determination of Nominal Bearing Resistance

The Department bases the required nominal resistance as shown on the plans for each field control method. Determine the driven pile nominal resistance in accordance with the following using the appropriate corresponding field control method as shown on the plans. Unless the contract requires otherwise, if more than one field control method is shown on the plans, determine the method used in accordance with the following:

(1) If the contract includes a "Pile Analysis" contract item for a substructure, provide the Pile Driving Analyzer (PDA) for the field control, or
(2) If the contract does not include a "Pile Analysis" for a substructure, the Contractor may choose the field control method. The Department will include the cost of the PDA with the relevant contract item for piling driven.

E.3 MnDOT Pile Formula 2012 (MPF12) Used as Field Control Method

Determine the nominal pile bearing resistance using the following dynamic formula for CIP concrete piles and steel H piles driven with power-driven hammers:

$$R_n = 20\sqrt{\frac{W \times H}{1000}} \times \log\left(\frac{10}{S}\right)$$

Where:

R_n = Nominal Pile Bearing Resistance in tons
W = Weight of the striking part of the hammer (ram) in pounds (see note below)
H = Height of fall in feet (see note below)
S = Average penetration in inches per blow for the last 10 blows or 20 blows, except if the pile may be damaged by this number of blows.

The MPF12 is not suitable for use in pile driving conditions where the average penetration during driving (S) is greater than 0.5 inches per blow (less than 24 blows per foot). The Contractor shall immediately notify the Engineer if the specified nominal pile bearing resistance shown in the plans is obtained with an average penetration greater than 0.5 inches per blow.

The Contractor may choose any of the following options to reduce the average penetration during driving to less than 0.5 inches per blow and achieve the specified nominal pile bearing resistance shown in the plans:

1. Reduce the fuel setting of the hammer for the test piles and foundation piles.
2. Perform redrives on the test piles and 10% of the foundation piles at a reduced fuel setting of the hammer. Perform redrives on the foundation piles that had the highest penetration at the end of initial drive or as determined by the Engineer.
3. Continue driving the pile until the average penetration is less than 0.5 inches per blow.
4. Use a qualified smaller hammer.

The above options will be performed at no additional cost to the Department, with the exception that additional driven and delivered length will be paid for by the Department up to the estimated length shown in the plans.

Regardless of the value measured during driving, the value of (S) used in the dynamic formula shall not be less than 0.066 inches per blow (more than 180 blows per foot). If the measured average penetration for the last 10 blows is less than 0.066 inches per blow, use 0.066 in the dynamic formula to determine the bearing resistance.

Note: (W x H) is measured during pile driving and is also commonly referred to as the "energy", E, hence E = W x H, for single acting power-driven hammers and is measured in foot-pounds. The value of (W x H) used in the dynamic formula shall not exceed 85 percent of the manufacturer's maximum rated energy for the hammer used.

In addition to the limits stated above, apply the dynamic formula only if:

(1) The hammer has a free fall,
(2) The head of the pile is free from damage,
(3) The penetration of the pile is at a uniform rate, and
(4) There is no bounce after the blow. If a bounce occurs, deduct twice the bounce height from H to determine the value of H in the formula.

For the requirements of this section, double-acting hammers include hammers utilizing a power source for acceleration of the down-stroke of the ram.

E.4 Pile Driving Analyzer (PDA) Used as Field Control Method

Determine the nominal pile bearing resistance using the pile driving analyzer and the Case Pile Wave Analysis Program (CAPWAP) as stated below, "Dynamic Monitoring of Pile Driving." Use the refined WEAP bearing graph as required in as stated below, "Wave Equation Analysis," to determine the bearing resistances recorded on the pile driving report. Attach a copy of the bearing graph to the pile driving report. Calculate and record the bearing resistances for informational and comparison purposes on the report in accordance with 2452.3.E.3, "MnDOT Pile Formula 2012 (MPF12) Used as Field Control Method."

E.4.1 High-Strain Dynamic Monitoring of Pile Driving

E.4.1.1 Description of Work

Provide and use a Pile Driving Analyzer (PDA) to perform high-strain dynamic monitoring of driven piles meeting the requirements of ASTM D4945. Perform the dynamic pile testing on the initial driving and re-driving of designated piles as shown in the plans or directed by the Engineer. Test additional piles or designated piles at additional times as directed by the Engineer.

E.4.1.2 Pile Preparation

Prepare each pile to be tested by marking and attaching instrumentation to the piles. During initial driving of steel shell piles, attach instrumentation after the pile has been placed in the leads. In all circumstances, extra care should be exercised to protect the instrumentation from distress throughout the pile installation. Wireless pile instrumentation may be attached to the pile, if approved by the engineer, prior to placing the pile in the leads provided that the instrumentation is adequately protected against damage by contact with the leads, abrasion, or shear from the rope, chain, or fabric, used to pick up the pile.

During the test, provide assistance as necessary, e.g. access, tightening gages, re-setting or replacing gages, or replacing cables as necessary for the successful conduct of the dynamic monitoring program. Alert the Engineer to any unanticipated or unusual conditions including such items as severed cables, loose gages, or unusual pile, or pile hammer performance.

E.4.1.3 Signal Matching and Refined Wave Equation Analysis

Following dynamic testing of the driven piling, perform a refined wave equation analysis based on driving data obtained from the high-strain dynamic monitoring program using the Case Pile Wave Analysis Program (CAPWAP) or other approved signal matching software. This work shall be performed by an engineer pre-qualified for work type 6.5 as defined by the MnDOT Geotechnical Manual. Complete the analysis on all piles dynamically tested, or as directed by the Engineer. Furnish PDA and CAPWAP electronic data and summary hardcopy outputs to the Engineer.

After the wave matching analysis is performed, use the GRLWEAP or similar program and the signal matching program (e.g. CAPWAP) data to produce a refined Wave Equation Analysis bearing graph and inspector's chart for the basis for pile acceptance. Prepare similar charts if soil

set-up and pile re-strikes are being evaluated. Submit the refined WEAP bearing graph and Inspector's Chart for use in construction control for each substructure. Use the bearing graph to determine the foundation pile's nominal bearing resistance to be recorded on the pile driving report.

Prepare and submit a summary plot of the performance of each pile in the pile group where each pile is plotted on the Inspector's chart by its observed set and the corresponding stroke of the pile hammer. Adjust this procedure as directed by the engineer for non-diesel hammers. Any piles not plotting in the acceptable range will be rejected.

E.4.1.4 Deliverables

Provide the results from each dynamic test performed with the PDA and analyzed with the CAPWAP program meeting the following requirements to the Engineer within the time specified:

1. Results from each high-strain dynamic test performed with the PDA and analyzed with the CAPWAP program. The results are to be transmitted in the form of the electronic raw data files and a hard copy of columnar data produced with the PDIPLOT program or similar. The data shall consist of blow counts, stresses in the pile, pile capacities, hammer energies and hammer strokes for each one-foot depth increment. This information will be used by the engineer to develop the construction control criteria, authorize pile length, and establish minimum penetration resistance. In addition, provide expert advice regarding the analysis of the PDA and CAPWAP data.

2. Bearing graphs showing blow count-versus-pile resistance and inspector's charts depicting stroke-versus-blow count to be used for confirming the Nominal Pile Bearing Resistance of the foundation piles. The graph/charts are to be developed based on the results of the PDA, CAPWAP, and pile load test data where static load tests are conducted as part of the construction control. These graphs/charts are also to be documented in the report listed below. These graphs and charts are required for each foundation group, or as specified in the contract documents, or as directed for the engineer. Submit this information both in hard-copy and electronically (Adobe PDF or similar).

3. A brief report for the piles at each substructure tested including a summary of the PDA and CAPWAP results; this report will include appropriate information for the evaluation of test data from standard "test" piles as well as Static Load Test (SLT) test piles, Static Load Test reaction piles, and foundation piles.

4. Supply one or more CDs (or other electronic storage media) containing all data for the piles tested for each substructure. The data shall be in the form of W01 (PDA file), PIL (PDIPLOT file), and CWW (CAPWAP file) and be properly labeled. The contractor shall send these electronic files to the Engineer no later than three working days after dynamic pile tests have been completed at any given substructure unit.

5. A final project report which summarizes the findings from the PDA and the associated CAPWAP computer program, the developed bearing graphs, and the pile load test results.

6. One or more CDs (or other electronic media) containing all data for the complete project as an archive copy including information for all piles tested, including any pile static load test data. The data from the dynamic tests shall be in the form of W01 (PDA file), PIL (PDIPLOT file) files, and shall be properly labeled. Include the CAPWAP analysis results and CWW (CAPWAP) files. Include all reports and electronic copies of bearing graphs and inspectors charts. Include any pre-construction WEAP analysis data sheets and WEAP submittal information and electronic files modeling the contractor's hammer system. Include subsequent refined wave equation analysis, and summary plots showing foundation pile performance with respect to the acceptance criteria. Include electronic copies of field notes and other information pertinent to the high-strain dynamic monitoring and any related static load testing (including gage locations, test dates, performance notes, etc.) Transmit this electronic archive to the Engineer within 5 working days after completion of the project dynamic (and or static) pile test program.

E.5 Static Load Test (SLT) Used as Field Control Method

Determine the nominal pile bearing resistance using the results from the Static Load Test and related analysis from high-strain dynamic monitoring and the Case Pile Wave Analysis Program (CAPWAP) in accordance with 2452.3.K, "Dynamic Monitoring of Pile Driving." Use the refined WEAP bearing graph as required in 2452.3.K.3, "Wave Equation Analysis," to develop the inspector's chart as the basis for foundation pile acceptance and use the bearing graph to report the bearing resistances, to be recorded on the pile driving report. Attach a copy of the bearing graph to the pile driving report. Calculate and record the bearing resistances for information and comparison purposes on the report in accordance with 2452.3.E.3, "MnDOT Pile Formula 2012 (MPF12) Used as Field Control Method." Provide the deliverables as required in 2452.3.K.4.

F Pile Cut-off

F.1 Piles

Cut off timber piles at the elevation shown on the plans within a tolerance from −1 in [25 mm] to ½ in [13 mm]. After cutting off the timber pile, leave the head of the pile with sound, undamaged wood.

Cut off steel piles using an approved method that preserves the shape of the pile at the elevation shown on the plans. For piles driven to within ±1 in [25 mm] of the cut-off elevation without damage to the pile head, the Engineer will not require the pile to be cut off.

F.2 Pile Bents

After aligning and bracing the pile bent, cut off the tops of timber piles at the elevation shown on the plans to provide uniform bearing for the cap without using shims or fills.

Cut off steel piles using an approved method that preserves the shape of the pile at the elevation shown on the plans to allow concrete forming or framing in brace members.

G Disposal of Pile Cut-Offs

Use pile cut-offs belonging to the Department in substructure units for piling lengths not authorized for the same structure or for other foundations within the same contract, as required by the Engineer.

Stockpile remaining steel H-pile, steel shell pile cut-offs, and timber cut-offs designated for salvage by the Engineer on skids at a location convenient for truck loading. Dispose of cut-offs not designated for salvage as approved by the Engineer.

H Extensions, Splices, and Studs

Make splices for steel H-piles and CIP steel shell piles as shown on the plans, except make splices for cold rolled fluted steel shells as recommended by the manufacturer and as approved by the Engineer.

Provide pile welders meeting the qualifications of AWS D1.1 or with a MnDOT welding certification and with continuity records proving performance in the last 6 months.

Make splices on piles driven in pile bents at points not exposed to view, unless otherwise approved by the Engineer. If making splices in pile bents exposed to view as approved by the Engineer, finish the splices by grinding in such a way that the ground area blends in smoothly with the contour of the CIP pipe. Verify the complete removal of the defect by visual inspection and the wall thickness shall not be adversely affected. If shear studs are required on the piles, perform the welding in accordance with AWS D1.5, clauses 7.5.1-7.5.4.

The Contractor may provide commercial drive-fit splices for CIP piles on a performance basis as approved by the Engineer. Do not use splices in the following conditions:

(1) In pile bent-type piers or abutments,
(2) Where foundation soils are soft or unstable,
(3) In foundations where uplift is anticipated (concrete seals, etc.),
(4) Within 10 ft [3 m] of the pile cut-off,
(5) Where down drag is indicated in the pile load table, or
(6) Where Pile Driving Analyzer or Static Load Test is specified in contract as field control method.

I (Blank)

J Coating Steel H-Piles and Steel Pile Shells

J.1 Painted Piles

Provide paint and perform painting in accordance with 2478, "Organic Zinc-Rich Paint System." Provide CIP steel pile shells painted in accordance with 3371, "Steel Shells for Concrete Piling."

Paint the outside of steel H-piles and CIP steel pile shells extending above ground surface or water surface with epoxy zinc-rich primer for the entire length, except for sections below splices at least 2 ft [600 mm] below the final ground surface or low water elevation. Apply the primer preferably before shipping or at least 2 days before driving the piles.

After driving, paint the piles with intermediate and finish coats on exposed portions above the water level, existing at the time of paint application or above an elevation 6 in [150 mm] below the final ground surface. Paint the finish coat for piles in bridges with concrete superstructures in a color matching the Federal Standard 595C No. 37200 (lusterless aluminum) and paint the finish coat for piles in bridges with painted steel superstructures with the topcoat color of the superstructure. Paint the finish coat for piles in bridges with unpainted 3309, "High-Strength Low-Alloy Structural Steel," steel or timber superstructures in a color matching the Federal Standard 595C No. 10075 (brown) with a semi-gloss finish.

J.2 Galvanized Piles

Provide galvanized steel H-piles and CIP steel pile shells in accordance with 3394, "Galvanized Structural Shapes." Provide H-piles galvanized in accordance with 3372, "Steel Piling." Provide CIP steel pile shells galvanized in accordance with 3371, "Steel Shells for Concrete Piling."

Protect the galvanizing from abrasion or discoloration beginning immediately after the coating process. The special care shall include, but not be limited to:

(1) Use of nylon slings for handling,
(2) Shipping and storing on blocking with isolation from adjacent shells,
(3) Carrying in lieu of dragging,
(4) Use of timber blocking in leads while pile driving, or
(5) Prompt washing of concrete leakage.

Design forms and falsework for the substructure in a manner not requiring clamping or welding to any portion of the piling that are exposed after the cap construction is complete.

Repair all damaged galvanized areas by the metalizing process described in AASHTO M 36, at no additional cost to MnDOT. Zinc rich paint is NOT an acceptable repair.

2452.4 METHOD OF MEASUREMENT

A Test Piles

If the plans show specific contract pay items for test piles, the Engineer will measure the number of test piles provided as required by the contract and driven as directed by the Engineer.

The Engineer will not eliminate test piles from the contract, unless all piles for the unit are eliminated or unless mutually agreed upon by the Contractor and the Engineer.

If the plans do not show a specific contract pay item for test piles, the Engineer will include the measurement of test piles with the measurement for piling delivered and piling driven.

If the Engineer determines that steel H-test piles or steel shells for cast-in-place concrete test piles provided in the lengths required by the contract do not develop sufficient nominal pile bearing resistance or do not provide information per 2452.3.D.2, "Test Piles," for ordering foundation piles, splice extensions onto test piles or deliver longer piles as required by the Engineer.

The Engineer will measure splice extensions onto test piles or longer piles, as required by the Engineer when driving beyond plan test pile length, in accordance with the relevant contract pay items for piling delivered and piling driven.

B Piling Delivered

If test piles are not required, the Engineer will measure piling delivered as shown on the plans for acceptable piling provided and delivered in the lengths and sizes of the relevant contract pay items. If the contract requires test piles, the Engineer will measure the lengths approved by the Engineer.

C Piling Driven

The Engineer will measure piling driven by the length of acceptable piling below cut-off.

D Pile Load Tests

The Engineer will measure pile load tests by the number of piles load tested as required by the contract and as directed by the Engineer.

E Reinforcement Bars

The Engineer will measure reinforcement bars used in cast-in-place concrete piles by weight in accordance with 2472, "Metal Reinforcement."

F Pile Redriving

The Engineer will measure pile redriving by the number of piles redriven as required by the contract and as directed by the Engineer. The Engineer will recalculate the estimated plan quantity to agree with the actual number of piles redriven at the project site, estimated not to exceed 25% of the total number of planned piles. The Engineer will consider any pile redriving completed without the direction of Engineer as unauthorized work and the Department will not compensate the Contractor for that work.

G Dynamic Monitoring of Pile Driving

The Engineer will measure Pile Driving Analyzer field control by the number of piles that required the pile driving analysis as required by the contract. The Engineer will consider initial

analysis and redrive analysis on an individual pile as one pile analysis. The Engineer may increase or decrease the number of piles to be dynamically monitored.

If the contract does not require the Pile Driving Analyzer field control method, the Contractor may perform the Pile Driving Analyzer field control method at the Contractor's option and at no additional cost to the Department.

2452.5 BASIS OF PAYMENT

The contract unit prices for *Test Pile* include the fixed costs of piling delivered and piling driven. If the plans do not include a contract pay item for test piles, the Department will include the fixed costs of piling delivered and piling driven with the relevant contract unit price for mobilization.

A Test Piles

The contract unit price for the test pile contract item of each kind and length include the cost of providing and driving test piles, providing and placing driving caps, concrete for cast-in-place concrete piles, painting steel H-piles and CIP steel shell piles, and performing analysis for hammer qualification submittals.

The Department will pay for splice extensions onto test piles or longer piles, as required by the Engineer when driving beyond plan test pile length, with the contract pay items piling delivered and piling driven.

B Piling Delivered

The Department will not pay full contract unit prices, but may make partial payments based on actual cost, for stock lengths of steel H-piles and steel shells for cast-in-place concrete piles delivered before the Engineer authorizes final lengths based on test pile driving. The Department will only pay contract unit prices for *Piling Delivered* in the lengths authorized by the Engineer. Remove delivered unauthorized piles at no additional cost to the Department.

The Department will not pay for piles or portions of piles damaged during handling. The Department will pay for piles damaged during driving if the Engineer determines that the damage was not caused by the Contractor's carelessness or negligence. The Department will not pay for piles rejected by the Engineer due to the use of an excessively heavy hammer.

The Department will pay for splicing of steel H-piles and CIP steel shell piles meeting the following requirements and characteristics at six times the relevant contract unit price for piling delivered, if the splice is actually made and:

(1) The Engineer directed the change after the Contractor cut the piles to lengths previously approved;
(2) Only for any extra splices required for a particular unit, if Engineer approved lengths longer than the length of the longest test pile of a specific kind as shown on the plans; and
(3) The Engineer ordered cut-offs, belonging to the Department, to be spliced together or onto other sections, except if made solely for the Contractor's convenience.

For a CIP steel shell pile made entirely from Department-owned cut-offs as required by the Engineer, the Department will consider providing and attaching the end plate as an additional splice and will pay for the additional splice with the relevant contract unit price.

C Piling Driven

The relevant contract unit prices for *Piling Driven* include the cost of preparing the piles for driving, preboring, jetting, providing and placing the driving shoes, concrete for cast-in-place piles, cutting and trimming, and coating steel H-piles and steel shell piles.

In the event foundation conditions are found to exist at the site of a structure, or a portion thereof, that are quite different from those upon which the foundation design was based, resulting in changes in foundation design or resulting in requirements for foundation pile lengths substantially different from those upon which the contract unit prices were established, the Engineer will, upon presentation of documentary evidence by the Contractor, enter into a Supplemental Agreement to reimburse the Contractor for any additional pile driving expense incurred as a result of those changes.

The Department will pay for driving pile cut-offs, from previously driven piles in the same contract that are the property of the Department, at the following percentages of the contract unit price for piling driven:

(1) Timber and Steel H-Piles, 150 percent, and
(2) Cast-in-Place Concrete Piles, 200 percent

The Department will include the cost of splices per 2452.5.B, "Piling Delivered," in the relevant contract unit prices for piling delivered.

D Pile Load Tests

The contract each price for *Pile Load Test* includes the cost of providing and driving reaction piles at locations that preclude their use in the structure as foundation piles.

E Pile Redriving

The contract unit price for *Pile Redriving* includes the cost of redriving test piles and foundation piles, and providing and driving additional pile lengths as directed by the Engineer.

F Dynamic Monitoring of Pile Driving

The contract each price for *Pile Analysis* includes the cost of dynamic testing of a pile during initial driving and redriving, additional time needed in driving operations, labor, consultants, and equipment.

The Department will include the cost of the actual redrive with the contract each price for *Pile Redriving.*

The Department will not adjust the contract each price for increased or decreased contract quantities for *Pile Analysis.*

G Pile Points

The contract each price for *Pile Points* includes the cost of providing and attaching the points to the piles.

H Pile Tip Protection

The contract each price for *Pile Tip Protection* includes the cost of providing and attaching the tips to the piles.

I Pay Items

The Department will pay for piling on the basis of the following schedule:

Item No.:	Item:	Unit:
2452.501	Untreated Timber Piling Delivered	linear foot [meter]
2452.502	Untreated Timber Piling Driven	linear foot [meter]
2452.503	Treated Timber Piling Delivered	linear foot [meter]
2452.504	Treated Timber Piling Driven	linear foot [meter]
2452.507	Cast-in-Place Concrete Piling Delivered ___*	linear foot [meter]
2452.508	Cast-in-Place Concrete Piling Driven ___*	linear foot [meter]
2452.510	Steel H-Piling Driven ___*	linear foot [meter]
2452.511	Steeel H-Piling Delivered ___*	linear foot [meter]
2452.516	Untreated Timber Test Pile, ___ ft [m] long	each
2452.517	Treated Timber Test Pile, ___ ft [m] long	each
2452.519	Cast-in-Place Concrete Test Pile, ___ ft [m] long ___*	each
2452.520	Steel H-Test Pile, ___ ft [m] long ___*	each
2452.525	Reinforcement Bars	pound [kilogram]
2452.526	Pile Load Test, Type ___	each
2452.527	Pile Redriving	each
2452.528	Pile Analysis	each
2452.529	Pile Points ___ in [mm]	each
2452.530	Pile Tip Protection ___ in [mm]	each

* Nominal size in in [mm]

SB -11. (2461) STRUCTURAL CONCRETE

MnDOT 2461 shall be deleted and replaced with the following:

2461.1 DESCRIPTION

This work consists of producing, providing, placing, curing, and protecting portland cement concrete for placement in structures, pavements and incidental construction.

2461.2 MATERIALS

A Cementitious Materials

Provide cementitious materials from certified sources listed on the Approved/Qualified Products list.

Use Type I or Type I/II portland cement to produce Type 1 non-air-entrained concrete.

Use Type I or Type I/II portland cement and an air-entraining admixture listed on the Approved/Qualified Products List to produce Type 3 air-entrained concrete.

Use Type III portland cement as allowed by the Contract or the Engineer.

A.1 ..... Portland Cement 3101

A.2 ..... Ground Granulated Blast Furnace Slag. 3102

A.3 ..... Blended Hydraulic Cement 3103

A.4 ..... Fly Ash 3115

A.5 Cementitious Content

Provide concrete with the minimum cementitious content for the grades and slumps of concrete in accordance with Table 2461-1:

Table 2461-1
Minimum Cementitious Content,
lb per cu. yd [kg per cu. m]

Specified Slump Limit, *in [mm]*	Grades							
	U	V	W	X	Y	A	B	C
1 [25]	800 [475]	730 [435]	—	—	—	—	—	—
2 [50]	830 [490]	765 [455]	660 [390]	630 [375]	570 [340]	530 [315]	490 [290]	420 [250]
3 [75]	850 [505]	730 [475]	695 [410]	665 [395]	605 [360]	560 [335]	515 [305]	445 [265]
> 3 [75]	—	—	730 [475]	700 [415]	640 [380]	590 [350]	540 [320]	470 [280]

Except for grout mixtures, limit the maximum cementitious content for a cubic yard [cubic meter] of concrete to 850 lb [505 kg].

A.6 Cementitious Substitutions

The Contractor may replace Type I or Type I/II portland cement with other cementitious materials in accordance with the following restrictions:

(1) Maximum of 15 percent substitution of Class C or Class F Fly Ash, on a one for one basis, by weight of the designed portland cement;

(2) For Department designed mixes, the Department will adjust the batch weight of coarse aggregates to compensate for volume changes due to cementitious substitutions;

(3) Maximum of 33 percent substitution of Class C or Class F Fly Ash for concrete pavement, on a one for one basis, by weight of the designed portland cement;
(4) Maximum of 35 percent substitution of slag, on a one for one basis, by weight of the designed portland cement; and
(5) Ternary mixes (portland cement and two other supplementary cementitious materials) are allowed when approved by the Engineer, in conjunction with the Concrete Engineer, or required by or allowed in the Contract.

B.....Fine Aggregate 3126

C.....Coarse Aggregate 3137

Unless otherwise required by the Contract, the Contractor may select the class of coarse aggregate as defined in 3137.2.B, "Classification."

D.....Water 3906

E.....Concrete Admixtures 3113

The Contractor may use the following admixtures listed on the Approved/Qualified Products List:

(1) Type A, "Water Reducing and Mid Range Water Reducing Admixtures,"
(2) Type B, "Admixtures Identified as Hydration Stabilizers,"
(3) Type D, "Water Reducing and Retarding Admixtures"
(4) Type S, "Viscosity Modifying Admixtures."

Use of any other admixtures in the concrete requires approval of the Concrete Engineer unless otherwise required by or allowed in the Contract.

When incorporating admixtures into the concrete:

(1) Use admixture dosage rates recommended by the manufacturer.
(2) Add all admixtures at the plant.
(3) Provide admixture additions at the job site that are the same products as originally incorporated into the mix.
(4) Use calcium chloride in concrete as approved by the Engineer, in conjunction with the Concrete Engineer. Do not use calcium chloride in units containing prestressing steel or in bridge superstructure concrete.

E.1 Use of Additional Admixtures

On a case by case basis, the Engineer, in conjunction with the Concrete Engineer, will consider the use of the following admixtures, added either at the plant or at the job site, as listed on the Approved Products list:

(1) Type C, "Accelerating Admixtures"

(2) Type E, "Water Reducing and Accelerating Admixtures"
(3) Type F, "Water Reducing, High Range Admixtures"
(4) Type G, "Water Reducing, High Range and Retarding Admixtures"

E.1.a Delivery Time Beyond 90 Minutes

If the haul time does not facilitate mixing and placing the concrete within 90 minutes, perform the following procedures for pre-qualifying a concrete mix to extend the delivery time to 120 minutes. Extending the delivery time beyond 120 minutes will require additional testing at 30 minute intervals up to the maximum desired delivery time as directed by the Concrete Engineer.

(1) Provide a Contractor mix design in accordance with 2461.3G2 for each combination of materials.
(2) Specification 2461.3D is modified to allow up to 25% fly ash replacement for cement. All other requirements of 2461 apply.
(3) Laboratory trial batching on the proposed mix includes the following testing requirements:
    (a) Perform all laboratory trial batching at an AMRL accredited laboratory.
    (b) Perform all plastic concrete testing after adding all admixtures to the concrete mixture.
    (c) Perform slump, air content, unit weight and temperature testing immediately after batching and at 90 and 120 minutes.
    (d) Fabricate concrete cylinders for compressive strength at 90 and 120 minutes (sets of 3) and cylinders for hardened air content testing at 90 and 120 minutes (sets of 5).
    (e) Test the cylinders for compressive strength at 28 days.
    (f) Determine the hardened air content (ASTM C457) at a minimum of 7 days. The Contractor is required to test at 2 samples representing 90 minutes and 2 samples representing 120 minutes and provide MnDOT with the other 6 samples for testing at their discretion. Retain any hardened concrete test specimens for a minimum of 90 days for MnDOT to examine at their discretion.
    (g) Ensure the admixture manufacturer's technical representative is present during the trial batching.
    (h) Contact the MnDOT Concrete Engineering Unit a minimum of 2 days prior to mixing. This same 2 day notification is required prior to any physical testing on hardened concrete samples.
    (i) Once accepted by the Concrete Engineer, the laboratory trial batching is considered acceptable for use for 5 years, unless it is determined the material sources have changed significantly since the initial laboratory testing and acceptance. In all cases, the Engineer will require field trial batching on a project specific basis.
(4) Field trial batching on the proposed mix for each specific project shall include batching in the presence of the Engineer and the following:
    (a) Provide a QC Plan for extending the delivery time beyond 90 minutes.

(b) Mix and transport the concrete using the same materials as were utilized in the laboratory trial batching.

(c) Batch a minimum 5 cu. yd (4 cu. m) of concrete utilizing the same methods intended for use when supplying concrete placed into the permanent work.

(d) Maintain the ready mix truck in transit; by either driving around the yard or on the roadway; and maintain the drum speed at 5 to 7 revolutions per minute for the entire 120 minutes.

(e) Perform all plastic concrete testing after adding admixtures to the concrete mixture.

(f) Perform slump, air content, unit weight and temperature testing at 90 and 120 minutes.

(g) Fabricate concrete cylinders for compressive strength at 90 and 120 minutes (sets of 3) and cylinders for hardened air content testing at 90 and 120 minutes (sets of 2).

(h) Test the cylinders for compressive strength at a minimum of 7 days.

(i) Determine the hardened air content (ASTM C457) at a minimum of 7 days. The Contractor is required to test 1 sample representing 90 minutes and 1 sample representing 120 minutes and provide MnDOT with the other 2 samples for testing at their discretion. Retain any hardened concrete test specimens for a minimum of 90 days for MnDOT to examine at their discretion.

(j) Incorporate the trial batch concrete into other work with the approval of the Engineer.

(k) The Contractor must demonstrate to the Engineer the ability to properly mix, control and place the concrete.

(5) The Concrete Engineer, in coordination with the Engineer, will review the trial batch results and all related concrete testing for compliance with the QC Plan and the Contract. Final approval of the mixture is based on satisfactory field placement and performance.

F Concrete Mix Designs

F.1 Department Designed

The Department will provide the estimated composition of concrete mixes unless otherwise required by the Contract.

The Department may adjust the mix composition of the concrete without adjusting the Contract unit price for any Contract items.

F.1.a Concrete Yield

The Department defines concrete yield as the ratio of the volume of mixed concrete, less accountable waste, to the planned volume of the work constructed. The Department will not assume responsibility for the yield from a given volume of mixed concrete.

F.1.b High-Early Strength Concrete

When the Engineer requires high-early strength concrete, the concrete is designed in accordance with the following:

(1) Increasing the cement content of the concrete up to 30 percent; using an approved accelerator as allowed by the Engineer, in conjunction with the Concrete Engineer; or both.
(2) Using 100 percent portland cement, unless allowed by the Contract or the Engineer.
(3) A maximum cement content for a cubic yard [cubic meter] of concrete not to exceed 900 lb [535 kg].
(4) A water/cement ratio not to exceed 0.38 for Type 3 Concrete unless otherwise required by the Contract.

F.2 Contractor Designed

Design the concrete mix based on an absolute volume of 27.00 cu. ft ± 0.10 cu. ft [1.000 cu. m ± 0.003 cu. m] for the following:

(1) Concrete paving mixes in accordance with 2301, "Concrete Pavement;"
(2) Concrete mixes with an anticipated or required 28-day compressive strength of at least 5,000 psi [34 MPa];
(3) Precast concrete in accordance with 2405, "Prestressed Concrete Beams," 2412, "Precast Concrete Box Culverts," 3236, "Reinforced Concrete Pipe," 3238, "Precast Concrete Box Culverts," 3621, "Concrete Masonry Units," 3622, "Sectional Concrete Manhole and Catch Basin Units," and 3630, "Precast Concrete Median Barriers;"
(4) Colored concrete;
(5) Stamped concrete;
(6) Cellular Concrete Grout – Controlled Low Strength Material (CLSM);
(7) Extended Delivery Times Beyond 90 minutes; and
(8) Concrete as otherwise required by the Contract.

Submit the concrete mixes using the MnDOT Contractor Mix Design Submittal Package available on the Department's website at least 21 calendar days before initial placement of the concrete mix. The Engineer, in conjunction with the Concrete Engineer, will provide specific gravity and absorption data for mix design calculations.

The Concrete Engineer, in coordination with the Engineer, will review the mix design submittal and will approve the materials and mix design for compliance with the Contract.

The Contractor assumes full responsibility for the mix design and performance of the concrete.

The Engineer determines final acceptance of the concrete for payment based on satisfactory field placement and performance.

F.3 Classification of Concrete

The Department will classify concrete by type, grade, consistency, and aggregate size. Refer to the mix number and Table 2461-2 to determine the mix requirements for each item of work.

Table 2461-2
Mix Number Identification

First Digit	Second Digit	Third Digit	Fourth Digit	Additional Digits
Type	Grade	Slump range	Coarse aggregate gradation range	Class A coarse aggregate when required, modified mix designation, or both

Refer to individual Contract items in the Standard Specification for Mix Numbers. Deviations from the specified Mix Numbers require coordination with the Concrete Engineer.

If the Contract does not show a concrete mix number, provide Type 3, Grade Y concrete with a slump and aggregate gradation determined by the Engineer.

The Department will designate grout by type and grade followed by the word "GROUT." Do not provide grout containing coarse aggregate. If the plans do not show a type or grade for grout, provide 3A GROUT.

F.3.a Type Designation

Provide Type 1 or Type 3 concrete in accordance with Table 2461-3:

Table 2461-3
Concrete Type Designation

Concrete Type	Target Air Content*, %	Maximum Water/Cement Ratio‖
1	2.0	≤ 0.53 for 1A43 ≤ 0.68 for 1C62 ≤ 0.64 for 1C Grout
3	6.5 †	≤ 0.45†#

* For concrete mix design purposes only.
‖ The water/cement ratio is defined as the ratio of the total water weight to the total cementitious weight.
† Unless otherwise required by 2301 or elsewhere in the Contract.
#The maximum water/cement ratio for machine placed concrete is 0.42.

F.3.b Grade Designation

The Department will designate concrete grade using a letter to represent the anticipated compressive strength and the minimum cementitious content in accordance with 2461.2.A.5, "Cementitious Content," and Table 2461-4:

Table 2461-4 Concrete Grade Designation		
Concrete Grade	**Type 1 Anticipated Compressive Strength, *psi [MPa]* ***	**Type 3 Anticipated Compressive Strength, *psi [MPa]* ***
U	6,300 [43]	5,600 [39]
V	6,000 [41]	5,300 [37]
W	5,700 [39]	5,000 [34]
X	5,400 [37]	4,700 [32]
Y	5,000 [34]	4,300 [30]
A	4,500 [31]	3,900 [27]
B	4,100 [28]	3,400 [23]
C	3,200 [22]	2,700 [19]
* Anticipated minimum strength produced in accordance with the Department specifications and cured for 28 days under laboratory conditions.		

The Concrete Engineer, in coordination with the Engineer, may increase the cement content for concrete with test cylinder results less than the anticipated compressive strength in accordance with Table 2461-4, "Concrete Grade Designation." The Contractor may request an increase in the cement content as approved by the Engineer, in conjunction with the Concrete Engineer.

F.3.c Slump Designation

Refer to the slump designation for the upper limit of the slump range without a water reducer in accordance with Table 2461-5:

Table 2461-5 Slump Designation	
Slump Designation	**Slump Range without Water Reducer, *in [mm]***
1	½ – 1 [12 – 25]
2	1 – 2 [25 – 50]
3	1 – 3 [25 – 75]
4	2 – 4 [50 – 100]
5	2 – 5 [50 – 125]
6	3 – 6 [75 – 150]

F.3.d Coarse Aggregate (CA) Designation

Refer to the coarse aggregate designation for the range of optional coarse aggregates gradations allowed in the mix in accordance with Table 3137-4, "Coarse Aggregate Designation for Concrete," and Table 2461-6:

Table 2461-6 Coarse Aggregate Designation for Concrete	
Range	**Optional Coarse Aggregate Designation**
0	CA-00 only
1	CA-15 to CA-50, inclusive
2	CA-15 to CA-60, inclusive
3	CA-35 to CA-60, inclusive
4	CA-35 to CA-60, inclusive
5	CA-45 to CA-60, inclusive
6	CA-50 to CA-70, inclusive
7	CA-70 only
8	CA-80 only

F.3.e Additional Designations

For mix designs that require a specified class of coarse aggregate as defined in 3137.2.B, "Classification," an additional letter will follow the fourth digit of the Mix Number such as "A" (Class A Aggregate Requirement).

The Engineer may identify special concrete mix designations with additional letters following the last digit such as "HE" (High Early), "WC" (Water/Cement Ratio), "HPC" (High Performance Concrete), "MS" (Microsilica), or others.

2461.3 CONSTRUCTION REQUIREMENTS

A Batching Equipment

A.1 Mixer Requirements

Provide stationary mixers or truck mixers.

A.2 General Condition

Maintain mixers as necessary to detect changes in condition due to accumulations of hardened concrete or mortar and examine to detect wear of blades.

Replace or recondition pickup and throwover blades in mixers with a rated capacity less than 14 cu. ft [0.40 cu. m] showing a blade wear loss of greater than ½ in [13 mm], and pickup and throwover blades in mixers of greater capacity, showing a blade wear loss of no greater than ¾ in [19 mm] from the original factory dimensions.

A.3 Manufacturer's Rating Plate

Provide mixers that include the manufacturer's rating plate, showing the following information:

(1) Serial number of the unit,
(2) Mixing speed of the drum or paddles, and
(3) Maximum capacity in terms of volume of mixed concrete.

A.4 Drum Speed for Stationary Mixers

Operate the drum speed in the mixer as specified by the manufacturer or as directed by the Engineer.

A.5 Auxiliary Equipment Requirements

Provide mixers equipped with the following:

(1) Timing device,
(2) Discharge locking device,
(3) Water measuring device that operates mechanically and automatically during each batching cycle, and
(4) A graduated adjustable indicator device to represent the volume of discharge in increments no greater than ¼ gal [1 L] in full view.

A.6 Mixer Capacity

Do not exceed the manufacturer's rated capacity of the mixer when mixing a single batch of concrete.

Batch concrete in volumes the mixer can accommodate without spilling, leaking, or segregating during the charging, mixing, or discharging operations. Provide mixers with a capacity of at least 1 sack [0.25 cu. m].

A.7 Mixing Time

The Department defines the mixing time as the time period beginning when the cement and aggregates enter the mixer drum and ending when the discharge begins.

Refer to the manufacturer's recommended minimum mixing time for single drum and dual drum mixers. In the absence of manufacturer's recommendation, the Engineer will designate the minimum mixing time. The minimum mixing time for any concrete batch is 60 s. The Contractor may reduce the manufacturer's recommended minimum mixing time or the Engineer designated mixing time if the Contractor obtains uniform mixing in accordance with 2461.3.E, "Mixing Requirements," and as approved by the Engineer, in conjunction with the Concrete Engineer.

If there is evidence of inadequately mixed concrete (unmixed or partially mixed materials) during concrete placement, the Engineer may direct an increase in the mixing time.

A.8 Turbine Type Mixers

Provide turbine type mixers meeting the applicable requirements for conventional type mixers (2461.3.A.1 through 2461.3.A.7) and in accordance with this subsection (2461.3.A.8). Maintain the mixer drum in a cylindrical shape within ¾ in [19 mm] from the original factory dimensions at any point. Maintain the mixer discharge gate in a

mortar tight condition in the closed position. Replace or recondition mixer paddles showing a wear loss greater than ½ in [13 mm] from the original factory dimensions.

Add the mixing water to the batch materials in a manner that distributes the water to the inner or central areas of the drum. Start the flow of water before introducing the solid batch materials into the mixer drum.

During mixing, operate the paddles at a speed between 20 revolutions and 30 revolutions per minute. After adding the batch materials to the drum, mix the concrete for an additional 60 s.

A.9 Horizontal Axial-Revolving Blade Type Mixers

Provide horizontal axial-revolving blade type mixers in accordance with the applicable requirements for conventional type mixers (2461.3.A.1 through 2461.3.A.7) and in accordance with this subsection (2461.3.A.9).

Charge the water, aggregates, and cement in the sequence approved by the Engineer. Test the concrete uniformity as directed by the Engineer. The Engineer will use concrete uniformity tests to determine the minimum mixing time.

B Transportation Units

B.1 General Requirements

Equip transportation units intended for both mixing and agitating with watertight revolving drums mounted and powered and fitted with properly designed mixing blades in accordance with 2461.3.A.1 through 2461.3.A.7. Provide units capable of combining all the ingredients into a homogeneous mixture and designed to provide two drum speeds, one for mixing and the other for agitating. Provide units capable of delivering the concrete without segregation or loss of any of the batch materials.

Equip the mixer drum with a working counting device to record the number of revolutions.

Equip dump trucks and agitator trucks with vibrators to aid in discharge.

B.2 Capacity of Transportation Units

Refer to the truck mixer manufacturer's certification plate attached to the unit for the maximum capacity of the unit. If the unit will not satisfactorily mix the maximum volume shown, reduce the batch volume to allow proper mixing or discontinue use of the mixing unit as directed by the Engineer until the problem is corrected.

C Handling and Storing Materials

C.1 Batch Material Requirements

Do not change the source, kind or gradation of batch materials after the start of concrete production for the work unless otherwise approved by the Engineer. If the Engineer approves use of different material, completely exhaust the supply on hand before changing to the different material.

If delivering freshly washed aggregates to the batching plant, drain the aggregates for at least 12 h before using in the batching operation. If draining freshly washed aggregates at the site of the batching plant, completely separate the drained material from the undrained materials, and provide for the disposal of water that accumulates from the drainage of materials.

Provide smooth, firm, and well-drained stockpile sites cleared of vegetable and extraneous matter. Where the natural foundation is unsatisfactory, as determined by the Engineer, construct the stockpiles on suitable platforms. Construct suitable bulkheads or partitions to separate different kinds of aggregate, gradation, or water content.

Construct stockpiles by methods that hold segregation and degradation to a minimum. If the Engineer sees segregation or degradation, the Engineer may designate that pile as unacceptable for use.

Do not use aggregates used to construct runways for loading or hauling equipment in concrete batches.

Use of aggregates from the bottom 1 ft [0.3 m] of a stockpile placed on an unprepared surface in concrete batches is allowed only under the Engineer's direct supervision and if the material meets all requirements of 3126, "Fine Aggregate for Portland Cement Concrete," and 3137, "Coarse Aggregate for Portland Cement Concrete."

Provide aggregates in accordance with the specified gradation requirements.

The Engineer will consider aggregates unacceptable if the variation in moisture content carried by any of the aggregates causes a marked variation in the consistency of successive batches of the mixed concrete, and will suspend operations until corrected.

C.2 Concrete Temperature Control

Produce concrete at temperatures from 50 °F to 90 °F [10 °C to 30 °C] and maintain temperatures until deposited in the work.

If necessary to maintain placement temperature, uniformly heat or cool the water, aggregates, or both, before introduction into the mixer. Control the temperature of the mixing water during heating or cooling.

Use aggregate at temperatures from 32 °F to 130 °F [0 °C to 55 °C]. Do not allow cementitious material to contact other batch material when the aggregate temperature exceeds 130 °F [55 °C].

Do not heat the cement, add salt, or add chemical admixtures to the concrete mix to prevent freezing.

Use a heating system to heat batch materials as approved by the Engineer. Do not use steam jets to spot heat the material as the work progresses.

Do not place mixer heaters intended for heating the batch materials in the mixer drum.

D Batching Requirements

Calibrate weighing equipment in accordance with 1901, "Measurement of Quantities." Inspect and calibrate the scales in accordance with the Concrete Manual.

D.1 Batching by Weight

D.1.a Proportioning Methods

Proportion concrete batch materials by weight in a central plant or by volume as directed by the Engineer, in conjunction with the Concrete Engineer.

D.1.b Weighing Equipment and Tolerances

Weigh or measure concrete mixture ingredients using load cells or meters for ready-mix and paving concrete to within the targeted batch weight in accordance with the following:

(1) Water – 1 percent,
(2) Cement – 1 percent,
(3) Other cementitious materials – 3 percent,
(4) Aggregates – 2 percent, and
(5) Admixtures – 3 percent.

D.1.c Batching of Mixing Water

Measure the mixing water on scales or water metering devices containing the following:

(1) A discharge indicator capable of being set to within 1 gal [5 L] of a predetermined quantity,
(2) A positive automatic shutoff valve, and
(3) An approved inspection seal on the scale or water metering device dating the time of the previous calibration and adjustment

An authorized service agency will calibrate the water meter every 6 months and make adjustments as necessary before use meeting the requirements of the weighing procedure in the Concrete Manual.

Check the water meter for accuracy at least once each month as the work progresses.

D.1.d Batching of Cementitious Materials

Weigh the cementitious material independently of the aggregates in separate compartments or on separate scales.

If the Contractor weighs the cement first and then separately records the weights of each individual cementitious material, the Contractor may weigh the cementitious materials cumulatively as approved by the Engineer, in conjunction with the Concrete Engineer.

D.1.e Batching of Aggregates

If the Contractor records each individual fraction weight of aggregates separately, the Contractor may weigh aggregates cumulatively as approved by the Engineer, in conjunction with the Concrete Engineer.

D.1.f Admixture Proportioning

If using two or more admixtures in a single concrete batch, add each admixture separately to prevent interaction of the different admixtures before mixing with other batch materials. Agitate admixtures to ensure homogeneous concentrations in accordance with the manufacturers recommendations.

Incorporate admixtures to the batch mix in liquid form. Maintain admixture solutions at a uniform concentration at all times. Use the solution concentration and proportions designated by the manufacturer.

If using a mechanical dispenser for proportioning Class I or Class II admixtures, provide a site gauge or meter. Have the admixture manufacturer check admixture dispensers yearly to determine accuracy and ensure unobstructed flow.

D.2 Batching by Volume

Proportion concrete for bridge deck overlays by volume or as required by the Contract.

If the Contractor calibrates the mixer for the specific batch materials in use, the Contractor may proportion concrete on other items of work by volume as approved by the Engineer in writing.

The Engineer will approve all methods and equipment used in volumetric proportioning.

Determine all material proportions and calibration settings on the basis of 100 lb [100 kg] of cementitious material.

Provide and use only sacked cement in the original mill containers unless the Contractor calibrates the mixer for the specific materials in use. Do not use fractional sacks.

Increase the cementitious content by 10 percent in the computation of volume proportions unless the Contractor calibrates the mixer for the specific materials in use.

E Mixing Requirements

The Engineer may check the water measuring equipment for accuracy before mixing operations begin and at any other time the Engineer considers necessary.

Mix concrete by one of the following methods:

(1) A central plant (stationary plant),
(2) Entirely or in part in truck mixers, or
(3) At the construction site.

Do not allow the mixing batch to merge or intermix with the subsequent dry batch during mixing.

Discharge water remaining in the drums before batching.

Mix concrete to provide a mixture that is homogeneous and uniform in color. The Engineer will reject concrete batches that show a marked variation in consistency or evidence of improper mixing as unacceptable work in accordance with 1503, "Conformity with Contract Documents," and 1512, "Unacceptable and Unauthorized Work."

After completely mixing the concrete, either in a central plant mixer or truck mixer, continuously agitate while in transit to the point of placement until the concrete is discharged from the unit, unless otherwise allowed by the Engineer, in conjunction with the Concrete Engineer.

If the mixing does not appear uniform, perform slump tests at the 15 percentage point and the 85 percentage points during unloading. If the results show a slump variation greater than 1½ in [38 mm], stop work and correct the mixing unit.

Produce concrete in such quantity and at such a rate as proper placement and finishing will permit. Do not re-temper partially set concrete.

Do not hand mix concrete.

E.1 Mixing In Truck Mixer

Charge the materials into the truck mixer drum by introducing sufficient water before adding solid materials. Perform charging operations without losing materials.

Leave the truck mixer at the plant site for a minimum of 5 min or 50 revolutions during the mixing period. Transport the concrete at agitating speed to the point of placement.

F Certified Ready-Mix Concrete

F.1 Definitions

The Department defines ready-mix concrete as one of the following:

(1) Central-mixed concrete proportioned and mixed in a stationary plant and hauled to the point of placement in revolving drum agitator trucks or a truck mixer, or
(2) Truck-mixed concrete proportioned in a stationary plant and fully mixed in truck mixers.

Table 2461-7 defines commonly used certified ready-mix terms.

Table 2461-7
Certified Ready-Mix Terminology

Term	Definition
Mix design water	The maximum allowable water content for 1 cu. yd [1 cu. m] of concrete in accordance with MnDOT Form TP 02406, *Estimated Composition of Concrete Mixes*.
Total moisture factor	Factor used to determine total amount of water carried by a given wet aggregate.
Absorption factor	Factor used to determine the water contained within the pores of the aggregate and is held within the particles by capillary force.
Free moisture	The water that is carried on the surface of the aggregate that becomes part of the total water.
Batch water	Water actually batched into the truck by the batcher.
Total water	Batch water added to free moisture. Total water may also include the water used in diluting admixture solutions.
Temper water	Water added in mixer to adjust slump.
Total actual water	The water in the concrete mixture at the time of placement from any source other than the amount absorbed by the aggregate. It includes all batch water placed in the mixer, free moisture on the aggregate and any water added to the ready mix truck prior to placement.
Ready-Mix Producer or "Producer"	Party that is producing the concrete for the Contract. It is understood that the Ready-Mix Producer is the agent of the Contractor.

F.2 General Requirements

Supply ready-mix concrete in accordance with 2461.3.F.3, "Certified Ready-Mix Plant Program."

The Engineer will reject ready-mix concrete delivered to the work site that does not meet the specified requirements for delivery time, consistency, quality, air content, or

other properties as unacceptable work in accordance with 1512, "Unacceptable and Unauthorized Work."

Provide batches for a delivered load of concrete in sizes of at least 1 cu. yd [1 cu. m].

F.3 Certified Ready-Mix Plant Program

Provide ready-mix concrete produced by a certified ready-mix plant. Perform quality control of concrete production under a certification program for ready-mix concrete plants.

Complete all concrete plant documentation utilizing the Concrete Ready-mix Plant QC Workbook available from the MnDOT Concrete Engineering website. Electronically submit the QC Workbook to the Engineer by the Tuesday immediately following the previous week's production.

F.3.a Plant Certification

Before concrete production each season, ensure the producer performs the following:

(1) Performs an on-site inspection at the concrete plant with the Engineer and completes a MnDOT Form 2163, *Concrete Plant Contact Report.*
(2) Signs the report certifying compliance with the Certified Ready Mix requirements and continual maintenance of the plant. The Engineer will also sign MnDOT Form 2163, *Concrete Plant Contact Report.*
(3) Provides a copy of the current Concrete Manual and retains it on-site.
(4) Equips the Certified Ready-Mix Plant with a working facsimile machine or an email address.
(5) Keeps plant reports, charts ,and supporting documentation on file at the plant site for 5 calendar years.
(6) Provides electronic scales for weighing all materials.

F.3.b Sampling and Testing

Provide a MnDOT Certified Concrete Plant Level 2 Technician to oversee testing and plant operations and to remain on-site during concrete production or have cellular phone availability.

Provide facilities in accordance with 1604, "Plant Inspection – Commercial Facility," for the use of the plant technician in performing tests.

Ensure the producer provides technicians with certification at least meeting MnDOT Concrete Plant Level 1 to perform all of the duties in accordance with the Concrete Manual. The Engineer will provide technicians with certification at least meeting MnDOT Concrete Plant Level 1 to perform all of the duties in accordance with the Concrete Manual.

Ensure the producer performs testing in accordance with the Concrete Manual and determines testing rates meeting the requirements of the Schedule of Materials Control. The Engineer performs testing in accordance with the Concrete Manual and determines testing rates meeting the requirements of the Schedule of Materials Control.

Take samples randomly using ASTM D 3665, Section 5.

Perform testing at the certified ready-mix plant site. Perform additional testing as directed by the Engineer. The Engineer may oversee the quality control sampling process.

Provide equipment and perform calibrations meeting the requirements of the following:

(1) AASHTO T 27, "Sieve Analysis of Fine and Coarse Aggregates,"
(2) AASHTO T 255, "Total Moisture Content of Aggregate by Drying,"
(3) AASHTO M 92, "Wire-cloth Sieves for Testing Purpose," and
(4) AASHTO M 231, "Weighing Devices Used in the Testing of Materials."

F.3.c Gradations

Determine the gradation of the fine aggregates and the coarse aggregates as required by the Contract. Use mechanical shakers for sieve analysis of fine and coarse aggregates.

Identify quality control companion samples with the following information:

(1) Date,
(2) Test number,
(3) Time,
(4) Type of material,
(5) Plant, and
(6) Sampling location.

Document gradation results on MnDOT Form 2449, *Weekly Concrete Aggregate Report.*

Chart all producer gradation results and Department verification gradation results of the coarse aggregate and the No. 8 [2.36 mm], No. 30 [600 µm], and No. 50 [300 µm] sieves of the fine aggregate.

The producer may request a reduction in testing rates as approved by the Engineer, in conjunction with the Concrete Engineer.

If the gradation tests on split samples from quality control or verification samples result in a variation between the producer and the Department greater than that set forth in Table 2461-8, the parties shall follow the procedures for test result dispute resolution available from the MnDOT Concrete Engineering website.

Table 2461-8 Allowable Variations on Percent Passing Sieves	
Sieve Size	**Allowed Percentage**
2 in – ⅜ in [50 mm – 9.5 mm]	± 6
No. 4 – No. 30 [4.75 mm – 600 µm]	± 4
No. 50 [300 µm]	± 3
No. 100 [150 µm]	± 2
No. 200 [75 µm]	± 0.6

F.3.c.(1) Non-conforming Material

Only place concrete meeting the gradation requirements in the work. If the Contractor places concrete not meeting the gradation requirements into the work, the Engineer will not accept nonconforming concrete at the Contract unit price.

For concrete not meeting the required gradation, the Engineer will make determinations regarding the disposition, payment, or removal. The Department will adjust the Contract unit price for the concrete Contract item in accordance with Table 2461-9 and Table 2461-10. When there is not a separate *Structural Concrete* Contract unit price for an item of work or the concrete is a minor component of the Contract unit price, the Department will reduce payment based on a concrete price of $100.00 per cu. yd [$130.00 per cu. m] or the Contractor-provided invoice amount for the concrete in question, whichever is less.

Table 2461-9 General Concrete for Individual Aggregate Fractions Fine and Coarse Aggregate Specification Sieves other than Fine Aggregate No. 200 [75 µm]	
Outside of Specification, %	**Adjusted Contract Unit Price**
≤ 3	The Department will pay 98 percent of the relevant Contract unit price for concrete placed as approved by the Engineer.
4 – 6	The Department will pay 95 percent of the relevant Contract unit price for concrete placed as approved by the Engineer.
7 – 10	The Department will pay 90 percent of the relevant Contract unit price for concrete placed as approved by the Engineer.
> 10	The Department will pay 75 percent of the relevant Contract unit price for concrete placed as approved by the Engineer.

Table 2461-10 General Concrete for No. 200 [75 µm] Sieve of Fine Aggregate	
Outside of Specification, %	**Adjusted Contract Unit Price**
< 0.3	The Department will pay 98 percent of the relevant Contract unit price for concrete placed as approved by the Engineer.
0.4 – 0.6	The Department will pay 95 percent of the relevant Contract unit price for concrete placed as approved by the Engineer.

Table 2461-10 General Concrete for No. 200 [75 µm] Sieve of Fine Aggregate	
Outside of Specification, %	**Adjusted Contract Unit Price**
0.7 – 1.0	The Department will pay 90 percent of the relevant Contract unit price for concrete placed as approved by the Engineer.
> 1.0	The Department will pay for 75 percent of the relevant Contract unit price for concrete placed as approved by the Engineer.

If failure occurs on the fine aggregate No. 200 [75 µm] sieve and on other sieves concurrently, the Department will only reduce the price based on the larger percentage deduction.

The Engineer, in conjunction with the Concrete Engineer, will determine adjusted Contract unit prices for coarse aggregate quality failures in accordance with 1503, "Conformity with Contract Documents," and 1512, "Unacceptable and Unauthorized Work."

F.3.d Moisture Content

Ensure the producer performs the following:

(1) Determines the moisture content using the oven-dry method in all fractions of the aggregate.
(2) Documents moisture tests on MnDOT Form 2152, *Concrete Batching Report.*
(3) Charts the moisture content of each aggregate.

In addition to the oven-dry moisture test, the producer may obtain the moisture content in the fine aggregate using a moisture probe.

To obtain approval for the use of a moisture probe, ensure the producer calibrates the moisture probe before each construction season meeting the requirements of the Concrete Manual. Ensure the producer verifies and charts both the probe moisture content and the oven-dry verification moisture test.

F.3.e Plant Diaries

Provide daily plant diaries in accordance with the Concrete Manual using an approved form from the MnDOT's Concrete Engineering website.

F.3.f Batch Weight Verification

The Engineer will observe the batching process to verify weights shown on the Certificate of Compliance.

The Engineer will observe the actual water batched during each collection of verification gradations in accordance with the following:

(1) Watching the ready-mix truck reverse the drum after washing,
(2) Verifying use of the current moisture test,
(3) Verifying that any additional water added to adjust the slump is recorded, and
(4) Validating water weights on the load batched and comparing the total water with the design water.

The Engineer will document the actual water batched on MnDOT Form 24143, *Weekly Certified Ready-Mix Plant Report* and submit a copy to the Engineer to provide to the Concrete Engineer.

The Engineer will provide plant diaries in accordance with the Concrete Manual.

F.3.g Certificate of Compliance

Provide a computerized Certificate of Compliance with each truckload of ready-mixed concrete at the time of delivery. The Department defines computerized to mean a document that records mix design quantities from load cells and meters.

If the computer that generates the Certificate of Compliance malfunctions, the Engineer may allow the Contractor to finish any pours in progress if the producer issues a handwritten MnDOT Form 0042, *Certificate of Compliance* with each load. Do not allow the producer to begin new pours without a working computerized Certificate of Compliance.

Provide a computerized Certificate of Compliance from the producer for each item of information, including the following:

(1) Name of the ready-mix concrete plant.
(2) Name of the Contractor.
(3) Date.
(4) State Project Number (SP) or (SAP).
(5) Bridge Number (if applicable).
(6) Time concrete was batched.
(7) Truck number.
(8) Quantity of concrete in this load.
(9) Running total of each type of concrete, each day for each project.
(10) Type of concrete (MnDOT Mix Designation Number).
(11) Cementitious materials using MnDOT Standard Abbreviations.
(12) Admixtures using MnDOT Standard Abbreviations.
(13) Aggregate sources using 5 digit State Pit Numbers.
(14) Admixture quantity in fluid ounces per 100 lb [milliliters per kilogram] or ounces per cubic yard [milliliters per cubic meter].
(15) Batch information for materials using MnDOT standardized labels to represent each column in Table 2461-11. Present the information in the order listed across the page (a through k) or print the information using two lines provided that the materials are identified in each line of information.

Table 2461-11 Standardized Certificate of Compliance Labels			
	Formula Letter	**Formula**	**Standard Label**
a	Ingredients (aggregate, cementitious, water, admixtures)	—	Ingredient
b	Product Source (MnDOT Standard Abbreviation)b	—	Source
c	Total Moisture Factor (in decimals to 3 places)	—	MCFac
d	Absorption Factor (in decimals to 3 places)	—	AbsFac
e	MnDOT mix design oven dry (OD) weights, *lb/cu. yd [kg/cu. m]*	—	OD
f	Absorbed moisture in the aggregates, *lb/cu. yd [kg/cu. m]*	(e × d)	Abs
g	Saturated surface dry (SSD) weights for aggregates, *lb/cu. yd [kg/cu. m]*)	(e + f)	SSD
h	Free moisture, *lb/cu. yd [kg/cu. m]*	(c - d) × e	Free Mst
i	Target weights for one cubic yard [cubic meter] of concrete, *lb/cu. yd [kg/cu. m]*	(g + h)	CY Targ [CM Targ]
j	Target batch weights, *lb [kg]*	(cu. yd × i) [cu. m × i]	Target
k	Actual batch weights, *lb [kg]*	—	Actual
NOTE: Actual cubic yards [cubic meters] batched may vary due to differences in air content, weight tolerances, specific gravities of aggregates, and other variables.			

(16) Total Water (Batch Water + Free Moisture) in pounds [kilograms].

(17) Water available to add [(Mix Design Water) × (Target CY (CM)) – Total water] in gallons [liters].

(18) Space to note the water adjustment information, including:

(18.1) Water in gallons [liters] added to truck at plant (filled in by producer, enter zero if no water is added).

(18.2) Water in gallons [liters] added to truck at the jobsite (filled in by producer or Engineer, enter zero if no water is added), and

(18.3) Total actual water in pounds [kilogram] (Total Water from Certificate of Compliance plus any additions).

(19) The following information printed with enough room beside each item to allow the Engineer to record the test results:

(19.1) Air content,

(19.2) Air temperature,

(19.3) Concrete temperature,

(19.4) Slump,

(19.5) Cylinder number,

(19.6) Location or part of structure,

(19.7) Time discharge, and

(19.8) Signature of Inspector.

(20) Location for the signature of the MnDOT Certified Plant 1 Technician representing the producer. The technician will review the first Certificate

of Compliance for each mix type, each day, for accuracy and hand sign the Certificate of Compliance at a location designated for signature signifying agreement to the terms of this policy and to certify that the materials itemized in the shipment comply requirements of the Contract.

F.3.h Decertification

If the Contractor provides concrete from a plant that cannot produce concrete, fails to perform testing, fails to report accurate results, or fails to complete the required documentation, the Engineer may reject the concrete as unacceptable in accordance with 1503, "Conformity with Contract Documents," and 1512, "Unacceptable and Unauthorized Work."

The Concrete Engineer, with coordination from the Engineer, may decertify the plant and halt production of concrete if the producer performs the following:

(1) Procedural changes made after the completion of the Concrete Plant Contact Report and after starting the work that cause non-compliance with the program,
(2) Continually produces concrete in non-compliance with this section,
(3) Completely disregards the requirements of this section, and
(4) Submits fraudulent test reports.

If decertifying the plant, the Concrete Engineer may perform the following:

(1) Revoke plant certification.
(2) Revoke technician certification for individuals involved,
(3) Revoke bidding privileges as determined by the Construction Engineer, and
(4) Criminal prosecution for fraud as determined by the Attorney General.

G Concrete Placement

Do not produce concrete earlier than 60 min before the National Weather Service official sunrise, unless the Engineer approves otherwise.

Place concrete after the Engineer inspects and approves the foundation preparations, forms and falsework erection, placement of reinforcement steel, materials, equipment condition, and cold weather protection.

Do not place concrete if portions of the base, subbase, or subgrade layer are frozen, or if the excessive moisture levels make the grade unstable. Maintain the surface temperature above freezing for forms, steel, and adjacent concrete that will come in contact with the poured concrete before concrete placement.

Protect the concrete from freezing.

Protect the concrete against damage from construction operations or traffic.

Assume full responsibility for the acceptable production, placement, finishing, and curing of all concrete under the conditions prevailing, regardless of the restrictions imposed. Provide any artificial lighting, rain or cold weather protection necessary at no additional cost to the Department. The Engineer may subject any defects in concrete or concrete surfaces resulting from weather conditions, inadequate lighting, or other causes to 1503, "Conformity with Contract Documents," and 1512, "Unacceptable and Unauthorized Work."

G.1 Notice of Inspection

Notify the Engineer at least 24 h before beginning concrete production to allow the Engineer time to provide inspection forces needed for the work and to approve preparations for concrete placement. If the Contractor fails to provide 24 h notice, the Engineer may delay concrete placement in accordance with 1503, "Conformity with Contract Documents" and 1512, "Unacceptable and Unauthorized Work."

If the producer needs to change plants during placement, notify the Engineer and obtain approval before changing the plant.

G.2 Placement Temperatures

Do not place concrete when the air temperature at the point of placement is below 36 °F [2 °C] or is expected to fall below 36 °F [2 °C] within the following 24 h period unless approved cold-weather provisions are in-place. Discontinue concrete placement if the air temperature falls below 36 °F [2 °C].

Maintain concrete at a temperature from 50 °F to 90 °F [10 °C to 30 °C] until placement.

G.3 Delivery Requirements

Place concrete into the work in accordance with the following:

(1) Type 1 Concrete—within 90 min of batching, and
(2) Type 3 Concrete— within 90 minutes of batching when all admixtures are added at the plant at the manufacturer's recommended dosage rates listed on the Approved Products list. If the haul time does not facilitate mixing and placing the concrete within 90 minutes, test the concrete in accordance with 2461.3E1a.

The Contractor may transport Type 3 concrete in non-agitating equipment if the concrete is discharged within 45 min of batching.

Batch time starts when the batch plant or the transit mix truck adds the cement to the other batch materials.

G.4 Field Adjustments

Do not add additional mixing water once the concrete is 60 min old.

Mix the load a minimum of 5 minutes or 50 revolutions at mixing speed after addition of any admixture.

For concrete with slumps of greater than 1 inch (25 mm) do not make water adjustments after approximately 1 cubic yard (**1 m^3**) is discharged.

For concrete with slumps of 1 inch (25 mm) or less, the Engineer will allow water adjustments as necessary to facilitate placement.

The Engineer will test the concrete for compliance with 2461.3.G.6, "Consistency," and 2461.3.G.7, "Air Content," in accordance with the following:

(1) If the test taken by the Engineer passes, the Engineer will continue verification testing in accordance with the Schedule of Materials Control.
(2) If the test taken by the Engineer fails, make adjustments and perform any quality control testing before the Engineer performs a final test. Acceptance or rejection of the truck is based on the Engineer's final test result.
(3) The Engineer will test up to two additional trucks in accordance with items (1) and (2) above.
(4) If the concrete does not meet the specification after those three trucks, the Engineer will reduce their verification testing rate to once per truck for acceptance for the remainder of the pour.

G.5 Test Methods and Specimens

The Engineer will furnish molds based on the maximum size aggregate for the test specimens in accordance with the following:

(1) 4 in × 8 in [100 mm × 200 mm] cylinder molds,
(2) 6 in × 12 in [150 in × 300 mm] cylinder molds for maximum aggregate sizes greater than 1¼ in [31.5 mm], and
(3) 6 in × 6 in × 20 in [150 in × 150 in × 500 mm] beam molds and use other beam mold sizes as approved by the Engineer.

Provide curing tanks of adequate size and number for curing all of the concrete test specimens in accordance with 2031.3.C, "Special Requirements." Supply the curing tanks with heaters to maintain a water temperature of 73 °F ± 3 °F [23 °C ± 2 °C].

If Contractor testing is required by the Contract, perform the following:

(1) Determine the required testing rates in accordance with the Schedule of Materials Control,
(2) Take samples after the first ¼ cu yd [cu. m] and before discharging the last ¼ cu. yd [cu. m] of the batch,
(3) Perform concrete sampling and testing meeting the requirements of the Concrete Manual,
(4) Measure slump and air content, and make strength specimens when placing the concrete,

(5) Record field measurements, including strength specimen identifications on MnDOT Form 2448, *Weekly Concrete Report*, to provide to the Concrete Engineer.

The Engineer will transport the cylinders to the Department's Laboratory for testing.

G.5.a Standard Strength Cylinders

The Department will perform the following for standard strength cylinders:

(1) Cast cylinders for testing at 28 days,
(2) Mark cylinders for identification of the represented unit or section of concrete,
(3) Cure the cylinders meeting the requirements of the Concrete Manual, and
(4) Submit cylinders and a completed cylinder identification card to the Department's Laboratory.

The producer of precast units is responsible for casting standard strength cylinders.

G.5.b Control Strength Cylinders

The Engineer will use control cylinders to determine when the sequence of construction operations is dependent upon the rate of concrete strength development. The Engineer will cast control cylinders to determine when the concrete attains the required strength for all desired control limitations. The Contractor is responsible for any additional control cylinders beyond the requirements of 2461.3.G.5.b (1).

The Department will perform the following for control strength cylinders:

(1) Cast up to three (3) control cylinders.
(2) Cure the cylinders in the same location and under the same conditions as the concrete structure or unit involved meeting the requirements of the Concrete Manual,
(3) Mark control cylinders for identification of the represented unit or section of concrete, and
(4) Submit cylinders and a completed cylinder identification card to the Department's Laboratory.

If the Department is unavailable to test the control cylinders, the Contractor shall submit the control cylinders to an independent testing facility for testing or perform the testing on the control cylinders on a portable mechanical or hydraulic testing machine checked and calibrated with a standard proving ring as approved by the Engineer and in the presence of the Engineer.

The producer of precast units is responsible for casting control strength cylinders.

G.5.c Strength Specimens for Concrete Paving

Use flexural beams to determine strength or provide cylinders as allowed by the Contract or approved by the Engineer.

Cast standard beams or cylinders for testing at 28 days.

Cast a sufficient number of control beams or cylinders to determine when the concrete attains the required strength for all desired control limitations.

Cure the standard beams or cylinders meeting the requirements of the Concrete Manual.

Cure the control beams or cylinders in the same location and under the same conditions as the concrete structure or unit involved meeting the requirements of the Concrete Manual.

The Engineer will test the flexural beams and record the results on MnDOT Form 2162, *Concrete Test Beam Data.*

If using cylinders, the Engineer will submit cylinders and a completed identification card to the Department's Laboratory.

G.6 Consistency

The Engineer will test the concrete for consistency using the slump test during the progress of the work. The Department may reject concrete batches with consistencies outside of the slump range in accordance with Table 2461-10. If any test shows the slump in excess of the upper limit of the slump range, the Engineer will reject the concrete represented by that test unless the Contractor makes adjustments to the concrete before use.

Adjust the slump within the allowable range to optimize both placement and finishing.

If not using a Department approved Type A water reducer at the manufacturer's recommended dosage rates listed on the Approved/Qualified Products List, meet the slump values for the slump range without water reducer in accordance with Table 2461-12.

If using an Department approved Type A water reducer at the manufacturer's recommended dosage rates listed on the Approved/Qualified Products List, meet the slump values for the slump range with water reducer in accordance with Table 2461-12.

Table 2461-12 Slump Range Designation		
Slump Designation	**Slump Range without Water Reducer, *in [mm]***	**Slump Range with Water Reducer, *in [mm]***
1	½ – 1 [12 – 25]	½ – 1 [12 – 25]
2	1 – 2 [25 – 50]	1 – 3 [25 – 75]
3	1 – 3 [25 – 75]	1 – 4 [25 – 100]
4	2 – 4 [50 – 100]	2 – 5 [50 – 125]
5	2 – 5 [50 – 125]	2 – 6 [50 – 150]
6	3 – 6 [75 – 150]	3 – 7 [75 – 175]

Contact the Engineer if encountering unusual placement conditions that render the specified slump range unsuitable. The Department will provide mix composition modifications for Department designed mixes to provide the desired change in consistency while maintaining the other specified properties of the concrete mix. Do not add water solely to temporarily facilitate the placement of concrete.

G.6.a Concrete Placed by the Slip-Form Method

Place concrete that does not slough and is adequately consolidated at a slump value that optimizes placement for the designated mixture.

G.6.b Non-Conforming Material

Only place concrete meeting the slump requirements in the work. If the Contractor places concrete not meeting the slump requirements into the work, the Engineer will not accept non-conforming concrete at the Contract unit price.

For concrete not meeting the required slump, the Engineer will make determinations regarding the disposition, payment, or removal. The Department will adjust the Contract unit price for the Contract item of the concrete in accordance with Tables 2461-13, 2461-14, 2461-15 and 2461-16. When there is not a separate Contract unit price for *Structural Concrete* for an item of work or the concrete is a minor component of the Contract unit price, the Department will reduce payment based on a concrete price of $100.00 per cu. yd [$130.00 per cu. m] or the Contractor-provided invoice amount for the concrete in question, whichever is less.

Table 2461-13 General Concrete*	
Outside of Slump Range	**Adjusted Contract Unit Price**
Below slump range*	The Department will pay 95 percent of the relevant Contract unit price for materials placed as approved by the Engineer.
≤ 1½ in [40 mm] above slump range	The Department will pay 75 percent of the relevant Contract unit price for materials placed as approved by the Engineer.

Table 2461-13 General Concrete*	
Outside of Slump Range	**Adjusted Contract Unit Price**
1¾ in [45 mm] – 2¼ in [55 mm] above slump range	The Department will pay 50 percent of the relevant Contract unit price for materials placed as approved by the Engineer.
> 2¼ in [55 mm] above slump range	The Department will pay 25 percent of the relevant Contract unit price for materials placed as approved by the Engineer
* If the Contractor places piling or footing concrete below the slump range, the Department will deduct $100 per cu. yd [$130 per cu. m] or the Contractor-provided invoice amount to the relevant Contract unit price of the concrete represented by the slump test, whichever is less. The Department will not reduce Contract unit price for low slump concrete placed with the slip-form method as approved by the Engineer.	

Table 2461-14 Bridge Deck Concrete	
Outside of Slump Range	**Adjusted Contract Unit Price**
Below slump range	The Department will pay 95 percent of the relevant Contract unit price for materials placed as approved by the Engineer.
≤ 1½ in [40 mm] above slump range	The Department will pay 75 percent of the relevant Contract unit price for materials placed as approved by the Engineer.
> 1½ in [40 mm] above slump range	The Department will pay 25 percent of the relevant Contract unit price for materials placed as approved by the Engineer.

Table 2461-15 Low Slump Bridge Deck Concrete From ½ in to 1 in [12 mm to 25 mm]	
Outside of Slump Range	**Adjusted Contract Unit Price**
Below slump range	No deduction for materials placed as approved by the Engineer.
≤ ½ in [12 mm] above slump range	The Department will pay 50 percent of the relevant Contract unit price for materials placed as approved by the Engineer.
> ½ in – ¾ in [12 mm – 20 mm] above slump range	The Department will not pay for concrete placed but will allow the concrete to remain in place as approved by the Engineer.
> ¾ in [20 mm] above slump range	The Department will not pay for concrete. Provide additional testing as directed by the Engineer to determine if the concrete can remain in place or is subject to removal and replacement.

Table 2461-16 Low Slump Concrete — Patching From ½ in to 1 in [12 mm to 25 mm]	
Outside of Slump Range	**Adjusted Contract Unit Price**
Below slump range	No deduction for materials placed as approved by the Engineer
≤ ½ in [12 mm] above slump range	The Department will pay 75 percent of the relevant Contract unit price for materials placed as approved by the Engineer.
≥ ¾ in [20 mm] above slump range	The Department will pay 25 percent of the relevant Contract unit price for materials placed as approved by the Engineer.

G.7 Air Content

Maintain the air content of Type 3 general concrete at the specified target of 6.5 percent ±1.5 percent of the measured volume of the plastic concrete in accordance with 1503, "Conformity with Contract Documents."

Make any adjustments immediately to maintain the desired air content.

Measure the air content at the point of placement but before consolidation.

G.7.a Non-Conforming Material

Only place Type 3 concrete meeting the air content requirements in the work. If the Contractor places Type 3 concrete not meeting the air content requirements into the work, the Engineer will not accept non-conforming concrete at the Contract unit price.

For concrete not meeting the required air content, the Engineer will make determinations regarding the disposition, payment, or removal. The Department will adjust the Contract unit price for the Contract item of the concrete in accordance with Table 2461-17. When there is not a separate Contract unit price for *Structural Concrete* for an item of work or the concrete is a minor component of the Contract unit price, the Department will reduce payment based on a concrete price of $100.00 per cu. yd [$130.00 per cu. m] or the Contractor-provided invoice amount for the concrete in question, whichever is less.

Table 2461-17 General Concrete (Target Air Content 6.5%)	
Air Content, %	**Adjusted Contract Unit Price**
> 10.0	The Department will pay 75 percent of the Contract unit price for the concrete represented for material placed as approved by the Engineer.
>8.0 – 10.0	The Department will pay 95 percent of the Contract unit price for the concrete represented for material placed as approved by the Engineer.
5.0 – 8.0	The Department will pay 100 percent of the Contract unit price for the concrete represented, for material placed as approved by the Engineer.
>4.0 – <5.0	The Department will pay 75 percent of the Contract unit price for the concrete represented for material placed as approved by the Engineer.
>3.5 – 4.0	The Department will pay 25 percent of the Contract unit price for the concrete represented and placed as approved by the Engineer. If the Engineer, in conjunction with the Concrete Engineer, determines the surface is exposed to freeze-thaw cycling, coat the concrete with an approved epoxy penetrant sealer from the Approved/Qualified Products List.
≤ 3.5	Remove and replace concrete in accordance with 1503, "Conformity with Contract Documents," and 1512, "Unacceptable and Unauthorized Work," as directed by the Engineer. If the Engineer, in conjunction with the Concrete Engineer, determines the concrete can remain in place, the Engineer will not pay for the concrete and if the Engineer determines the surface is exposed to salt-brine freeze-thaw cycling, coat with an approved epoxy penetrant sealer from the Approved/Qualified Products List.

G.8 Allowable Testing Tolerances

Allowable tolerances are based on the results from two different testers and two different pieces of equipment from the same sample. Perform the test within the allowable tolerances in accordance with Table 2461-18.

Table 2461-18 Allowable Testing Tolerances	
Test	**Allowable Tolerance**
Air content, % volume of concrete	1.0
Average slump:	
≤ 4 in [100 mm]	1.0 in [25 mm]
4 in – 6 in [100 mm – 150 mm]	1.5 in [38 mm]
≥ 6 in [150 mm]	2.0 in [50 mm]
Unit weight, per cu. ft [cu. m], calculated to an air-free basis	1.0 lb/cu. ft [16 kg/cu. m]
Compressive strength 3,000 psi – 8,000 psi [20.6 MPa – 55.2 MPa], average of 3 tests	500 psi [3.4 MPa]

2461.4 METHOD OF MEASUREMENT

The Engineer will measure fresh concrete produced as required by the Contract by the theoretical volume. The Engineer will deduct accountable waste from the concrete measurement.

The Engineer will measure concrete mixtures on the basis of the dimensions of the structure shown on the plans. If the plans do not include a Contract item for concrete used in miscellaneous items, include the cost of the concrete with the relevant Contract items.

2461.5 BASIS OF PAYMENT

The Department will include the cost of the Certified Ready-Mix Plant Program with other relevant Contract items.

The Contract cubic yard [cubic meter] price for Structural Concrete (3Y43) includes the cost of production, placement, finishing, curing, and protection of concrete.

The Department will pay for structural concrete on the basis of the following schedule:

Item No.:	Item:	Unit:
2461.501	Structural Concrete (3Y43)	cubic yard [cubic meter]

SB -12. (2471) STRUCTURAL METALS

The provisions of Mn/DOT 2471 are modified and/or supplemented with the following:

Delete the fourth paragraph of 2471.3A2 and substitute the following:

The Contractor/Fabricator performing coating application must demonstrate qualification by obtaining the AISC Sophisticated Paint Endorsement (SPE), the SSPS QP Certification, or a Quality Control Plan (QCP) that is acceptable to the Engineer.

Add the following to the end of the second paragraph of 2471.3C:

The Engineer will audit suppliers with approved QCP's on a biannual or annual basis or as deemed necessary by the Engineer to determine if the QCP is being implemented. The Department will invoke its Corrective Action Process if the audit indicates non-conformance. Corrective action, up to and including the supplier hiring a third party Quality Control Inspector, may be required as a disciplinary step, at no cost to the Department. A copy of the Departments Corrective Action Process is available from the Engineer.

Add the following to 2471.3E1 as the first paragraph:

Steel plates and splice plates for major structural components shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile or compressive stresses.

Add the following to 2471.3F:

F1b Web-to-Flange Welds

For the purpose of this specification, a repair is defined as any area of the welded product not in compliance with the current edition of AASHTO AWS D1.5 Bridge Welding Code. Limit each individual web-to-flange weld repairs to 2 percent of the weld length and grinding web-to-flange weld repairs to 5 percent of the weld length. Exceeding these limits will result in revocation of the Welding Procedure Specification (WPS) used to perform the initial production welding.

Add the following as 2471.3G1:

G1 Fracture Critical Welder Qualifications

Fracture Critical Welder Qualifications shall be in accordance with AASHTO/AWS D1.5-Bridge Welding Code. Annual requalification shall be based upon acceptable radiographic test results of either a production groove weld or test plate. If a welder is requalified by test, a WPS written in accordance with the requirements of D1.5, shall be used and the test plate shall be as shown in Figure 5.24. The WPS shall be included in the Fabricators QCP.

Add the following to 2471.3N1:

Work that is not performed in accordance with the suppliers approved QCP shall be subject to rejection in accordance with 1512.

SB -13. (2472) METAL REINFORCEMENT

The provisions of MnDOT 2472 are modified and/or supplemented with the following:

Delete Table 2472-2 from 2472.4A and substitute the following sentence and table:

Reinforcement bars may be marked in either U.S. Customary or Metric sizes. The conversion shall be made per the following table:

Table 2472-2 Reinforcement Bars Theoretical Weights Nominal Dimensions

U.S. Customary Bar Size	Metric Bar Size*	Diameter, *in [mm]*	Weight, *lb/ft [kg/m]*
3	10	0.375 [9.5]	0.376 [0.560]
4	13	0.500 [12.7]	0.668 [0.994]
5	16	0.625 [15.9]	1.043 [1.552]
6	19	0.750 [19.1]	1.502 [2.235]
7	22	0.875 [22.2]	2.044 [3.042]
8	25	1.000 [25.4]	2.670 [3.973]
9	29	1.128 [28.7]	3.400 [5.060]
10	32	1.270 [32.3]	4.303 [6.404]
11	36	1.410 [35.8]	5.313 [7.907]
14	43	1.693 [43.0]	7.650 [11.380]
18	57	2.257 [57.3]	13.600 [20.240]

* Bar designation numbers approximate the nominal diameter of the bar in millimeters

SB -14. (2511) RIPRAP – GEOTEXTILE FILTER TYPE IV (MODIFIED)

The provisions of MnDOT 2511 are modified and/or supplemented with the following:

SB-14.1 Adhere to 2511.2 and 3733 material requirements except as modified below:

Modify 3733.2A as follows:

Delete the first sentence of the first paragraph and replace with the following:
Use non-woven needle punched fabric for geotextile.

Modify 3733.2B as follows:

Delete the first sentence of section and replace with the following:

Geotextile property requirements are the same as shown in Table 3733-1 except as modified below:

Table 3733-1 (Modified):

Geotextile Property	Test Method (ASTM) Units	Type *(A)* IV
B1 Grab Tensile Strength minimum, each principal direction	D4632 kN **(pounds)**	1.45 **(315)**

SB-14.2 Delete the second paragraph of 2511.3A and replace with the following:

Place riprap on a filter material, to the thickness and extent specified in the plans.

Delete the last paragraph of 2511.3B2 and replace with the following:

Place Geotextile Filter as shown in the Plans.

SB-14.3 Geotextile filter included in bid for Item 2511.501 "Quarry Run Riprap Class IV".

SB -15. (3371) STEEL SHELLS FOR CONCRETE PILING

The provisions of Mn/DOT 3371.2 are modified and/or supplemented with the following:

The fourth and fifth paragraphs of 3371.2 are hereby deleted and the following substituted therefore:

Piling that will receive a painted finish as per Mn/DOT 2452.3J or a galvanize finish as per 3394 shall be, at the time of coating, visually examined and shall be free of any weld contour, defects or deleterious matter that would adversely affect the coating in the finished condition.

Pipe containing an as described defect shall be given one of the following dispositions:

a. The visible welds, "flash" of trimmed welds or other defects shall be removed by grinding in such a way that the ground area blends in smoothly with the contour of the pipe. Complete removal of the defect shall be verified by visual inspection of the ground area, and the wall thickness in the ground area shall not be adversely affected.
b. The section of pipe containing the defect shall be cut off.
c. The entire pipe shall be rejected.

Add the following to 3371.3:

The use of small quantities of piling from the Contractor's surplus of cut-offs and overruns may be submitted for use and approved by the Engineer. These materials shall be certified by the Contractor to be remaining quantities of materials previously submitted with accompanying Mill Test Reports and subsequently approved for use on other projects. Pile splices used to make up authorized pile lengths shall be considered to have been made at the Contractor's convenience and shall not be considered eligible for extra compensation under 2452.4B.

SB -16. (3391) FASTENERS

Delete the contents of 3391.2B and substitute the following:

Field and shop bolts for steel bridges shall meet ASTM A325, Type 3 bolts. The bolts shall project through the nut not less than 3 mm (**1/8"**) nor more than 10 mm (**3/8"**). Field and

shop nuts for steel bridges shall meet ASTM A563/A563M, Grade C3 or DH3 nuts and field and shop washers for steel bridges shall meet ASTM F436/F436M, Type 3 washers.

For all other bridges and structures the bolts shall meet ASTM A325, Type 1 (for painted and/or galvanized applications) or Type 3 (for unpainted weathering steel applications). The bolts shall project through the nut not less than 3 mm (**1/8"**) nor more than 10 mm (**3/8"**). The nuts shall meet ASTM A563/A563M and the washers shall meet ASTM F436/F436M.

ASTM A325 bolts may only be retightened once after having been previously fully tightened.

At the time of installation of fasteners, all nuts, regardless of their specified finish, shall be lubricated with a lubricant of contrasting color as per ASTM A 563 Supplementary requirements S1, S2, and S3.

SB-16.1 Delete the first two sentences of 3391.2E and add the following:

Stainless steel bolts are to meet the requirements of ASTM F 593, Condition CW1, Type 304, 316, or 316L, with a minimum yield strength of 415 MPa (**60,000 psi**), an ultimate tensile strength of 660 MPa (**95,000 psi**), and a minimum elongation of 20 percent in 50 mm (**2 inches**). The nuts are to meet the requirements of ASTM F 594, Condition CW1, Type 304, 316, or 316L.

NOTIFICATION FORM ON DISPOSAL OF BRIDGE STEEL

The Contractor is required to provide certain information on disposal of bridge steel which has been painted with lead-based paint. By signing this document, the Contractor certifies that information supplied by the Contractor is correct and that the Contractor is familiar with proper handling and disposal of materials with lead-based paint. This information must be furnished to the Project Engineer a minimum of 30 days prior to removal of the bridge steel from the project site. Any change in method or location of disposal would require resubmittal and a 30 day notice.

MnDOT Project No. _____ **Bridge No.**_____

Description of Bridge Steel _____

Paint System is MnDOT Spec. _____ , _____
(Primer) **(Top Coat)**

Project Engineer: _____

Contractor/Subcontractor: _____
(Name, mailing address, telephone no.)

_____

I _____ certify that the following information is correct:
(print name of authorized representative)

The above bridge steel will be disposed of by the following method(s): _____
(list name,

_____
address and telephone no. of recipient, estimated delivery date, and intended use.)

_____

_____

I also certify that _____ is familiar with
(Contractor/Subcontractor name)
the requirements in OSHA 29 CFR 1926.62 relating to lead, precautions to be taken when working with lead, and proper handling and disposal of materials with lead-based paint systems and that _____ has been notified of the presence of lead-based paint.
(name of recipient)

_____ _____
(signature) **(date)**

Received by Project Engineer/Inspector: _____ _____
(date) **(signature)**

cc: Project File
Office of Environmental Services

NOTIFICATION FORM ON OWNERSHIP TRANSFER OF TREATED WOOD

The prospective buyer identified below has expressed interest in obtaining treated wood from Mn/DOT for reuse/recycling. Treated wood can include, but is not limited to: copper chromium arsenic (CCA), ammoniacal copper quat (ACQ), copper azole, ammoniacal copper citrate, creosote, and pentachlorophenol (PCP or penta). By signing this document, the buyer certifies that he or she is familiar with proper handling and disposal of this material. The buyer must complete this form to Mn/DOT's satisfaction prior to removal of any treated wood. Any change in the method or location of re-use of the materials would require re-submittal and approval.

Source of treated wood:_____

Mn/DOT Contract:_____

Buyer:_____
(name, company, mailing address, telephone number)

_____

I_____ certify that the following information is correct:
(Print name of authorized buyer)

The above treated wood will be reused in the following manner:_____

_____

_____

I also certify that _____ is familiar with Local, State and
(buyer name)
Federal requirements, including the Minnesota Pollution Control Agency fact sheet "Treated Wood: Use, Disposal and Alternatives for Businesses", regarding proper handling and disposal of treated wood and the buyer has been notified of this.

_____ _____
(buyers signature) (date)

Received by Mn/DOT representative:_____
(print name)

_____ _____
(signature) (date)

cc: District File
Office of Environmental Services (Mail stop 620)

OWNERSHIP TRANSFER

DESCRIPTION	QUANTITY	DATE TRANSFERRED	COMMENTS

Minnesota Pollution Control Agency Notification of Intent to Perform a Bridge Demolition For Mn/DOT Operations.

Minnesota Pollution Control Agency

Type of Notification: [ ] Original [ ] Amended [ ] Project Cancellation

Notification must be postmarked or received ten (10) WORKING days before demolition begins.

Demolition Contractor:

Name:_____

Address:_____

_____

City, State, Zip:_____

Contact Person:_____

Phone Number(s):_____

Bridge Owner:

Name:_____

Address:_____

_____

City, State, Zip:_____

Contact person:_____

Phone Number(s):_____

Bridge Information:

Bridge Number:_____

Mile Point/Trunk Highway:_____

Miles and direction (N,E,W,S) From Nearest Town:_____

_____.

County:_____

Project Engineer Phone Number(s):_____

Age of Brdg. (years):_____ Size of Brdg. (sq. ft.):_____

Type of Bridge:_____

Suspect Materials to be checked for asbestos: pipes, asphalt underlay, spray-on application, and joint compounds.

Dates when demolition will Begin _____ & End _____.

Both Beginning and Ending dates should be amended in writing as necessary to reflect current project dates.

Check as appropriate:

☐ There is no Asbestos Containing Material (ACM) present in the structure to be demolished

☐ ACM will be removed prior to or during demolition (attach MPCA asbestos notification form)

1. Provide name of company and/or individual that conducted the bridge assessment, MDH certification # and procedure used to determine presence or absence of ACM (including analytic method): _____

_____

2. Description of planned demolition and the specific method(s) that will be used:_____

_____

Demolition Material should be recycled on site or sent to a metal scrap recycler. Information must be provided on the following items 3 and 4 for any material not recycled:

3. Demolition Waste Transporter(s):

Transporter Name:_____

Transporter Contact:_____

Transporter Address:_____

City, State, Zip:_____

Phone Number:_____

4. Demolition Waste Disposal Site:

Landfill Name:_____

Owner/Operator:_____

Address/Location:_____

City, State, Zip:_____

Phone Number:_____

5. I certify that the above information is correct and I am a bonafide representative of the demolition contractor or bridge owner and have authority to enter into agreements for my employer. In event that unexpected asbestos containing material is found, the material will be removed by a MDH certified asbestos abatement contractor.

Signature of Contractor, Owner Agent_____ **Date**_____

Send to: Minnesota Pollution Control Agency Regional Environmental Management Division 520 Lafayette Road N. St. Paul, MN 55155-4194	CC: Mn/DOT (att. Mark Vogel) Mail Stop 620 395 John Ireland Boulevard St. Paul, MN 55155-3000	For questions call: 651-284-3790

PCB Removal Information *Polychlorinated Biphenyls (PCBs) will be removed from the bridge prior to demolition.*

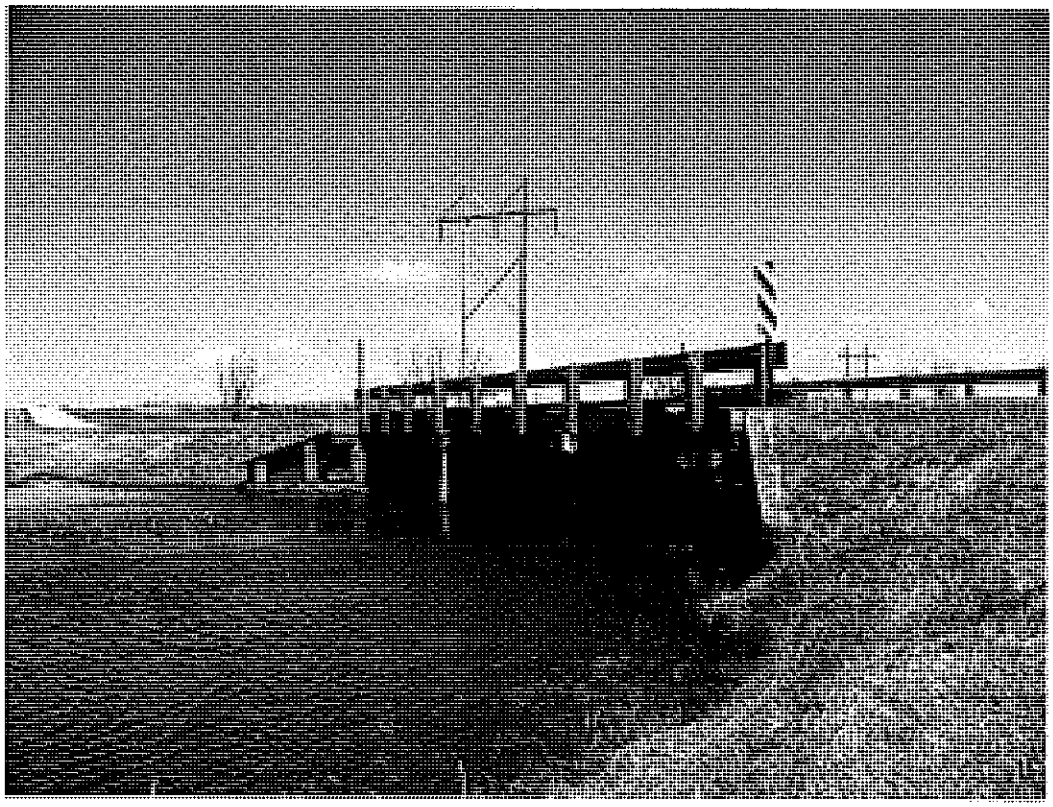
Mercury Removal Information *Material containing mercury will be removed from the bridge prior to demolition.*

Treated Wood and Lead Plates *Will be removed from the bridge prior to demolition or separated during demolition.*

Peeling or Loose Lead Paint *Will be encapsulated or removed prior to demolition.*

ASBESTOS & REGULATED WASTE ASSESSMENT REPORT

BRIDGE# 42513
SODUS TOWNSHIP
LYON COUNTY, MN



Prepared for:

Lyon County Highway Department
Suhail Kanwar, P.E., County Engineer
June 8, 2011

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Site Specifics & Certifications

Bridge No.:	**42513**
Location:	**On CSAH 7 over Big Cottonwood River, 1.2 Mi. South of Jct. CSAH 2, in Sodus Township, Lyon County, Minnesota; Sec 32, T110N, R41W.**
Type of Structure:	**Bridge # 42513 is a 31.7' x 54.5', three span, timber slab span bridge built in 1967.**
Railing:	**Galvanized steel W-beam guardrail on treated timber posts. No visible paint system in place on entire structure.**
Decking:	**Treated timber slab span decking with asphalt surface.**
Superstructure:	**Treated timber deck. Asphalt surface with no membrane present per MN/DOT Structure Inventory Report dated 04/13/2011, and site inspection 04/28/2011.**
Substructure:	**Treated timber piling with timber caps in all bents. 9 Pile in each abutment; 7 pile in each pier; 2 pile in each wing wall; . See Inspection Report dated 11/02/2010.**
Current Owner:	**Lyon County.**
Disposition of Structure:	**Demolition**
Licensure:	**MDH Certified Asbestos Inspector, Ernest G. Fiala, P.E. Conducted this Inspection (See Appendix IV).**
Certification:	**The undersigned certifies that this asbestos inspection was performed on April 28, 2011, in compliance with MN Rules 4620.3460.**

This report was compiled under my direct supervision.
I have reviewed the report's contents and find it to meet
MN/DOT requirements as described in the "Asbestos & Regulated Waste Manual for Structure Demolition or Relocations for Construction Projects."

_____

Ernest G. Fiala, P.E. Reg. No. 18480
MDH Asbestos Inspector #AI10135

Summary of all Asbestos & Regulated Waste & Actions Required for this Demolition

Based on a field inspection, the following conclusions are summarized for Asbestos & Regulated Waste Assessment. Applicable items listed below should be removed and/or stabilized prior to demolition of Bridge # 42513.

2.1 Asbestos Summary

Sample AB-1 was taken from the mastic material covering the top of wing wall pile at the NE corner of bridge and lab results indicated a presence of 10% Chrysotile.

Sample AB-2 was taken from the mastic material covering the top of wing wall pile at the SE corner of bridge and lab results indicated a presence of 10% Chrysotile. This is typical of all the pile tops where the mastic was used. Laboratory test results are included in Appendix IV and pictures of sample locations are included in Appendix I.

2.2 Lead Summary

Sample L-I was taken from the metal pile cap covering on NE abutment pile and indicated a lead presence of 0.069%.

Sample L-2 was taken from the metal pile cap covering on SE abutment pile and indicated a lead presence of 0.070%.

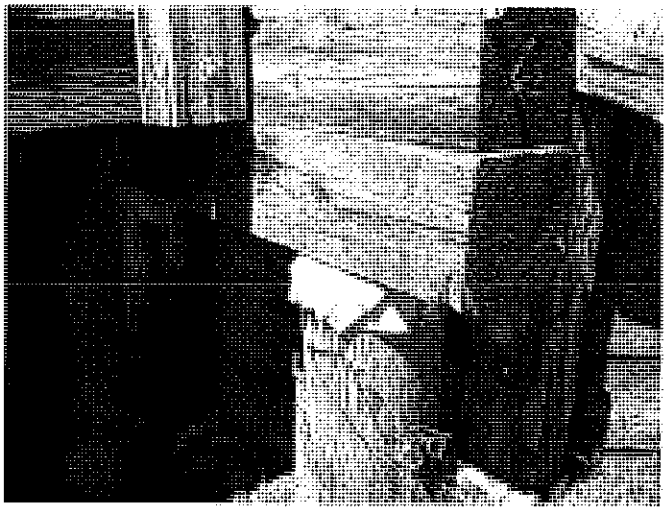
Pictures of sample locations are included in Appendix I.

2.3 Regulated Waste Summary

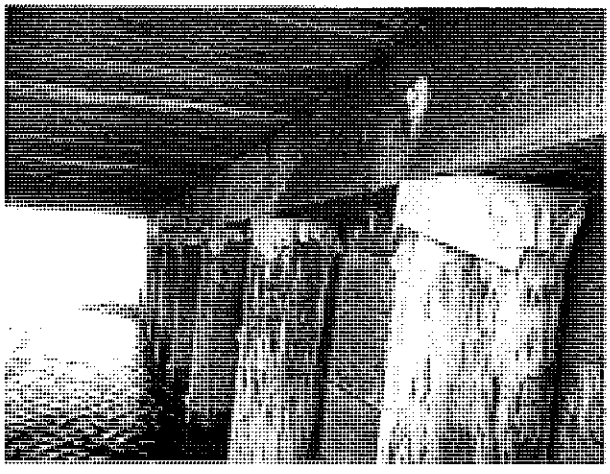
The following Regulated Waste was observed on or in the vicinity of the bridge.

- **2.3.1 Mercury – None**
- **2.3.2 PCBs – None**
- **2.3.3 CFCs – None**
- **2.3.4 Treated wood – The timber slab, beams, columns, caps and wingwalls are all considered Treated Wood and must be handled as regulated waste in accordance with MN/DOT Guidelines, see Appendix VII. Photos of locations are included in Appendix I.**
- **2.3.5 Household Hazardous Waste - None.**
- **2.3.6 White Goods - None.**
- **2.3.7 Solid Waste - None.**

Appendix I
Sample Location Photographs



Sample L-1. Lead sample from abutment pile cap at NE corner of bridge.



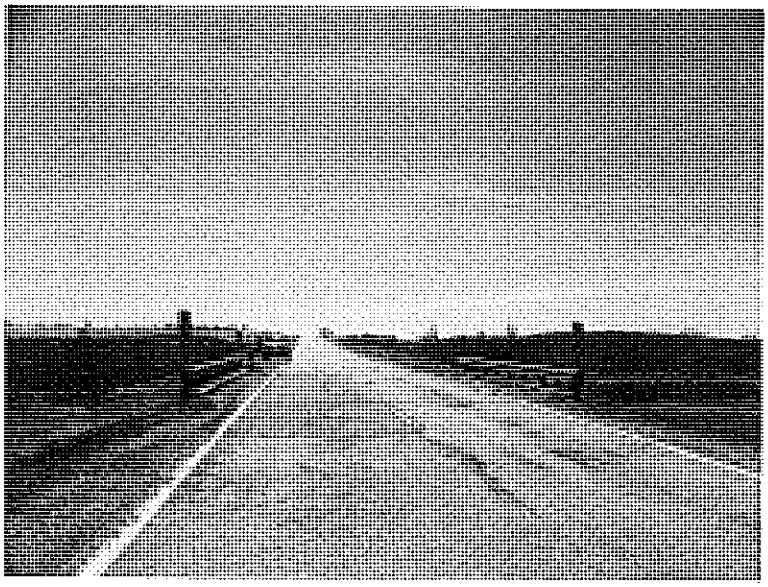
Sample L-2. Lead sample from Abutment pile cap at SE corner of bridge. Typical all abutment and pier piles.

. Sample AB-1. Asbestos sample from wing wall pile NE corner of Bridge.

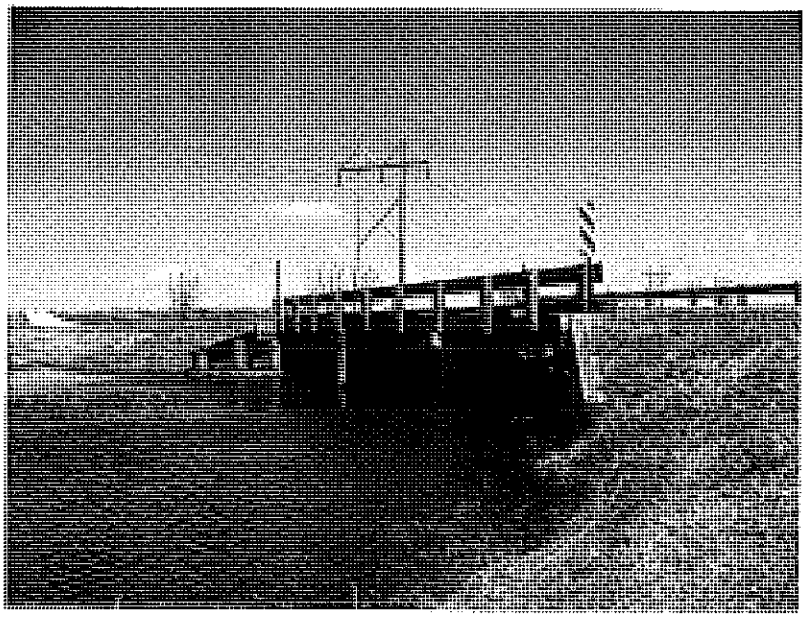
Sample AB-2. Asbestos sample from wing wall pile at SE corner of bridge.

Appendix II
Site Location Photographs

South approach to bridge looking North.



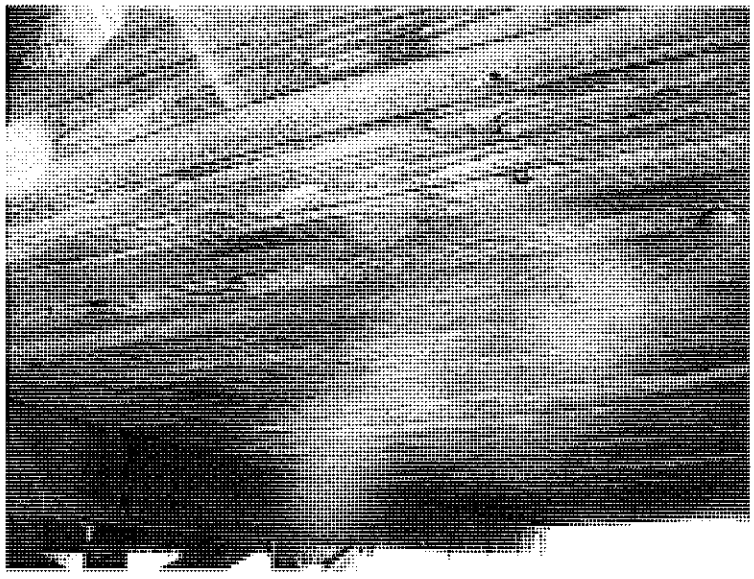
North approach to bridge looking South.



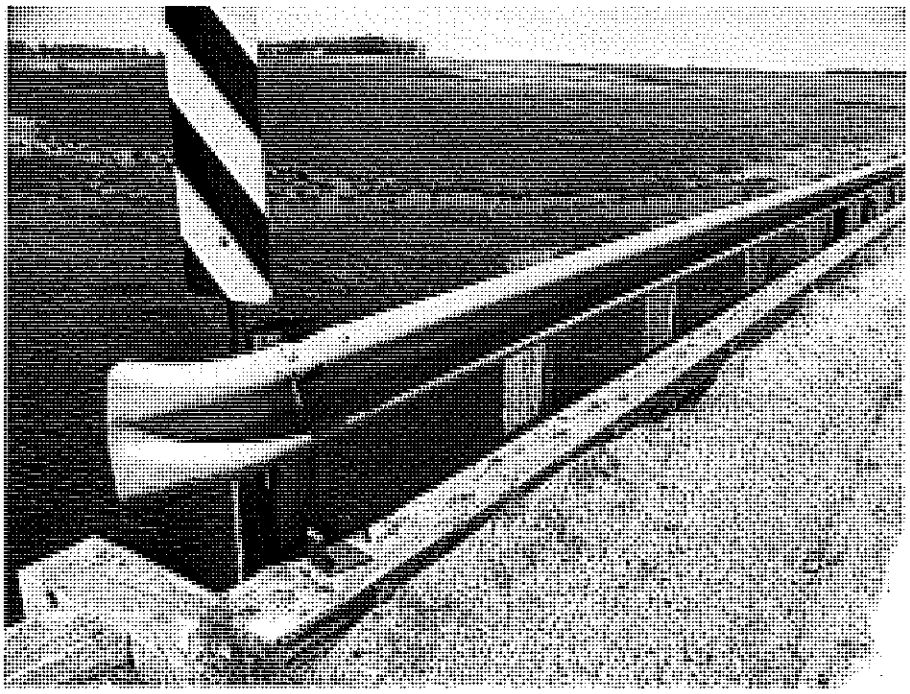
West side of bridge.

East side of bridge.

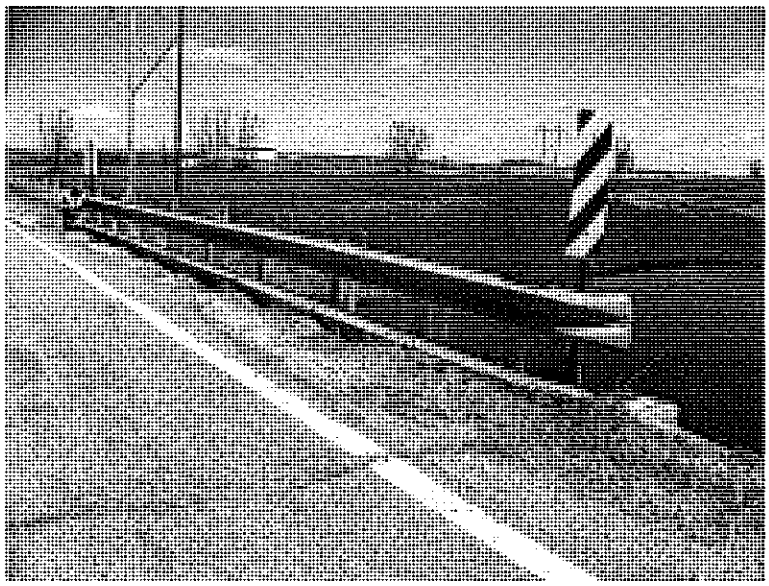
South abutment showing Sheet metal pile caps. Typical.



Timber slab span deck.



Galvanized w-beam guardrail on timber posts with no paint system in place. West side of bridge.



W-beam guardrail on East side of bridge.

Appendix III
MN/DOT Structure Inventory and Bridge Inspection Reports

Mn/DOT Structure Inventory Report

Bridge ID: 42513 CSAH 7 over BIG COTTONWOOD RIVER Date: 04/13/2011

+ GENERAL +		+ ROADWAY +		+ INSPECTION +	
Agency Br. No. S2		Bridge Match ID (TIS) 1		Deficient Status S.D.	
District 8 Maint. Area		Roadway O/U Key 1-ON		Sufficiency Rating 69.8	
County 42 - LYON		Route Sys/Nbr CSAH 7		Last Inspection Date 11-02-2010	
City		Roadway Name or Description		Inspection Frequency 12	
Township SODUS		CSAH 7		Inspector Name LYON	
Desc. Loc. 1.2 MI S OF JCT CSAH 2		Roadway Function MAINLINE		Structure A-OPEN	
Sect., Twp., Range 32 - 110N - 41W		Roadway Type 2 WAY TRAF		+ NBI CONDITION RATINGS +	
Latitude 44d 17m 43.98s		Control Section (TH Only)		Deck	6
Longitude 95d 48m 58.76s		Ref. Point (TH Only)		Superstructure	6
Custodian COUNTY		Date Opened to Traffic		Substructure	4
Owner COUNTY		Detour Length 3 mi.		Channel	6
Inspection By LYON COUNTY		Lanes 2 Lanes ON Bridge		Culvert	N
BMU Agreement		ADT (YEAR) 738 (2008)		+ NBI APPRAISAL RATINGS +	
Year Built 1967		HCADT		Structure Evaluation	4
Year Fed Rehab		Functional Class. RUR/MAJOR COLL		Deck Geometry	6
Year Remodeled		+ RDWY DIMENSIONS +		Underclearances	N
Temp		If Divided NB-EB SB-WB		Waterway Adequacy	8
Plan Avail. NO PLAN		Roadway Width 30.4 ft		Approach Alignment	9
+ STRUCTURE +		Vertical Clearance		+ SAFETY FEATURES +	
Service On HIGHWAY		Max. Vert. Clear.		Bridge Railing 0-SUBSTANDARD	
Service Under STREAM		Horizontal Clear.		GR Transition 0-SUBSTANDARD	
Main Span Type TIMB SLAB SPAN		Lateral Clr. - Lt/Rt		Appr. Guardrail 0-SUBSTANDARD	
Main Span Detail		Appr. Surface Width 28.0 ft		GR Termini 0-SUBSTANDARD	
Appr. Span Type		Roadway Width 30.4 ft		+ IN DEPTH INSP. +	
Appr. Span Detail		Median Width		Frac. Critical	
Skew		+ MISC. BRIDGE DATA +		Underwater	
Culvert Type		Structure Flared NO		Pinned Asbly.	
Barrel Length		Parallel Structure NONE		Spec. Feat.	
Number of Spans		Field Conn. ID		+ WATERWAY +	
MAIN: 3 APPR: 0 TOTAL: 3		Cantilever ID		Drainage Area	
Main Span Length 18.4 ft		Foundations		Waterway Opening 400 sq ft	
Structure Length 54.5 ft		Abut. TIMBER - PILE BENT		Navigation Control NO PRMT REQD	
Deck Width 31.7 ft		Pier TIMBER - PILE BENT		Pier Protection NOT APPL	
Deck Material TIMBER		Historic Status NOT ELIGIBLE		Nav. Vert./Horz. Clr.	
Wear Surf Type BITUMINOUS		On - Off System ON		Nav. Vert. Lift Bridge Clear.	
Wear Surf Install Year		+ PAINT +		MN Scour Code I-LOW RISK	
Wear Course/Fill Depth 0.29 ft		Year Painted Pct. Unsound		Scour Evaluation Year 1991	
Deck Membrane NONE		Painted Area		+ CAPACITY RATINGS +	
Deck Protect. N/A		Primer Type		Design Load H 20	
Deck Install Year		Finish Type		Operating Rating HS 44.29	
Structure Area 1,728 sq ft		+ BRIDGE SIGNS +		Inventory Rating HS 32.30	
Roadway Area 1,658 sq ft		Posted Load NOT REQUIRED		Posting	
Sidewalk Width - L/R		Traffic NOT REQUIRED		Rating Date 02-01-1974	
Curb Height - L/R		Horizontal OBJECT MARKERS		Mn/DOT Permit Codes	
Rail Codes - L/R 37 37		Vertical NOT APPLICABLE		A: N B: N C: N	

04/13/2011 Page 1 of 2

Mn/DOT BRIDGE INSPECTION REPORT

Inspected by: LYON COUNTY

BRIDGE 42513 CSAH 7 OVER BIG COTTONWOOD RIVER **INSP. DATE: 11-02-2010**

County: LYON
City:
Township: SODUS
Section: 32 Township: 110N Range: 41W
Span Type: TIMB SLAB SPAN
NBI Deck: 6 Super: 6 Sub: 4 Chan: 6 Culv: N

Location: 1.2 MI S OF JCT CSAH 2
Route: CSAH 7 Ref. Pt.: 006+00.860
Control Section: Maint. Area:
Local Agency Bridge Nbr: S2
Open, Posted, Closed: OPEN

Length: 54.5 ft
Deck Width: 31.7 ft
Rdwy. Area / Pct. Unsnd: 1,658 sq ft
Paint Area/ Pct. Unsnd:
Culvert N/A

Appraisal Ratings - Approach: 9 Waterway: 8
MN Scour Code: I-LOW RISK
Def. Stat: S.D. Suff. Rate: 69.8

Required Bridge Signs - Load Posting: NOT REQUIRED
Horizontal: OBJECT MARKERS
Traffic: NOT REQUIRED
Vertical: NOT APPLICABLE

STRUCTURE UNIT: 0

ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
55	TIMBER SLAB-BIT O/L	2	11-02-2010	1,733 SF	0	1,733	0	0	N/A
			10-23-2009	1,733 SF	0	1,733	0	0	N/A
	Notes: 2007 cracks								
407	BITUMINOUS APPROACH	1	11-02-2010	2 EA	0	2	0	0	N/A
			10-23-2009	2 EA	0	2	0	0	N/A
	Notes: < none >								
333	RAILING - OTHER	2	11-02-2010	108 LF	108	0	0	N/A	N/A
			10-23-2009	108 LF	108	0	0	N/A	N/A
	Notes: < none >								
206	TIMBER COLUMN	2	11-02-2010	30 EA	0	15	15	0	N/A
			10-23-2009	30 EA	0	15	15	0	N/A
	Notes: Several abt. piling sounded hollow.								
216	TIMBER ABUTMENT	2	11-02-2010	62 LF	0	33	30	0	N/A
			10-23-2009	62 LF	0	33	30	0	N/A
	Notes: 2007 north abt shows deter. at waterline								
235	TIMBER CAP	2	11-02-2010	128 LF	0	115	13	0	N/A
			10-23-2009	128 LF	0	115	13	0	N/A
	Notes: < none >								
386	TIMBER WINGWALL	2	11-02-2010	4 EA	0	4	0	0	N/A
			10-23-2009	4 EA	0	4	0	0	N/A
	Notes: < none >								
964	CRITICAL FINDING	2	11-02-2010	1 EA	1	0	N/A	N/A	N/A
			10-23-2009	1 EA	1	0	N/A	N/A	N/A
	Notes: DO NOT DELETE THIS CRITICAL FINDING SMART FLAG.								
981	SIGNING	2	11-02-2010	1 EA	1	0	0	0	0
			10-23-2009	1 EA	1	0	0	0	0
	Notes: < none >								
985	SLOPES	2	11-02-2010	1 EA	0	1	0	N/A	N/A
			10-23-2009	1 EA	0	1	0	N/A	N/A
	Notes: 1993 NEEDS SLOPE PROTECTION								

Mn/DOT BRIDGE INSPECTION REPORT

Inspected by: LYON COUNTY

BRIDGE 42513 CSAH 7 OVER BIG COTTONWOOD RIVER INSP. DATE: 11-02-2010

STRUCTURE UNIT: 0

ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
988	CURB & SIDEWALK	2	11-02-2010	1 EA	0	1	0	N/A	N/A
			10-23-2009	1 EA	0	1	0	N/A	N/A

Notes: < none >

General Notes: SMJ 2003 smj & ckm
2005 smj 2007 smj 2008smj 2009smj 2010smj

Inspector's Signature

Reviewer's Signature / Date

Appendix IV
Laboratory Analysis Reports

EMSL Analytical, Inc.
14375 23rd Avenue North, Minneapolis, Mn 55447
Phone: (763) 445-4922 Fax: (763) 445-4924 Email: minneapolislab@emsl.com

Attn: **Denice Cliff**
Institute For Environmental Assessment
9201 West Broadway
Suite 600
Brooklyn Park, MN 55445
Fax: (763) 315-7920 Phone: (763) 315-7900
Project: **1667-1112042, Bridge #42513-Lyon City Bridge**

Customer ID: IFEA50
Customer PO:
Received: 05/27/11 9:50 AM
EMSL Order: 351102945
EMSL Proj:

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B*/7000B)

Lab ID:	Analyzed	RDL	Lead Concentration	Notes
0003	5/27/2011	0.010 % wt	0.069 % wt	Site: Pile Cap NE Cor. Abut.
Client Sample 52611L-1				Collected:
0004	5/27/2011	0.010 % wt	0.070 % wt	Site: Abut Pile Cap SE Cor.
Client Sample 52611L-2				Collected:

Initial report from 05/27/2011 16:52:41

Rachel Travis, Laboratory Manager
or other approved signatory

Reporting limit is 0.01 % wt. The QC data associated with these results included in this report meet the method QC requirements, unless specifically indicated otherwise. Unless noted, results in this report are not blank corrected. EMSL bears no responsibility for sample collection activities. Samples received in good condition unless otherwise noted. * slight modifications to methods applied.
Samples analyzed by EMSL Analytical, Inc. Minneapolis, Mn AIHA-LAP, LLC ELLAP 153182

Test Report PB w/RDL-7.21.0 Printed: 5/27/2011 4:52:41 PM

Page 1 of 1

EMSL Analytical, Inc.
14375 23rd Avenue North, Minneapolis, Mn 55447
Phone: (763) 449-4922 Fax: (763) 449-4924 Email: minneapolislab@emsl.com

Attn: **Denice Cliff**
Institute For Environmental Assessment
9201 West Broadway
Suite 600
Brooklyn Park, MN 55445

Fax: (763) 315-7920 Phone: (763) 315-7900
Project: **1667-1112042, Bridge #42513-Lyon City Bridge**

Customer ID: IFEA50
Customer PO:
Received: 05/27/11 9:50 AM
EMSL Order: 351102945

EMSL Proj:
Analysis Date: 5/27/2011

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos			Asbestos
Sample	Description	Appearance	% Fibrous		% Non-Fibrous	% Type
52611AB-1 *351102945-0001*	Wingwall Pile Cap. NE Cor.	Gray/Black Fibrous Heterogeneous	15%	Cellulose	75% Non-fibrous (other)	10% Chrysotile
52611AB-2 *351102945-0002*	Wingwall Pile Cap. SE Cor.	Gray/Black Fibrous Heterogeneous	15%	Cellulose	75% Non-fibrous (other)	10% Chrysotile

Initial report from 05/27/2011 16:52:41

Analyst(s)

Rachel Travis (2)

Rachel Travis, Laboratory Manager
or other approved signatory

Appendix V
Chain of custody Documents

May 25, 2011

Denice Cliff
Institute for Environment Assessment, Inc.
9201 West Broadway, Suite 600
Brooklyn Park, MN 55445

Re: Testing for the presence of lead; Samples L-1 and L-2
Testing for the presence of asbestos; Samples AB-1and AB-2.
Lyon County Bridge # 42513

Dear Ms. Cliff:

Enclosed are two samples, L-1 and L-2 which are to be tested for the presence of lead, and two samples, AB-1 and AB-2 which are to be tested for the presence of asbestos. All samples are in zip lock bags and labeled with sample numbers, dates of sampling, and project identification. Please forward the test results and required chain of custody forms to:

Ernest G. Fiala, PE
118 W. 3rd St.
Redwood Falls, MN 56283

ernie.fiala@gmail.com

507-637-2492
507-430-3600 Cell

Lyon County intends to demolish this structure as soon as possible and has requested a rush on the testing if at all possible. Please advise by E-mail above if this is possible. Also, would you please forward a copy of your most recent lab certifications so I may update my files. All fees incurred should be billed to the above. Should you have any questions or require additional information, please contact me at any of the above.

Sincerely,

Ernest G. Fiala, PE

Cc: File
Enclosures

9201 West Broadway North, Suite 600
Brooklyn Park, MN 55445
(763) 315-7900
1-800-233-9513

CHAIN OF CUSTODY

2010 - 242

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Page ___ of ___

Shaded Areas are for Laboratory Use Only!

Client # 11d67 Project # 1012.059

Client ______

Address ______

Building Name Bridge # 94055 - Renville Cty.

Project Name Lead testing

Contact Person ______ Contact Person Phone ______

Other Information ______

Verbal results to Denice

Phone, Fax No. or E-Mail ______

TAT (circle) 6 hr 1d (2d) (3d) 4d Specify

Verbal results relayed to ______

Verbal results relayed by ______ Date ______ Time ______

Analysis location: O On Site O Lab O Regional Office ⊗ Other EMSL

Sample #	Work Area or Phase #	Comments / Location	Sample type or Material code	Volume	Matrix type: Air	Bulk	Dust	Analysis requested: PCM	PLM	TEM	Other	Filter type: MCE	.8 um	.45 um
94055L-1		ABUT - Pile Cap SW Cor			O	X	O	O	O	O	Flame AA	O	O	O
94055L-2		ABUT - Pile Cap NE Cor			O	X	O	O	O	O	Flame AA	O	O	O
94055LP-1		North Rail			O	X	O	O	O	O	Lead Paint Chip	O	O	O
94055LP-2		East Facia Beam			O	X	O	O	O	O	Lead Paint Chip	O	O	O

The MN Department of Health Alternative Indoor Air Standard for this project is: ______ F/CC. Batch Number: ______ Samples Acceptable? O Yes O No

Sampled by	Date	Time	Delivered by	Date	Time	Received by lab	Date	Time	Entered by	Date	Time
Client						Kkubokawa	10/29	9:30 ET	NC		
Received by	**Date**	**Time**	**Delivered by**	**Date**	**Time**	**Analysis by**	**Date**	**Time**	**Delivered by**	**Date**	**Time**
Denice Cl[illegible]	10/27/10										

06039

Appendix VI
Laboratory Accreditations

AIHA
Laboratory Accreditation Programs, LLC

AIHA Laboratory Accreditation Programs, LLC
SCOPE OF ACCREDITATION

EMSL Analytical, Inc.
14375 23rd Avenue North, Minneapolis, MN 55447

Laboratory ID: 163162
Issue Date: 02/01/2011

The laboratory is approved for those specific field(s) of testing/methods listed in the table below. Clients are urged to verify the laboratory's current accreditation status for the particular field(s) of testing/Methods, since these can change due to proficiency status, suspension and/or revocation. A complete listing of currently accredited Environmental Lead laboratories is available on the AIHA-LAP, LLC website at: http://www.aihaaccreditedlabs.org

The EPA recognizes the AIHA-LAP, LLC ELLAP program as meeting the requirements of the National Lead Laboratory Accreditation Program (NLLAP) established under Title X of the Residential Lead-Based Paint Hazard Reduction Act of 1992 and includes paint, soil and dust wipe analysis. Air analysis is not included as part of the NLLAP.

Environmental Lead Laboratory Accreditation Program (ELLAP)

Initial Accreditation Date: 09/01/2010

Field of Testing (FoT)	Method	Method Description *(for internal methods only)*
Airborne Dust	NIOSH 7082	
Paint	EPA SW-846 7000B	
	EPA SW-846 3050B	
Settled Dust by Wipe	EPA SW-846 7000B	
	EPA SW-846 3050B	
Soil	EPA SW-846 7000B	
	EPA SW-846 3050B	

The laboratory participates in the following AIHA-LAP, LLC-approved proficiency testing programs:

√ Paint
√ Soil
√ Settled Dust by Wipe
√ Airborne Dust

Effective: 4/24/09
Scope_ELLAP_R4
Page 1 of 1

AIHA

Laboratory Accreditation Programs, LLC

AIHA Laboratory Accreditation Programs, LLC

acknowledges that

EMSL Analytical, Inc.

14375 23rd Avenue North, Minneapolis, MN 55447

Laboratory ID: 163162

along with all premises from which key activities are performed, as listed above, has fulfilled the requirements of the AIHA Laboratory Accreditation Programs (AIHA-LAP), LLC accreditation to the ISO/IEC 17025:2005 international standard, *General Requirements for the Competence of Testing and Calibration Laboratories* in the following:

LABORATORY ACCREDITATION PROGRAMS

☐	**INDUSTRIAL HYGIENE**	Accreditation Expires:
✓	**ENVIRONMENTAL LEAD**	Accreditation Expires: 03/01/2013
✓	**ENVIRONMENTAL MICROBIOLOGY**	Accreditation Expires: 03/01/2013
☐	**FOOD**	Accreditation Expires:

Specific Field(s) of Testing (FoT)/Method(s) within each Accreditation Program for which the above named laboratory maintains accreditation is outlined on the attached Scope of Accreditation. Continued accreditation is contingent upon successful on-going compliance with ISO/IEC 17025:2005 and AIHA-LAP, LLC requirements. This certificate is not valid without the attached Scope of Accreditation. Please review the AIHA-LAP, LLC website (www.aihaaccreditedlabs.org) for the most current Scope.

Christine Powell

Chairperson, Analytical Accreditation Board

Cheryl O. Morton

Director, AIHA Laboratory Accreditation Programs, LLC

Revision 10: 01/13/2011

Date Issued: 02/01/2011

NVLAP® National Voluntary Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

EMSL Analytical, Inc.
14375 23rd Avenue North
Minneapolis, MN 55447
Ms. Rachel Travis
Phone: 763-449-4922 Fax: 763-449-4924
E-Mail: rtravis@emsl.com
URL: http://www.emsl.com

AIRBORNE ASBESTOS FIBER ANALYSIS (TEM) **NVLAP LAB CODE 200019-0**

NVLAP Code	*Designation / Description*
18/A02	U.S. EPA's "Interim Transmission Electron Microscopy Analytical Methods-Mandatory and Nonmandatory-and Mandatory Section to Determine Completion of Response Actions" as found in 40 CFR, Part 763, Subpart E, Appendix A.

2010-04-01 through 2011-03-31
Effective dates

For the National Institute of Standards and Technology

NVLAP-01S (REV. 2008-05-19)

Appendix VII
Inspector's Licensure and Certification

Certificate No: 5LM10071018IR *Expiration Date: October 7, 2011*

This is to certify that
Ernest G. Fiala
has attended and successfully completed an
ASBESTOS INSPECTOR
REFRESHER TRAINING COURSE
permitted by
the State of Minnesota under Minnesota Rules 4620.3702 to 4620.3722
and meets the requirements of
Section 206 of Title II of the Toxic Substances Control Act (TSCA)
conducted by

Lake States Environmental, Ltd.
in
White Bear Lake, MN on October 7, 2010
Examination Date: October 7, 2010

Lake States Environmental, Ltd
P. O. Box 645, Rice Lake, WI 54868
(800) 254-9811

Training Instructor

MDH ASBESTOS INSPECTOR
Certified by:
State of Minnesota
Department of Health
Expires: 10/07/2011
Ernest G Fiala
118 W 3rd St
Redwood Falls, MN 56283

Director, Env. Health Div. No. AI10135 Issued: 11/03/2010

Appendix VIII

Minnesota Pollution Control Agency

Minnesota Pollution Control Agency Notification of Intent to Perform a Bridge Demolition for Mn/DOT Operations.

Type of Notification: [ ] Original [ ] Amended [ ] Project Cancellation

Notification must be postmarked or received ten (10) WORKING days before demolition begins.

Minnesota Department of Transportation

Demolition Contractor:

Name:_____

Address:_____

_____

City, State, Zip:_____

Contact Person:_____

Phone Number(s):_____

Bridge Owner:

Name:_____

Address:_____

_____

City, State, Zip:_____

Contact person:_____

Phone Number(s):_____

Bridge Information:

Bridge Name:_____

Mile Point/Trunk Highway:_____

Miles and direction (N,E,W,S) From Nearest Town:_____

_____

County:_____

Project Engineer Phone Number(s):_____

Age of Brdg. (years):_____ Size of Brdg. (sq. ft.):_____

Type of Bridge:_____

Suspect Materials to be checked for asbestos: pipes, asphalt underlay, spray-on and joint compounds.

Dates when demolition will Begin _____ & End _____

Both Beginning and Ending dates should be amended in writing as necessary to reflect current project dates.

There is no Asbestos Containing Material (ACM) present in the structure to be demolished

1. Company and/or individual that conducted the bridge inspection or record review, certification#, and the procedure used to determine the presence or absence of ACM (including analytic method): *Prior to demolition all bridges must be inspected by an MDH certified asbestos inspector.* _____

_____

2. Description of planned demolition and the specific method(s) that will be used:_____

_____

Demolition Material will be recycled on site or a metal scrap recycler, Material not recycled will be sent to:

3. Demolition Waste Transporter(s) Information:

Transporter Name:_____

Transporter Contact:_____

Transporter Address:_____

City, State, Zip:_____

Phone Number:_____

4. Demolition Waste Disposal Information:

Landfill Name:_____

Owner/Operator:_____

Address/Location:_____

City, State, Zip:_____

Phone Number:_____

5. I certify that the above information is correct and I am a bonafide representative of the demolition contractor or bridge owner and have authority to enter into agreements for my employer. In event that unexpected asbestos containing material is found, the material will be removed by a MDH certified asbestos abatement contractor.

Signature of Contractor, Owner Agent_____ **Date**_____

Send to: Minnesota Pollution Control Agency Regional Environmental Management Division 520 Lafayette Road North St. Paul, MN 55155-4194	For questions call: 651-296-6300 1-800-657-3864 FAX: 651-215-1593

PCB Removal Information *Polychlorinated Biphenyls (PCBs) will be removed from the bridge prior to demolition.*

Mercury Removal Information *Material containing mercury will be removed from the bridge prior to demolition.*

[Notification of Intent to Perform a Demolition form 1] Revised 08 04 CC: Mark Vogel, OES, MS 620

Appendix IX
Notification Form on Transfer of Bridge Steel

NOTIFICATION FORM ON DISPOSAL OF BRIDGE STEEL

The Contractor is required to provide certain information on disposal of bridge steel which has been painted with lead-based paint. By signing this document, the Contractor certifies that information supplied by the Contractor is correct and that the Contractor is familiar with proper handling and disposal of materials with lead-based paint. This information must be furnished to the Project Engineer a minimum of 30 days prior to removal of the bridge steel from the project site. Any change in method or location of disposal would require resubmittal and a 30 day notice.

Mn/DOT Project No._____ **Bridge No.**_____

Description of Bridge Steel_____

Paint System is Mn/DOT Spec. _____ , _____
(Primer) **(Top Coat)**

Project Engineer: _____

Contractor/Subcontractor: _____
(Name, mailing address, telephone no.)

_____

I _____ certify that the following information is correct:
(print name of authorized representative)

The above bridge steel will be disposed of by the following method(s): _____
(list name,

_____
address and telephone no. of recipient, estimated delivery date, and intended use.)

_____

_____

I also certify that _____ is familiar with
(Contractor/Subcontractor name)
the requirements in OSHA 29 CFR 1926.62 relating to lead, precautions to be taken when working with lead, and proper handling and disposal of materials with lead-based paint systems and that _____ has been notified of the presence of lead-based paint.
(name of recipient)

_____ _____
(signature) **(date)**

Received by Project Engineer/Inspector: _____ _____
(date) **(signature)**

cc: Project File
Office of Environmental Services

Appendix X
Notification Form on Ownership Transfer of Treated Wood

1 of 2 pages

NOTIFICATION FORM ON OWNERSHIP TRANSFER OF TREATED WOOD

The prospective buyer identified below has expressed interest in obtaining treated wood from Mn/DOT for reuse/recycling. Treated wood can include, but is not limited to: copper chromium arsenic (CCA), ammoniacal copper quat (ACQ), copper azole, ammoniacal copper citrate, creosote, and pentachlorophenol (PCP or penta). By signing this document, the buyer certifies that he or she is familiar with proper handling and disposal of this material. The buyer must complete this form to Mn/DOT's satisfaction prior to removal of any treated wood. Any change in the method or location of re-use of the materials would require re-submittal and approval.

Source of treated wood:_____

Mn/DOT Contract:_____

Buyer:_____
(name, company, mailing address, telephone number)

_____

I_____ certify that the following information is correct:
(Print name of authorized buyer)

The above treated wood will be reused in the following manner:_____

_____

_____

I also certify that _____ is familiar with Local, State and
(buyer name)
Federal requirements, including the Minnesota Pollution Control Agency fact sheet "Treated Wood: Use, Disposal and Alternatives for Businesses", regarding proper handling and disposal of treated wood and the buyer has been notified of this.

_____ _____
(buyers signature) (date)

Received by Mn/DOT representative:_____
(print name)

_____ _____
(signature) (date)

cc: District File
Office of Environmental Services (Mail stop 620)

OWNERSHIP TRANSFER

DESCRIPTION	QUANTITY	DATE TRANSFERRED	COMMENTS

Minnesota Pollution Control Agency

Minnesota Pollution Control Agency/Minnesota Dept. of Health

Notification of Asbestos Related Work

Type of Notification: [ ] Original [ ] Amended #____
[ ] Project Cancellation [ ] Residential [ ] Nonresidential

MINNESOTA MDH DEPARTMENT OF HEALTH

Asbestos Abatement Contractor: Lic. #

Name:

Address:

City, State, Zip:

Contact Person:

Phone Number(s):

Air Monitoring Consultant/Laboratory: Lic. #

Name:

Address:

City, State, Zip:

Contact person:

Phone Number(s):

[ ] air sample analysis only

Building Owner:

Name:

Address:

City, State, Zip:

Contact person:

Phone Number(s):

Building Information:

Building Name:

Address/Location:

City, State, Zip:

County:

Phone Number(s):

Size of Bldg. (sq. ft.): _____ Age of Bldg. (years): _____

Number of Floors Including Basement Level(s):

Present Use of Bldg.:

Prior Use of Bldg.:

1. Type of Project: (check all that apply):

[ ] Renovation [ ] Demolition [ ] Encapsulation [ ] Permanent Enclosure
[ ] Emergency (#7 must be completed to validate an Emergency)
[ ] Using MDH Demolition Abatement Rules Minn. R. 4620.3585

2. Amount(s) of RACM (Regulated Asbestos Containing Material) to be Abated:

friable	nonfriable	
_____	_____	Linear feet on pipes
_____	_____	Square feet on facility components (e.g. tanks, boilers, ceilings, ceiling tiles, flooring)
_____	_____	Cubic feet off facility components if linear footage or square footage cannot be determined

3. Asbestos Abatement Activity Dates:

a. Precleaning Work Area to Final Visual Inspection Start: _____ End: _____
b. Dates When RACM will be Disturbed: Start: _____ End: _____
c. Workshifts, time and days (e.g. 7 AM to 3 PM Mon.-Fri.) _____

4. Building Inspection: **** Prior to a renovation or demolition, all buildings must be inspected by an EPA accredited inspector.***

a. Company and/or individual that conducted the building inspection:
b. Procedure, including analytic method, used to determine the presence of RACM:

5. Description & Location of RACM to be abated (including floor # and room #):

6. **Describe in detail the following procedures SPECIFIC TO THIS SITE:** (use a separate sheet if necessary)

   a. Asbestos abatement emissions control procedures: _____

   _____

   b. Waste handling emission control procedures: _____

   _____

   c. Description of procedures to be followed in the event that unexpected RACM is found or Cat. II nonfriable ACM becomes crumbled, pulverized, or reduced to a powder: _____

   _____

   d. Description of work practice, including specific abatement procedures and techniques to be used: _____

   _____

7. **For Emergency Renovation/Demolition Abatement Projects:** ***Telephone MDH and MPCA for guidance on this option***

   a. Date and hour of emergency: _____

   b. Description of the sudden and unexpected event: _____

   _____

   c. Explanation of how the event caused unsafe conditions or would cause equipment damage: _____

   _____

8. **Waste Transporter(s) Information:**

   Transporter Name: _____

   Transporter Contact: _____

   Transporter Address: _____

   City, State, Zip: _____

   Phone Number: _____

9. **Waste Disposal Information:**

   Landfill Name: _____

   Owner/Operator: _____

   Address/Location: _____

   City, State, Zip: _____

   Phone Number: _____

10. **Permit fee: (Check the one that applies)**

   [ ] **$35 permit fee**
   For all residential projects with less than 260 linear and 160 square feet but more than 10 linear and 6 square feet of RACM.

   [ ] **1% permit fee** Total Cost of Project $_____
   For all projects, residential and nonresidential, with more than 260 linear or 160 square feet of RACM.
   Attach a signed copy of the bid acceptance document or other cost verification document.
   Does this 1% permit fee includes air monitoring costs? **yes** **no**
   Is this a "Time and Materials" project? **yes** **no**

I certify that an individual trained in the provisions of Federal Regulations 40 CFR Part 61, Subpart M (a Minnesota Site Supervisor) will be on-site during the ashestos abatement project.
I certify that the ahove information is correct and I am a bonafide representative of the ahatement contractor or building owner and have authority to enter into agreements for my employer.

Signature of Contractor/Owner _____ Date _____

Send a copy of this notice to:	**Send a copy of this notice, permit fee and cost verification to:**
Asbestos Coordinator Minnesota Pollution Control Agency Metro Districts – Regular Facilities Section 520 Lafayette Road North St. Paul, MN 55155-4194 ***Postmarked or delivered at least 10 working days (Mon.-Frl.) before RACM disturbance for all projects.***	Asbestos Unit Minnesota Department of Health P.O. Box 64975 St. Paul, MN 55164-0975 ***Received at least 5 calendar days before the start of a project..***
For questions call: 651-296-6300 or 1-800-657-3864	**For questions call:** 651-201-5000 **Revised 9/05**

SALT Schedule of Materials Control - Local Government Agency

This Schedule of Materials Control (SMC) outlines the minimum testing requirements for State Aid Funded and/or Federal Aid Projects off the National Highway and Trunk Highway System. Optional to this SMC is the MnDOT Materials Control Schedule. Usage of either schedule must be defined in the project proposal.

1603.2 SAMPLING AND TESTING - INSERT INTO SPECIAL PROVISIONS

The first paragraph is hereby deleted and replaced with the following:

Sampling and testing of materials for this project will be in accordance with the State Aid for Local Transportation (SALT) "Schedule of Materials Control – Local Government Agency" (SMC-LGA). This schedule establishes the size of samples and the minimum rate of testing, but in no way affects Specification requirements for the material.

The SMC - LGA serves as a guide for material testing with allowable acceptance "as directed by the Engineer" detailed in Specification 1501.1a - Authority of the Engineer. These testing rates are a minimum and additional tests may be taken at the Engineer's discretion. A minimal testing rate does not always ensure a quality product; field observations and attention to detail is crucial. Materials not listed on an approved products list may be sampled and tested as directed by the Engineer. Materials listed on a Qualified Products list may be accepted or tested at the discretion of the Engineer.

Federal Aid projects require Independent Assurance Inspection. Contact the MnDOT District IA Inspector when the job starts to provide the proper servicing of your project.

Definitions

SALT

MnDOT Office of State Aid for Local Transportation. The SMC - LGA is located at the construction page under "Construction Tools".

MnDOT Materials Control Schedule

Materials Control Schedules are inserted into project proposals to direct how materials are to be sampled. The Materials Control Schedule is updated yearly. Each Materials Control Schedule is project specific. Therefore, one needs to refer to their specific proposal.

Approved

Products are 'approved' when they have been found to routinely meet all applicable standards and specifications. The product is placed on the list based upon established successful manufacturer's quality control and warranties, but the listing may expire or require periodic renewal to verify the product has not changed over time. The approval process for the individual product should specify any expiration requirement.

Qualified

Products are predicted to meet all applicable standards and specifications, but random sample testing is required to verify specific product lots meet specifications prior to usage. These products are generally considered to be "qualified" but not approved until tested for compliance. Successfully tested products lots are considered to be "approved". The approval process for the individual product should specify any further testing requirements for the product.

Certified Sources

Certified Sources must comply with each individual product's defined "certification procedure". Acceptance of products from certified sources follows the same sampling and testing as "qualified" products.

STATE AID FOR LOCAL TRANSPORTATION

Material Acceptance Summary

LOCAL NO. _____

SAP/SP NO. _____

Date	Item Description	Qualified Product List	Approved Product List	Certificate of Compliance	Accepted by Engineer*

* Items not included on the Approved Product List or the Manufacturer's Certifications have not been received are hereby accepted by the Engineer. Materials on a Qualified Products list which have not been tested at the discretion of the Engineer are hereby accepted.

signed: _____

Project Engineer Date

STATE AID FOR LOCAL TRANSPORTATION

Material Acceptance Summary

LOCAL NO. 2013 - 001

SAP/SP NO. 88-601-040

Date	Item Description	Qualified Product List	Approved Product List	Certificate of Compliance	Accepted by Engineer*
5/15/13	PG 58-28 Asphalt Cement		7/15/13		
5/15/13	CSS-1H Emulsion Tack		Note*		
5/15/13	Temporary spray on CL skips				7/15/13
5/15/13	Glass Beads			7/22/13	
5/15/13	Epoxy Paint, CL & Fog Lines			7/22/13	
5/15/13	Galvan. U Posts - mail boxes				7/29/13
5/15/13	Mail Box Kits				7/29/13
	* submitted sample to lab 7-18-13				

* Items not included on the Approved Product List or the Manufacturer's Certifications have not been received are hereby accepted by the Engineer. Materials on a Qualified Products list which have not been tested at the discretion of the Engineer are hereby accepted.

signed: _____

Project Engineer Date

BITUMINOUS QUALITY MANAGEMENT

The Contractor shall provide and maintain a quality control program as detailed in Specification 2360.2.G. The Engineer shall review the quality control program for compliance.

	Type of Test	Spec Section *	Contractor - QC Testing Rates	Agency - QA Testing Rates
Start-Up Testing Rates for the 1st 2000 tons **	Bulk Specific Gravity	2360.2.G.7.b	1 per 500 tons 55 lb. sample 3 full cylinder molds	1 Verification Mixture Sample per day, all QA samples are from a split (QC/QA) sample.
	Maximum Specific Gravity	2360.2.G.7.c		
	Air Voids (calculated)	2360.2.G.7.d		
	Asphalt Content	2360.2.G.7.a		
	Adj. Asphalt Film Thickness (AFT)	2360.2.E.7.e		
	Gradation	2360.2.G.7.f		
	Fines to Effective Asphalt Ratio calc'd	2360.2.G.7.a/f		
	Coarse Aggregate Angularity (CAA)	2360.2.G.7.g	1 per 1000 tons	
	Fine Aggregate Angularity (FAA)	2360.2.G.7.h		
	Added AC/Total AC Ratio (calc'd)	2360.2.G.7.a		
Production Testing Rates	Bulk Specific Gravity	2360.2.G.7.b	1 per 1000 tons 55 lb. sample 3 full cylinder molds	1 Verification Mixture Sample per day/ mix type, submit companion to the QC - CAA & FAA test results.
	Maximum Specific Gravity	2360.2.G.7.c		
	Air Voids (calculated)	2360.2.G.7.d		
	Asphalt Content	2360.2.G.7.a		
	Adj. Asphalt Film Thickness (AFT)	2360.2.E.7.e		
	Gradation (minimum of 1 per day)	2360.2.G.7.f		
	Added AC/Total AC Ratio (calculated)	2360.2.G.7.a		
	Coarse Aggregate Angularity (CAA)	2360.2.G.7.g	NOTE 1	
	Fine Aggregate Angularity (FAA)	2360.2.G.7.h	NOTE 2	
	TSR	2360.2.G.7.i	When directed by the Materials Engineer	
	Aggregate Specific Gravity	2360.2.G.7.j		
	Mixture Moisture Content	2360.2.G.7.k	As directed by the Engineer	
	Asphalt Binder Certified Supplier	2360.2.G.7.l	NOTE 3	
	Asphalt Emulsion Certified Supplier	2357		
	Compaction / Density Requirements	2360.3.D	Review special provisions	
	Small Quantity Requirements	See 2360.2G.5 & 2360.3G		

Testing rates are minimums, additional testing is encouraged to insure a quality product.

Contact the MnDOT District IA Inspector to provide servicing of your Federal Aid Project.

* Review Special Provisions & 2360.2.G Mixture Quality Management.

** The testing rates apply only to mixtures that have not been tested on previous projects. Mixtures from previous years should use the start- up testing rates.

NOTE 1: 2 tests/day for a minimum of 2 days, then 1 per day if CAA is met. If CAA > 8% of requirement, 1 sample/day but test 1/week. No testing required for Class A and or B Aggregates.

NOTE 2: 2 tests/day for a minimum of 2 days, then 1 per day if FAA is met. If FAA > 5% of requirement, 1 sample/day but test 1/week.

Shall be a Certified Supplier - No Samples Required unless otherwise directed by the Engineer.

NOTE 3: Agencies using MnDOT Metro Inspection Services will be sampled at the current MnDOT Schedule of Materials Control rates and will be billed accordingly.

BITUMINOUS SPECIALTY ITEMS

Type of Test	Spec	Contractor - QC Testing Rates	Agency - QA Testing Rates
Gradation PASSRC & PASB	2350 2360	1 per 1,000 Ton with a minimum 1 per day.	1 per day. 35 lbs.
Micro-Surfacing	2354	Stockpile: 1/1,500 Tons (min 1/day) Machine Hopper: 1/500 Ton (min 1/day)	Stockpile & Machine Hopper: 1/day **60 lbs.**
Seal Coat & Otto Seal	2356	Stockpile: 1/1,500 Tons (min 1/day) Chip Spreader Hopper: 1/day	1/day from Hopper. 60 lbs.
% Crushing - CAA PASSRC & PASB	2350 2360	1 per 1,000 Ton with a minimum 1 per day.	1 per day from gradation test. 35 lbs.
Moisture - In Aggregate Micro-Surfacing	2354	Machine Hopper: 1/500 Tons (min 3/day)	1/day 2lbs
Sand Equivalence Micro-Surfacing	2354	Stockpile or Machine Hopper: 1/500 Tons (min 1/day)	1/day, test at Engineer discretion, **25 lbs.**
Bituminous Mixture UTBWC	2356 3151	1/300 Tons, min 1/day. %AC, Gradation, Max SpG, Adj.AFT	1/day, 20 lbs. cylinder
PASSRC & PASB	3151 2350	Asphalt spot check: min 1/day	-
Asphalt Binder Tests Fog Seal	3151 2355	Dilution rate: 1/project	Asphalt Binder List Asphalt Emulsion List
UTBWC	2356 3151	Agency Testing rate unless otherwise directed by Engineer: **Asphalt Binder:** First load, then 1/250,000 gallons. Sample size of 1 quart metal container. **Emulsified Asphalt:** First load, then 1/50,000 gallons. Sample size of 1/2 gallon plastic containers.	
Micro-Surfacing	2354		
Seal Coat & Otto Seal	2356		
Tack Coat	2357		
Asphalt Binder Rate Micro-Surfacing	2354	Verify Application Rate 3/day	Verify Application Rate 1/day
Fog Seal	2355	Verify Application Rate 1/day	Verify Application Rate 1/day
Seal Coat & Otto Seal	2356		
Tack Coat	2357		

Contact the MnDOT District IA Inspector to provide servicing of your Federal Aid Project.

CERTIFIED READY - MIX CONCRETE 1 of 2

The Prime Contractor is responsible to assure that all ready-mix concrete used is produced by a annually certified ready-mix plant. The Certified Ready Mix Program requirements are detailed in Specification 2461.4D7. The Engineer shall review the suppliers ready-mix certification program for compliance.

Test Type	Spec.	Contractor Testing	Agency Testing **	Form
Gradation	3126 3137	Coarse 1 per 100 yd3, Fine 1 per 200 yd^3	Coarse and Fine: 1 per 200 yd^3 unless directed by the Engineer.	2449 24143 21763
Quality & Coarse agg. Minus 200 sieve	3126 3137	Test at Contractor's discretion.	1 / Source unless directed by the Engineer.	

Test Type	Spec.	Agency Testing	Form
Air Content *	2461	Test first load each day per mix, then 1 test per 100 yd^3	2448 Weekly Concrete Report
Slump *		Test first load each day per mix, then 1 test per 100 yd^3 **slump test not required for slip form placement.**	
Temperature		Record temperature each time air content, slump or strength test specimen is performed/fabricated.	
Compressive Strength		Test first load each day per mix, then 1 test per 100 yd^3, Minimum of 1 per day if production is more than 50 yd^3.	2409 Concrete Cylinder Card
	2519	Cellular Concrete: 1 set of 4 cylinders (28 day) per day, fill in 2 equal lifts, do not rod, lightly tap the sides, cover and move to area with no vibration. Do not disturb for 24 hours.	

* The first load of concrete must have passing air content and slump prior to placement.

** Agencies using MnDOT Metro Inspection Services will be sampled at the current MnDOT Schedule of Materials Control rates and will be billed accordingly. Small quantity is 25 yd^3 or less per day with no gradation testing or plant monitoring required.

The testing rates shown in the SMC - LGA are minimums. Take as many tests as necessary to ensure quality concrete. It is recommended that the Agency Plant Monitor be present during critical pours, such as superstructure or paving concrete (i.e.. 3Y33, 3Y36, 3Y46, 3A21). If any field test fails, reject the concrete or if the Producer makes adjustments to the load to meet requirements, record the adjustments on the Certificate of Compliance and Weekly Concrete Report. Retest the load and record the adjusted test results. Make sure the next load is tested, before it gets into the work. If batching adjustments are made at the plant, test the adjusted load, before it gets into the work. Continue to test the concrete when test results are inconsistent or marginal. Material not meeting requirements shall not knowingly be placed in the work. If failing concrete inadvertently gets placed in the work, use either the MN/DOT Standard Specifications for Construction or the Schedule of Price Reductions for Concrete to address penalties. It is recommended that the Agency representative continually monitor the progress of all concrete pours. (It is not a recommended practice to only perform minimum testing requirements and leave the project.)

Contact the MnDOT District IA Inspector to provide servicing of your Federal Aid Project.

CERTIFIED READY - MIX CONCRETE 2 of 2

Only materials on the Approved Products List, Qualified Products List, or from a Certified Source are allowed for the following items unless otherwise directed by the Engineer.

- Air-Entraining Admixtures
- Certified Sources of Fly Ash
- Certified Sources of Slag
- Concrete Admixtures A-S
- Concrete Anchorages
- Concrete Curing Compounds
- Non-Shrink Rapid Set Concrete for Dowel Bar Retrofit
- Concrete Pipe Tie Coatings
- Epoxies
- Form Release Agents
- Non-Shrink Grouts
- Concrete Hot-Poured Certified Sources
- Rapid Hardening Materials for Repairs
- Special Surface Finish System

See Metals worksheet for steel reinforcement sampling requirements.

Test	Sample Size	
Gradation	25 lb. 3/4" Plus Coarse Aggregate. 15 lb. 3/4" Minus Coarse Aggregate	10 lb. CA-70 CA-80 & Sand
Quality	50 lb. 3/4" plus Coarse Aggregate 30 lb. 3/4" minus Coarse Aggregate	30 lb. Fine Aggregate
Moisture	1 lb. Fine Aggregate	4 lb. Coarse Aggregate

Additional Resources

MnDOT Concrete Manual

MnDOT Certified Ready-Mix Program

Contact the MnDOT District IA Inspector to provide servicing of your Federal Aid Project.

GRADING AND BASE CONSTRUCTION ITEMS 1 of 2

The Contractor is responsible for maintaining a gradation control program as detailed in Spec. 2211.

	Material Type	Const. Spec.*	Minimum Req'd Agency Acceptance Testing	QC Testing Rates**	Lab Sample
Gradation Testing (See Notes 2 & 3)	Aggregate Surfacing	2118	500 to 4000 = 1/1000 Tons, 4000 to 10,000 Tons = 4 tests/Lot	1/1,000 tons stockpile, 1/5,000 tons rdwy	1/source 30 lb.
	Aggregate Base	2211			
	Aggregate Shoulders	2221			
	Open Graded Aggregate Base (OGAB)	2211	1/1,000 Tons		1/source 30 lb.
	Granular Borrow	2105	1/36,000 Tons	1/18,000 Tons	1/source 30 lb.
	Select Gran. Borrow				
	Stabilizing Agg.				
	Full Depth Reclamation	2331	1/12,000 yd^2 unless directed by Engineer	1/6,000 yd2	None
	Granular Filter	2511	1/ source unless directed by Engineer	1/source	1/source 30 lb.
	Granular Backfill	2451		2/source before delivery	
	Aggregate Backfill				
	Granular Bedding				
	Aggregate Bedding				
	Coarse Filter				
	Fine Filter	2502			
Proctor Test	*(Req'd for Specified Density)*		1/source	-	1 sample minimum 25 lb.
	Aggregate Base	2211			
	Aggregate Shoulders	2221			
	Embankment Soil; Excavation & Borrow	2105	1 per major soil	-	1 sample minimum 25 lb.
Specified Density Test (Sand Cone)	*(Req'd for Specified Density)*		1/1,800 Tons	-	None
	Aggregate Base	2211			
	Aggregate Shoulders	2221			
	Embankment Soil; Excavation & Borrow	2105	1/7,000 Tons	-	
Dynamic Cone Penetration (DCP) Index	Aggregate Base	2211	1 DCP tests/500 yd^3 (CV) or 1/900 Tons	-	None
	Aggregate Shoulders	2221			
	Full Depth Reclamation	2331	1 DCP tests/3,000 yd^2	-	
	Fine Filter Aggregate (Edge Drains)	2502	Special Provisions	-	
Penetration Index (Mod. DCP)	Aggregate Base	2211	1 DCP tests/900 Tons	-	None
	Aggregate Shoulders	2221			
	Granular Borrow	2105	1 DCP tests/3,600 Tons	-	
	Select Granular Borrow				

Contact the MnDOT District IA Inspector to provide servicing of your Federal Aid Project.

GRADING AND BASE CONSTRUCTION ITEMS 2 of 2

	Material Type	Const. Spec.*	Minimum Req'd Agency Acceptance Testing	QC Testing Rates**	Lab Sample
Moisture Content Test	*(Required for Quality Compaction or DCP Method)*				None
	Aggregate Base	2211	1/1,800 Tons or 10 tests whichever is less unless directed by the Engineer	-	
	Aggregate Shoulders	2221			
	Full Depth Reclamation	2215	1/6000 yd^2 unless directed by Engineer	-	
	Embankment Soil; Excavation & Borrow	2105	1/18,000 Tons *Required for Specified Density*	-	None
Percent Crushing	Particle Count (note 1)	2105 2118 2211 2221	1/ source unless directed by Engineer, (req'd for class 5, class 6, stabilizing aggregate & aggregate bedding).	1 / Day	1/source 30lb
Quality	Aggregate Quality Tests	2105 2118 2206 2211 2221 2451 2502	1/ source unless directed by Engineer	-	1/source 30lb

Contact the MnDOT District IA Inspector to provide servicing of your Federal Aid Project.

* Always review the project Special Provisions for modifications.

** QC testing is a requirement of 2211, these rates are for informational purposes.

Laboratory Companion Samples:

1. Samples are not required for 1,000 tons or less.
2. Include the laboratory companion with the first field sample.
3. Include the field sample results with the laboratory sample.
4. Laboratories with AMRL Accreditation are not required to submit laboratory companion samples.
5. Carbonate aggregate materials require 50 lb. samples for the laboratory testing.

NOTE 1: Percent crushing test is not required when the material is crushed from a quarry or contains 25% or greater recycled materials.

NOTE 2: Submit a laboratory companion to the first Acceptance Gradation sample for a bituminous extraction, see 3138.2A2a(a). Full Depth Reclamation samples are not required.

NOTE 3: The Certification of Aggregates and Granular Materials procedure and documentation of testing locations is at the discretion of the Engineer.

Samples are not required for less than 500 tons (275 yd^3).

Conversions: 1 ton = 0.55 yd^3 (CV), 1 ton = 0.7 yd3 (LV)

Click here for testing procedures in the Grading & Base Manual.

Forms and worksheets at the Grading & Base Website.

Gradation worksheets at the SALT Construction Website

LANDSCAPING AND EROSION CONTROL ITEMS

Kind of Material	Spec. #	Min. Required Acceptance Testing (Field Testing Rate)
Manufactured Topsoil Borrow, Salvaged Topsoil (stockpiled)	3877.2	As directed by the Engineer
Plant Stock & Landscape Materials	3861 and 2571.2A1	Certificate of Compliance, Nursery stock certificate registered with Mn Dept. of Agriculture. Out of state products subject to pest quarantines must accompanied by documentation certifying all products are free of regulated pests.
Erosion Control Blanket	3885	Visual Inspection and Check approved products or approved vendors list - As directed by the Engineer.
Erosion Control Netting	3883	
Silt Fence	3886	
Erosion Stabilization Mat	3885	
Flotation Silt Curtain	3887	Accepted, based on manufacturers certification of compliance. Check weight of fabric.
Filter Logs	3897	None
Flocculants	3898	Obtain copy of Certificate of Compliance and MSDS
Fertilizer	3881	Obtain copy of invoice of blended material stating analysis.
Agricultural Lime	3879	Contractor must supply amount of ENP (Equivalent Neutralizing Power) for each shipment.
Mulch - Type 3	3882	Certified Weed Free (Certified sources only) Check for Certified Vendor tag from Minnesota Crop Improvement Association (MCIA).
Mulch - Type 6 - Woodchips		All wood chips supplied by a supplier outside the Emerald Ash Borer quarantine area or have an Emerald Ash Borer Compliance Agreement with the MDA
Seeds	3876	(Certified Vendors Only) (Mixes 100-299) Check for Certified Vendor tag from Minnesota Crop Improvement Association (MCIA).
Native Seed		(Mixes 300-399) certified seed only. Check for Certified Vendor tag from Minnesota Crop Improvement Association (MCIA).
Sod	3878	Visual Inspection - Check approved products list - As directed by the Engineer. Check for Certified Vendor tag from Minnesota Crop Improvement Association (MCIA) for salt tolerant sod.
Compost (from Certified Source)	3890	
Compost (from Non-Certified Source)		Visual Inspection - As directed by the Engineer.
Hydraulic Soil Stabilizer	3884	Check Approved/Qualified Products List - As directed by the Engineer.

CHEMICAL ITEMS

Kind of Material	Spec. No.	Min. Required Acceptance Testing (Field Testing Rate)
Asphalt Plank	3204	Visual Inspection - As directed by the Engineer.
Calcium Chloride	3911	Review the percentage required as per specification.
Magnesium Chloride	3912	
Hot-Pour Crack Sealant (for Crack Sealing/Filling)	3719 3723 3725	Retain Certification of Compliance
Waterproofing Materials		
Membrane Waterproofing System	3757	Visual Inspection - Check qualified products list.
Waterproofing Materials - Three Ply System		
Asphalt Primer	3165	Visual Inspection - As directed by the Engineer.
Waterproofing Asphalt	3166	
Fabric	3201	
Paints		
Waterborne Latex - Traffic Paint	3591	Visual Inspection - Check qualified products list - retain Certificate of Compliance.
Epoxy Traffic Paint	3590	
Traffic Marking Paint	Special Provisions	
Only approved paints are allowed for use. For bridge coatings, see www.dot.state.mn.us/products for the approved products list. For all others, see the Special Provisions. Send color sample to Chemical Laboratory for color matching.		
Non-Traffic Striping Paints	3500 Series	Retain Certification of Compliance
Bridge Structural Steel Paint	3520	Visual Inspection - Check approved products list - retain Certificate of Compliance.
Exterior Masonry Paint	3584	
Noise Wall Stain	Special Provisions	
Drop-on Glass Beads	3592	Visual Inspection - Check qualified products list. Retain Certificate of Compliance.
Pavement Marking Tape	3354 3355 Special Provisions	Visual Inspection - Check qualified products list. Retain Certificate of Compliance.
Signs and Markers	3352	Visual Inspection - Check qualified products list.

Metals 1 of 2

Kind of Material	Spec. No.	Min. Required Acceptance Testing (Field Testing Rate)*
Guard Rail		
Fittings - Splicers, Bolts, etc.	3381	Visual Inspection - Materials shall be approved before use. Call MnDOT inspector at 218-846-3613 to see if material has been approved.
Structural Plate Beam	3382	
Non-High Tension Guard Rail Cable	3381	
High Tension Guard Rail Cable	Special Provisions	
Steel Posts		
Steel Sign Posts	3401	Visual Inspection - As directed by the Engineer. Retain Certificate of Compliance in Project file.
Fence Posts, Brace Bars, Rails and others	3403	Visual Inspection - As directed by the Engineer. Retain Certificate of Compliance and certified mill analysis in project file.
	3406	
	3379	
Fence		
Barbed Wire	3376	Visual Inspection Retain Certification of Compliance, As directed by the Engineer.
Woven Wire		
Chain Link Fabric		
Components: cup, cap, nut, bolt, end clamp, tension band, truss rod tightener, hog ring, tie wire, tension stretcher bar, truss rod, clamp & tension wire		
Gates	3379	
Pipe		
Water Pipe and other Piping Materials	3364, 3365, 3366 & Special Provisions	Visual Inspection - As directed by the Engineer.
Reinforcing Steel - Inspected by MnDOT & will be charged back to the Local Agency.		
Uncoated Bars	3301	Retain Certificate of Compliance & Certified Mill Analysis
Epoxy Coated Bars	3301	For Epoxy-Coated bars, steel will be tagged "Inspected" when it has been sampled and tested by Mn/DOT prior to shipment, & it will be tagged "Sampled" when testing has not been completed prior to shipment. If the Epoxy-Coated bars are not tagged "Sampled" or "Inspected", submit samples, Certificate of Compliance, & Certified Mill Analysis for testing. Maintain original Cert. of Compliance & Certified Mill Analysis in project file.
Spirals	3305	
Stainless Steel Bars	Special Provisions	Visual Inspection Testing as directed by the Engineer. Certified Mill Test Reports to be kept in file.

Metals 2 of 2

Kind of Material	Spec. No.	Min. Required Acceptance Testing (Field Testing Rate)*
Reinforcing Steel - Inspected by MnDOT & will be charged back to the Local Agency.		
Steel Fabric	3303	Visual Inspection - Retain Certificate of Compliance.
Dowel Bars	3302	
Castings		
Drainage Castings	3321	Visual Inspection - Check approved foundries list.
	2471	
Electrical	2565	
Anchor Rods (Cast in Place) and Structural Fasteners	3385 3391	Visual Inspection - Testing as directed by the Engineer, (see Notes below)
Notes: Manufacturer must have one yearly passing test from the Department for each anchor rod or bolt type. Prior to installation, obtain copy of Mn/DOT passing test report from supplier. Specs 3385.2 A, B, & C require anchor rod markings per ASTM F 1554 S3. The end of each anchor bolt intended to project from the concrete must be die stamped with the grade identification as follows: Grade 36 = AB36, Grade 55 = AB55, Grade 105 = AB105.		
Anchorages (Drilled In)	Special Provisions	Visual Inspection - Check qualified products list.
Structural Steel	**Inspected by MnDOT & will be charged back to the Local Agency.**	
Steel Bridge - Beams, Girders, Diaphragms, etc.	2471	Structural Metals Inspection Tag and field inspection for damage/defects, check dimensions for contract compliance. Review approved products list as directed by the Engineer. Note: Structural metals products will be inspected at the plant and will be shipped with a Structural Metals Inspection Tag. An inspection confirmation report will be completed by Structural Metals Inspection staff and sent to the field personnel. Only approved suppliers are allowed to supply Structural Metals products. A list of approved suppliers can be found on the Bridge Office web site: http://www.dot.state.mn.us/bridge/
Concrete Girders-Diaphragms and sole plates		
Expansion Joints		
Steel Bearings		
Railing-Structural tube and ornamental		
Drainage Systems		
Protection Angles		
Overhead Sign structures	2564 2471	
High Mast Lighting Structures	2545 2471	
Monotube Signal Structures	2565 2471	

* Check domestic steel requirement under 1601 Special Provision.

Geosynthetics, Pipe, Tile, Precast/Prestressed Concrete 1 of 2

Kind of Material	Spec. No.	Min. Required Acceptance Testing (Field Testing Rate)
Corrugated Metal Products		
Culvert Pipe Under drains Erosion control Structures	3225 thru 3229, 3351, 3399	Visual Inspection: Check for good construction, workmanship, finish requirements and shipping
Structural Plate	3231	Visual Inspection: Invoice shall include notation that material described is in accordance with fabricator's Certificate and Guarantee
Aluminum Structural Plate	3233	
REMARKS: Retain the Certificate of Compliance and certified mill analysis in project file.		
Pipe		
Clay Pipe	3251	Visual Inspection
Reinforced Concrete Pipe and Arches, Precast Cattle Pass Units, Sectional Manhole Units	3236	Field Inspection: Check for damage and defects. Check dimensions and class as required.
Non-Reinforced Concrete Pipe	3253	
Drain Tile (Clay or Concrete)	3276	Visual Inspection - Acceptance as directed by the Engineer.
Thermoplastic (TP) Pipe ABS and PVC	3245	Obtain Certificate of compliance. Check for approved marking printed on pipe. Field Inspect for damage or defects.
Corrugated Polyethylene Pipe	3278	Check for markings (AASHTO M 252) Certificate of Compliance. Field Inspect for damage or defects.
Corrugated Polyethylene Pipe - Dual Wall 12"-48"	3247	Visual Inspection - Check approved products list. Obtain Certificate of Compliance.
Precast/Prestressed Concrete Structures - Inspected by MnDOT & will be charged back to the Local Agency.		
Reinforced Precast Box Culvert	3238	Field Inspection: Check for damage and defects. Check dimensions as required. Check for the "MnDOT" stamp and signature on the certification document.
Precast/Prestressed Concrete Structure (beams, posts, etc.)	2405	
Manholes and Catch Basins (Construction)	2506 3622	
Pipe Joint Sealer		
Sewer Joint Sealing Compound	3724	Visual Inspection - Acceptance as directed by the Engineer.

Geosynthetics, Pipe, Tile, Precast/Prestressed Concrete 2 of 2

Kind of Material	Spec. No.	Min. Required Acceptance Testing (Field Testing Rate)
Preformed Plastic Sealer for Pipe	3726 Type b	Visual Inspection - Acceptance as directed by the Engineer.
Bituminous Mastic Joint Sealer for Pipe	3728	
EPS Geofoam	Special Provisions	Visual Inspection - Acceptance as directed by the Engineer. Check for yellow aged material, uniformity and dimensions.
Geotextile Fabric and Geogrid Reinforcement	3733 and Special Provisions	Geotextile Materials are tested on a on-going basis. **Call the Maplewood lab regarding material acceptance, 651-366-5451.**
Silt Fence	3886	Visual Inspection - Check approved products list.

Miscellaneous Materials

Kind of Material	Spec. No.	Min. Required Acceptance Testing (Field Testing Rate)
Timber, Lumber Piling & Posts	3412 to 3471 & 3491	Visual Inspection - Acceptance as directed by the Engineer. Untreated materials shall be inspected in the field. Treated materials shall be Certified on the Invoice or Shipping Ticket. Material is inspected and stamped by an Independent Agency as per Specification 3491. Contact Laboratory for additional information.
Miscellaneous pieces and Hardware (Galvanized)	3392 3394	Visual Inspection - Acceptance as directed by the Engineer.
Insulation Board	3760	
Elastomeric Bearing Pads	3741 and Special Provisions	Check dimensions. Check repair of tested pad. Obtain copy of Certificate of Compliance. DO NOT USE ANY PADS THAT ARE NOT CERTIFIED.

(2360) PLANT MIXED ASPHALT PAVEMENT

January 23, 2013

2360.1 DESCRIPTION

This work consists of constructing plant mixed asphalt pavement on a prepared surface.

Plant mixed asphalt pavement designed according to a gyratory mix design method for use as a pavement surface.

A Mixture Designations

The Department will designate the mixture for asphalt mixtures in accordance with the following:

(1) The first two letters indicate the mixture design type:
  (1.1) SP = Gyratory Mixture Design.

(2) The third and fourth letters indicate the course:
  (2.1) WE = Wearing and shoulder wearing course, and
  (2.2) NW = Non-wearing Course.

(3) The fifth letter indicates the maximum aggregate size:
  (3.1) A = ½ in [12.5mm], SP 9.5,
  (3.2) B = ¾ in [19.0mm], SP 12.5,
  (3.3) C = 1 in [25.0mm], SP 19.0, and
  (3.4) D = ⅜ in [9.5mm], SP 4.75.

(4) The sixth digit indicates the Traffic Level (ESAL's × 10^6) in accordance with Table 2360-1, "Traffic Levels."

Table 2360-1
Traffic Levels

Traffic Level	20 Year Design ESALs
2 *	< 1
3 ‖	1 – < 3
4	3– < 10
5	10 – ≤ 30
6	>30 (See SMA Provision)

NOTE: The requirements for gyratory mixtures in this specification are based on the 20 year design traffic level of the project, expressed in Equivalent Single Axle Loads (ESAL's) 1 × 10^6 ESALs

* AADT < 2,300

‖ AADT > 2,300 to < 6,000

(5) The last two digits indicate the air void requirement:
  (5.1) 40 = 4.0 percent for wear mixtures, and
  (5.2) 30 = 3.0 percent for non-wear and shoulder.

(6) The letter at the end of the mixture designation identifies the asphalt binder grade in accordance with Table 2360-2, "Asphalt Grades."

Table 2360-2 Asphalt Grades	
Letter	**Grade**
A	PG 52 – 34
B	PG 58 – 28
C	PG 58 – 34
E	PG 64 – 28
F	PG 64 – 34
H	PG 70 – 28
I	PG 70 – 34
L	PG 64 – 22
M	PG 49 – 34

Ex: Gyratory Mixture Designation -- SPWEB540E (Design Type, Lift, Aggr. Size, Traffic Level, Voids, Binder)

2360.2 MATERIALS

A Aggregate

Use aggregate materials in accordance with 3139.2.

B Asphalt Binder Material.....3151

C Additives

The Department defines additives as material added to an asphalt mixture or material that does not have a specific pay item.

Do not incorporate additives into the mixture unless approved by the Engineer. Add anti-foaming agents to asphalt cement at the dosage rate recommended by the manufacturer. The Contractor may add mineral filler in quantities no greater than 5 percent of the total aggregate weight. The Contractor may add hydrated lime in quantities no greater than 2 percent of the total aggregate weight. Do not add a combination of mineral filler and hydrated lime that exceeds 5 percent of the total aggregate weight. Use methods for adding additives as approved by the Engineer.

C.1 Mineral Filler ..... AASHTO M 17

C.1.a Mineral Filler – Hydrated Lime

Provide hydrated lime for asphalt mixtures with no greater than 8 percent unhydrated oxides (as received basis) and meeting the requirements of AASHTO M 216. Use a method to introduce and mix hydrated lime and aggregate as approved by the Engineer before beginning mixture production.

C.2 Liquid Anti-Stripping Additive (Contractor Added)

If adding a liquid anti-strip additive to the asphalt binder, complete blending before mixing the asphalt binder with the aggregate. Only use liquid anti-strip additives that ensure the asphalt binder meets the Performance Grade (PG) requirements in 3151. The Contractor may use asphalt binder with liquid anti-strip added at the refinery or the Contractor may add liquid anti-strip at the plant site. If using asphalt binder with liquid anti-strip added at the refinery, ensure the supplier tests the binder and additive blend to confirm compliance with the AASHTO M 320. If an anti-strip agent is added at the plant, the plant mixed asphalt producer is considered a supplier and the binder must conform to the requirements of 3151. Do not pave until the asphalt binder and additive blend testing results meet the criteria in 2360.2.B, "Asphalt Binder Material."

C.2.a Mixture Requirements at Design

Design the mixture with the same asphalt binder supplied to the plant site using mixture option 1, "Laboratory Mixture Design" or mixture option 2, "Modified Mixture Design."

Provide documentation with either design option and include the amount of anti-strip needed to meet the minimum tensile strength requirements. Verify that the binder with the anti-strip meets the PG binder requirements for the mixture.

C.2.b Contractor Production Testing Requirements

Sample and test the asphalt binder and anti-strip blend daily. The Contractor may test the blend by viscosity, penetration, or dynamic sheer rheometer (DSR) of the blend. If the contract requires the use of a polymer modified asphalt binder in the mixture, use the DSR as the daily QC test.

Send the Engineer and MnDOT Chemical Laboratory Director a weekly QC report summarizing the results of the daily testing.

Perform at least one test bi-weekly per project to ensure the binder and anti-strip blend meets the requirements of AASHTO M 320. Send the test results to the Engineer and MnDOT Chemical Laboratory Director.

Provide asphalt binder and anti-strip blend field verification samples in accordance with 2360.2.G.7, "Production Test."

C.2.c Liquid Anti-Strip Additive Metering System

Include a liquid anti-strip flow meter and an anti-strip pump with the metering system. Connect the flow meter to the liquid anti-strip supply to measure and display only the anti-strip being fed to the asphalt binder.

Position the meter readout so that the inspector can easily read it.

Provide means to compare the flow meter readout with the calculated output of the anti-strip pump.

Provide a system that displays the accumulated anti-strip quantity being delivered to the mixer unit in gallons [liters] to the nearest gallon [liter] or in units of tons [metric tons] to the nearest 0.001 ton [0.001 tonne].

Calibrate and adjust the system to maintain an accuracy of ± 1 percent.

Calibrate each plant set-up before producing the mixture.

"Stick" the anti-strip tank at the end of the day's production to verify anti-strip usage quantities. The Engineer may require "sticking" on a daily basis.

Ensure the system has a spigot for sampling the binder and anti-strip after blending.

Use alternative blending and metering systems only when pre-approved by the Engineer.

C.3 Coating and Anti Stripping Additive 3161

C.4 Warm Mix Asphalt (WMA)

WMA is allowed on all projects. Any mix that is produced at temperatures 30°F or lower than typical HMA mixing temperature of the asphalt binder, as defined by the asphalt supplier, is considered as WMA.

The WMA can be manufactured through use of foamed asphalt and/or chemical additive processes. Notify the Engineer in advance of using any WMA additive or process. When chemical additives are used, provide the plant mixing and the laboratory mixing and compaction temperatures as recommended by the manufacturer of the additive.

D **Bituminous Tack Coat** **2357**

E **Mixture Design**

E.1 **Submittal Location**

Submit documentation and sample aggregate materials for review to the District Materials Laboratory.

E.2 **Aggregate Quality**

Provide aggregate in accordance with 3139.2.

E.3 **Restrictions**

Do not add aggregates and materials not included in the original mixture submission unless otherwise approved by the Engineer.

E.4 **Responsibility**

Design a gyratory mixture that meets the requirements of this specification in accordance with the following:

(1) MnDOT Laboratory Manual Method 1820,
(2) The Asphalt Institute's Superpave Mix Design Manual SP-2 (Use a 2 h short term aging period for volumetric), and
(3) The Laboratory Manual.

E.5 **Type of Mixture Design Submittal**

E.5.a **Option 1 — Laboratory Mixture Design**

E.5.a(1) **Aggregate**

Submit the aggregate samples for option 1, at least 15 working days before beginning production samples for quality testing. At least 30 calendar days before beginning asphalt production, submit samples of aggregates that require the magnesium sulfate soundness test to the District Materials Laboratory. Test the samples for quality of each source, class, type, and size of virgin and non-asphaltic salvage aggregate source used in the mix design. Retain a companion sample of equal size until the Department issues a Mixture Design Report. Provide 24 h notice of intent to sample aggregates to the Engineer. Provide samples in accordance with the following:

Table 2360-4
Aggregate Sample Size

Classification	Sieve	Weight
Virgin	Retained on No. 4 [4.75 mm]	80 lb [35 kg]
Virgin	Passing No. 4 [4.75 mm]	35 lb [15 kg]
Recycled asphalt pavement (RAP)	—	80 lb [35 kg]
Recycled asphalt shingles (RAS)	—	10 lb [5 kg] sample of representative RAS material

E.5.a(2) Mixture Sample

At least 7 working days before the start of asphalt production, submit the proposed Job Mix Formula (JMF) in writing and signed by a Level II Quality Management mix designer for each combination of aggregates to be used in the mixture. Include test data to demonstrate conformance to mixture properties as specified in Table 2360-7, "Mixture Requirements," and 3139.2, "Bituminous Aggregates." Use forms approved by the Department for the submission.

Submit an uncompacted mixture sample plus briquettes, in conformance with the JMF, compacted at the optimum asphalt content and required compactive effort for laboratory examination and evaluation. Provide a mixture sample size and the number of compacted briquettes and in accordance with the following:

Table 2360-5
Mixture Sample Requirements

Item	Gyratory Design
Uncompacted mixture sample size	75 lb [30 kg]
Number of compacted briquettes	2

E.5.a(3) Tensile Strength Ratio Sample

At least 7 days before actual production, submit sample to the District Materials Laboratory for verification of moisture sensitivity retained tensile strength ratio (TSR). The Engineer may test material submitted for TSR verification for maximum specific gravity G_{mm} compliance in addition to TSR results. The Engineer will reject the submitted mix design if the tested material fails to meet the G_{mm} tolerance. If the Engineer rejects a mix design, submit a new mix design in accordance with 2360.2.E, "Mixture Design." The Contractor may use one of the following options to verify that the TSR meets the requirements in Table 2360-7, "Mixture Requirements."

E.5.a(4) Option A

Batch material at the design proportions including optimum asphalt. Split the sample before curing and allow samples to cool to room temperature, approximately 77 °F [25 °C]. Submit 80 lb [35 kg] of mixture to the District Materials Laboratory for curing and test verification. Use a cure time of 2 h ±15 minutes at 290 °F [144 °C] cure time for both groups and follow procedures Laboratory Manual Method 1813.

E.5.a(5) Option B

Batch and cure in accordance with Option A. Compact, and submit briquettes and uncompacted mixture in accordance with Table 2360-6, "Option B Mixture Requirements."

Table 2360-6
Option B Mixture Requirements

Item	Gyratory Design
Un-compacted mixture sample size	8,200 g
Number of compacted briquettes*	6
Compacted briquette air void content	6.5 % – 7.5 %
* 6 in [150 mm] specimens.	

For both options, cure for 2 h ±15 min at 290° F [144° C] meeting the requirements in the MnDOT Laboratory Manual Method 1813.

E.5.a(6) Aggregate Specific Gravity

Determine the specific gravity of aggregate in accordance with Laboratory Manual Methods 1204 and 1205.

E.5.b Option 2 — Modified Mixture Design

The Contractor may use the modified mixture design if testing shows that the aggregates meet the requirements of 3139.2 in the current construction season and if the Level II mix designer submitting the mixture design has at least 2 years experience in mixture design. The Department will not require mixture submittal.

E.5.b(1) Mixture Aggregate Requirements

Size, grade, and combine the aggregate fractions in proportions that are in accordance with 3139.2.

E.5.b(2) JMF Submittal

At least 2 working days before beginning asphalt production, submit a proposed JMF in writing to the District Materials Laboratory signed by a Level II Quality Management mix designer for each combination of aggregates. For each JMF submitted, include documentation in accordance with 2360.2.E.5.a, "Option1 – Laboratory Mixture Design," to demonstrate conformance to mixture properties as specified in Table 2360-7, "Mixture Requirements," and Table 3139-3, "Mixture Aggregate Requirements." Submit the JMF on forms approved by the Department.

E.5.b(3) Initial Production Test Verification

The Department will take a mix verification sample within the first four samples at the start of production of each mix type. The Engineer will notify the Contractor electronically when a sample is to be taken and tested for tensile strength ratio (TSR). Initial production testing will be done within the first 5,000 tons [4500 tonnes] of the start of production.

E.6 Mixture Requirements

The Department will base mixture evaluation on the trial mix tests and in accordance with Table 2360-7, "Mixture Requirements."

Table 2360-7
Mixture Requirements

Traffic Level	2	3	4	5
20 year design ESALs	< 1 million	1 – 3 million	3 – 10 million	10 – 30 million
Gyratory mixture requirements:				
Gyrations for N_{design}	40	60	90	100
% Air voids at N_{design}, wear	4.0	4.0	4.0	4.0
% Air voids at N_{design}, Non-wear and all shoulder	3.0	3.0	3.0	3.0
Adjusted Asphalt Film Thickness, minimum μ	8.5	8.5	8.5	8.5
TSR*, *minimum %*	75‖	75‖	80†	80†
Fines/effective asphalt	0.6 – 1.2	0.6 – 1.2	0.6 – 1.2	0.6 – 1.2

* Use 6 in [150 mm] specimens in accordance with 2360.2.I, "Field Tensile Strength Ratio (TSR)."
‖ MnDOT minimum = 65
† MnDOT minimum = 70

E.7 Minimum Ratio of Added Asphalt Binder to Total Asphalt Binder

Control recycled materials used in mixture by evaluating the ratio of new added asphalt binder to total asphalt binder as show in Table 2360-8.

Table 2360-8 Requirements for Ratio of Added New Asphalt Binder to Total Asphalt Binder[1] min%:			
Specified Asphalt Grade[2]	Recycled Material		
	RAS Only	RAS + RAP	RAP Only
PG XX-28, PG 52-34, PG 49-34, PG 64-22			
Wear	70	70	70
Non-Wear	70	70	65
PG 58-34, PG 64-34, PG 70-34			
Wear & Non-Wear	80	80	80

[1] The ratio of added new asphalt binder to total asphalt binder is calculated as (added binder/total binder) x 100

[2] The Contractor can elect to use a blending chart to verify compliance with the specified binder grade. The Department may take production samples to ensure the asphalt binder material meets the requirements. The blending chart is on the Bituminous Office Website.

E.8 Adjusted Asphalt Film Thickness (Adj. AFT)..... MnDOT Laboratory Manual Method 1854

Ensure the adjusted asphalt film thickness (Adj. AFT) of the mixture at design and during production meets the requirements of Table 2360-7,"Mixture Requirements." Base the Adj. AFT on the calculated aggregate surface area (SA) and the effective asphalt binder content.

E.9 Documentation

Include the following documentation and test results with each JMF submitted for review:

(1) Names of the individuals responsible for the QC of the mixture during production,
(2) Low project number of the contract on which the mixture will he used,
(3) Traffic level and number of gyrations,
(4) The following temperature ranges as supplied by the asphalt binder supplier:
  (4.1) Laboratory mixing and compaction,
  (4.2) Plant discharge, and
  (4.3) Field compaction.
(5) The percentage in units of 1 percent (except the No. 200 sieve [0.075 mm] in units of 0.1 percent) of aggregate passing each of the specified sieves (including the No. 16, No. 30, No. 50, and No. 100) for each aggregate to be incorporated into the mixture. Derive the gradation of the aggregate from the RAP after extracting the residual asphalt.
(6) Source descriptions of the following:
  (6.1) Location of material,
  (6.2) Description of materials,
  (6.3) Aggregate pit or quarry number, and
  (6.4) Proportion amount of each material in the mixture in percent of total aggregate.
(7) Composite gradation based on (5) and (6) ahove. Include virgin composite gradation based on (6) and (7) above for mixtures containing RAP/RAS.
(8) Bulk and apparent specific gravities and water absorption (by % weight of dry aggregate). Both coarse and fine aggregate, for each product used in the mixture (including RAP/RAS). Use Mn/DOT Laboratory Manual Method 1204 and 1205. The tolerance allowed between the Contractor's and the Department's specific gravities are G_{sb} (individual) = 0.040 [+4 and -4] and G_{sb} (combined) = 0.020.
(9) FHWA 0.45 power chart represented by the composite gradation plotted on Federal Form PR-1115
(10) Test results from the composite aggregate blend at the proposed JMF proportions showing compliance with Table 3139-3:
  (10.1) Coarse Aggregate Angularity,
  (10.2) Fine Aggregate Angularity, and
  (10.3) Flat and Elongated

(11) Extracted asphalt binder content for mixtures containing RAP/RAS with no retention factor included.

(12) Asphalt binder percentage in units of 0.1 percent based on the total mass of the mixture and the PG grade.

(13) Each trial mixture design includes the following:

(13.1) At least 3 different asphalt binder contents (with at least 0.4 percent between each point), with at least one point at, one point above and one point below the optimum asphalt binder percentage.

(13.2) Maximum specific gravity for each asphalt binder content calculated based on the average of the effective specific gravities measured by using at least two maximum specific gravity tests at the asphalt contents above and below the expected optimum asphalt binder content.

(13.3) Test results on at least two specimens at each asphalt binder content for the individual and average bulk specific gravities, density, and heights.

(13.4) Percent air voids of the mixture at each asphalt binder content.

(13.5) Adj. AFT for each asphalt binder content.

(13.6) Fines to Effective Asphalt (F/A) ratio calculated to the nearest 0.1 percent.

(13.7) TSR at the optimum asphalt binder content.

(13.8) Graphs showing air voids, adjusted AFT, G_{mb}, G_{mm} and unit weight vs. percent asphalt binder content for each of the three asphalt binder contents submitted with trial mix.

(13.9) Evidence that the completed mixture will conform to design air voids (V_a), Adj. AFT, TSR, F/A_e (Fines to effective asphalt ratio).

(13.10) Gyratory densification tables and curves generated from the gyratory compactor for all points used in the mixture submittal.

(13.11) % new asphalt binder to total asphalt binder.

(14) The Contractor has the option of augmenting the submitted JMF with additional sand or rock. When using this option, provide samples of the aggregate for quality analysis in accordance with 2360.2.E.5, "Type of Mixture Design Submittal." Also provide mix design data for two additional design points per add-material. Provide one point to show a proportional adjustment to the submitted JMF that includes 5 percent, by weight, add-material at the JMF optimum asphalt percent. Provide a second point to show a proportional adjustment to the submitted JMF that includes 10 percent, by weight, add material at the JMF optimum asphalt percent. Report the following information for each of these two points:

(14.1) The maximum specific gravity determined by averaging two tests,

(14.2) Test results showing the individual and average bulk specific gravity, density, and height of at least two specimens at the optimum asphalt binder content,

(14.3) Percent air voids for the mixture for each point,

(14.4) Fines to Effective Asphalt ratio calculated to the nearest 0.1 of a percent,

(14.5) Crushing of the coarse and fine aggregate,

(14.6) Adj. AFT, and,

(14.7) Up to two add materials will be allowed.

F Mixture Design Report

The Department will provide a Mixture Design Report consisting of the JMF. Include the following in the JMF:

(1) Composite gradation,

(2) Aggregate component proportions,

(3) Asphalt binder content of the mixture,

(4) Design air voids,

(5) Adj. asphalt film thickness, and

(6) Aggregate bulk specific gravity values.

Show the JMF limits for gradation control sieves in accordance with aggregate gradation broadbands shown in Table 3139-2, percent asphalt binder content, air voids, and Adj. AFT. If the Department issues a Mixture Design Report, this report only confirms that the Department reviewed the mixture and that it meets volumetric properties shown in Table 2360-7 and Table 2360-8. The Department makes no guaranty or warranty, either express or implied, that compliance with volumetric properties ensures specification compliance regarding placement and compaction of the mixture.

Provide materials meeting the requirements of the aggregate and mixture design before issuing a Mixture Design Report. The Department will review two trial mix designs per mix type designated in the plan per contract at no cost to the Contractor. The Department will verify additional mix designs at a cost of $2,000 per design.

Provide a Department - reviewed Mixture Design Report for all paving except for small quantities of material as described in 2360.3.G, "Small Quantity Paving."

For city, county, and other agency projects, provide the District Materials Laboratory a complete project proposal, including addenda, supplemental agreements, change orders, and plans sheets, including typical sections, affecting the mix design before the Department begins the verification process.

G Mixture Quality Management

G.1 Quality Control (QC)

The Contractor will perform Quality Control (QC) as part of the production process. QC is the process control of the operations related to mixture production and determining the quality of the mixture being produced. The QC sample is the Contractor's sample taken and tested during production and used to control the production process. Provide and maintain a QC program for plant mix asphalt production, including mix design, process control inspection, sampling and testing, and adjustments in the process related to the production of an asphalt pavement.

G.1.a Certification

Provide the following to obtain certification:

(1) Completed and submitted request form application for plant inspection.
(2) Site map showing stockpile locations.
(3) Signed asphalt plant inspection report showing the plant and testing facility passed as documented by Asphalt Plant Inspection Report (TP 02142-02, TP 02143-02). The inspection report must also include documentation showing plant and laboratory equipment has been calibrated and is being maintained to the tolerance shown in the Bituminous Manual and sections 1200, 1800, and 2000 of the Mn/DOT Laboratory Manual.
(4) A Department-signed Mixture Design Report (MDR) before mixture production.

G.1.b Maintaining Certification

Maintain plant certification by documenting the production and testing of the certified plant asphalt mixtures. Sample and test asphalt mixtures in accordance with this section and meeting the requirements of the Schedule of Materials Control.

G.1.b(1) Annual Certification

Perform annual certification after winter suspension.

G.1.b(2) Sampling Rate

Sample at the rate in accordance with 2360.2.G.6 and the requirements of the Schedule of Materials Control.

G.1.b(3) Plant Moved

Recertify the plant if the plant moves to a new or previously occupied location.

G.1.c. Plant Certification Revocation

The Engineer may revoke certification for any of the following reasons:

(1) If the mix does not meet the requirements of 2360.2.E.6, 2360.2.E7,and 3139.2,
(2) If there is a failure to meet the testing rates, or
(3) If it is determined records were falsified.

If the Engineer revokes plant certification, the Department may revoke the Technical Certification of the individual or individuals involved. The Department will maintain a list of companies with revoked certifications.

G.2 Quality Assurance (QA)

The Engineer will perform Quality Assurance (QA) as part of the acceptance process. QA is the process of monitoring and evaluating various aspects of the Contractor's testing as described below. The QA sample is the Department's companion sample to the Contractor's QC sample. QA testing is performed to accept the work. The Engineer will perform the following:

(1) Conduct QA and verification sampling and testing,
(2) Observe the QC sampling and tests,
(3) Monitor the required QC summary sheets and control charts,
(4) Verify calibration of QC laboratory testing equipment,
(5) Communicate Department test results to the Contractor's personnel on a daily basis, and
(6) Ensure Independent Assurance (IA) sampling and testing requirements are met.

If the Engineer observes that the Contractor is not performing sampling and quality control tests in accordance with the applicable test procedures, the Engineer may stop production until the Contractor takes corrective action. The Engineer will notify the Contractor of observed deficiencies promptly, both verbally and in writing.

The Engineer may obtain additional samples, at any time and location during production, to determine quality levels in accordance with 2360.2.G.3, "Verification Sample."

The Department will post a chart with the names and telephone numbers for the personnel responsible for QA.

The Engineer will calibrate and correlate laboratory testing equipment in accordance with the Bituminous Manual and Laboratory Manual.

Table 2360-9 Allowable Differences between Contractor and Department Test Results*	
Item	**Allowable Difference**
Mixture bulk specific gravity (G_{mb})	0.030
Mixture maximum specific gravity (G_{mm})	0.019
Adjusted AFT (calculated)	1.2
Fine Aggregate Angularity, uncompacted voids (U) %	1
Coarse Aggregate Angularity, % fractured faces (%P)	15
Aggregate Individual Bulk Specific Gravity (+ No. 4 [+4.75 mm])	0.040
Aggregate Individual Bulk Specific Gravity (- No. 4 [-4.75mm])	0.040
Aggregate combined blend Specific Gravity (G_{sb})	0.020
Tensile strength ratio (TSR), %	Table 2360-7
Asphalt binder content:	
Meter method, %	0.2
Spot check method, %	0.2
Chemical extraction methods, %	0.4
Incinerator oven, %	0.3
Chemical vs. meter, spot check, or incinerator methods	0.4
Incinerator oven vs. spot check	0.4
Gradation sieve, *% passing:*	
1 in [25.0 mm], ¾ in [19.0 mm], ½ in [12.5 mm], ⅜ in [9.5 mm]	6
No. 4 [4.75 mm]	5
No. 8 [2.36 mm], No. 16 [1.18 mm], No. 30 [0.60 mm]	4
No. 50 [0.30 mm]	3
No. 100 [0.15 mm]	2
No. 200 [0.075 mm]	1.2
* Test tolerances listed are for single test comparisons.	

G.3 Verification Sample

The Department will test a minimum of one of the companion samples to the Contractor's QC samples and identify this as a verification sample. The Department's verification sample is used to assure compliance of the Contractor's QC program. The verification samples can be any one or all of the splits to the Contractor's QC samples. Additionally, the Department can take a random sample at any time from behind the paver or from the truck box and will consider this a verification sample. The split of this sample, given to the Contractor, must be tested by the Contractor and will replace the next scheduled QC sample. The Department recommends sampling enough material to accommodate retesting in case the samples fail.

The Department will perform verification testing on at least one set of production tests in accordance with 2360.2.G.6.b, "Production," and 2360.2.G.7, "Production Test," on a daily basis per mix type. Use the verification companion sample to verify the requirements of Table 3139-2, Table 3139-3, and Table 2360-7. Compare the verification companion sample to the verification sample for compliance with allowable tolerances in Table 2360-9, "Allowable Differences between Contractor and Department Test Results." These include the mixture properties of G_{mm} (mixture maximum gravity), G_{mb} (mixture bulk gravity), asphalt binder content, Adjusted AFT (calculated), Coarse and Fine Aggregate crushing, and gradation. Perform one test per week on a verification companion for coarse and fine aggregate crushing meeting the requirements of 2360.2.G.7.g "Coarse Aggregate Angularity" and 2360.2.G.7.h, "Fine Aggregate Angularity." These do not include the aggregate bulk specific gravity G_{sb}, fines to effective asphalt, or the tensile strength ratio (TSR). Determine the asphalt binder content and gradation in accordance with the extraction method specified in 2360.2.G.7.a, "Asphalt Binder Content," or 23602.G.7.b, "Gyratory Bulk Specific Gravity.

The Contractor may access the Department's verification test results for G_{mm} (mixture maximum gravity), Gmb (mixture bulk gravity), air voids (calculated), asphalt binder content, within 2 working days from the time the sample is delivered to the District Laboratory. The Department will provide the gradation, crushing, and Adj. AFT (calculated) results to the Contractor within three working days. The Department will include the verification test results on the test summary sheet. The Department will compare the results with the Contractor's verification companion for the allowable tolerances in Table 2360-9, "Allowable Differences between Contractor and Department Test Results." The Department will consider the verification process complete if the Contractor's verification companion meets the tolerances in Table 2360-9.

If the tolerances between the Contractor's verification companion and the Department's verification sample do not meet the requirements of Table 2360-9, the Department will retest the material. If the retests fail to meet tolerances, the Department will substitute the Department's verification test results for the Contractor's results in the QC program and use those results for acceptance. The Department will only substitute the out-of-tolerance parameters and will recalculate volumetric properties if applicable.

If the Adj. AFT calculation does not meet the tolerance, equalize the Department Adj. AFT result by increasing the original Department value by 0.5 microns. Use the increased Department Adj. AFT for the Individual Adjusted AFT result and to calculate the Moving Average Adj. AFT results. The increased Department Adj. AFT will form the basis for acceptance.

If the verification sample retests do not meet tolerances, the Department will immediately investigate the cause of the difference that will include a review of testing equipment, procedures, worksheets, gyratory specimen height sheets, and personnel to determine the source of the problem. The Engineer may require both the Department and Contractor to perform at least one hot-cold comparison of mixture properties.

To perform a hot-cold comparison, split the sample into three representative portions. The Engineer will observe the Contractor testing. Immediately compact one part while still hot. Apply additional heating to raise the temperature of the sample to compaction temperature if necessary. Allow the second and third part to cool to air temperature. Retain the second part and transport the third part to the District Materials Laboratory. On the same day and at the same time as the District Materials Laboratory, heat samples to compaction temperature and compact. Develop a calibration factor to compare the specific gravity of the hot compacted samples to reheated compacted samples. Use at least two gyratory specimens for each test. The Engineer or the Contractor may request that this test be repeated.
Reheat mix samples to 160° F [70° C] to allow splitting of the sample into representative fractions for the various tests. Do not overheat the mixture portions used for testing maximum specific gravity test.

The Department will test the previously collected QA samples until they meet the tolerances or until the Department has tested all of the remaining samples. After testing the samples, the Department will test QA samples subsequent to the verification sample until tolerances are met. The Department will base acceptance on QC data. The Department will base acceptance on QC data with substitution of Department test results for those parameters out of tolerance. Cease mixture production and placement if reestablished test results do not meet tolerances within 48 h. Resume production and placement only after meeting the tolerances. The process for dispute resolution is available on the Bituminous Office website.

If the Engineer analyzes the data using methods for determination of bias on file in the Bituminous Office and finds a bias in the test results, the Engineer will specify which results to use. If through analysis of data, it is determined that there is a bias in the test results, the Engineer will determine which results are appropriate and will govern.

G.4 Contractor Quality Control

G.4.a Personnel

Submit an organizational chart listing the names and phone numbers of individuals and alternates responsible for the following:

(1) Mix design,
(2) Process control administration, and
(3) Inspection.

Provide QC technicians certified as a Level I Bituminous Quality Management (QM) Tester meeting the requirements of the MnDOT Technical Certification Program for QC testing and Level II Bituminous QM Mix Designer to make process adjustments. Provide at least one person per paving operation certified as a Level II Bituminous Street Inspector.

Provide a laboratory with equipment and supplies for Contractor quality control testing and maintain with the following:

(1) Up-to-date equipment calibrations and a copy of the calibration records with each piece of equipment,
(2) Telephone,
(3) Fax and copy machine; however, the Engineer may waive the requirement to have a fax machine if internet and email are available,
(4) Internet and Email,
(5) Computer,
(6) Printer, and
(7) Microsoft Excel, version 2010 or newer

Laboratory equipment need to meet the requirements listed in Section 400 of the Bituminous Manual, Laboratory Manual, and these specifications, including having extraction capabilities. Before beginning production, the laboratory equipment needs to be calibrated and operational.

Calibrate and correlate all testing equipment in accordance with the Bituminous Manual and Laboratory Manual. Keep records of calibration for each piece of testing equipment in the same facility as the equipment.

G.4.b Sampling and Testing

Take QC samples at random tonnage or locations, quartered from a larger sample of mixture. Sample randomly and in accordance with the Schedule of Materials Control. Determine random numbers and tonnage or locations using the Bituminous Manual; Section 5-693.7 Table A or ASTM D 3665, Section 5, or, an Engineer approved alternate method of random number generation. Sample either behind the paver or from the truck box at the plant site. Other sampling locations can be approved by the Engineer. The Contractor must decide and notify the Engineer where samples will be taken before production begins. The Contractor and Engineer must both agree to a change of sampling location once production has begun. The procedure for truck box sampling is on the Bituminous Office website. The Contractor will obtain at least a 130 pound [60 kg] sample. Split the sample in the presence of the Inspector. The Inspector will retain possession of the Agency portion of each split sample that is taken and randomly submit a minimum of one sample, on a daily basis, to the District Laboratory for Verification testing (see 2360.2.G.3). Store compacted mixture specimens and loose mixture companion samples for 10 calendar days. Label these split companion samples with companion numbers.

If coarse and fine aggregate angularity are not evaluated for every QC sample retain the extracted gradation samples for the respective QC samples for additional testing. Keep the aggregate samples in containers with field identification labels for a period of 10 calendar days. The Engineer will identify which extracted gradation sample is the Verification Companion and whether it is to be tested for coarse and fine aggregate angularity.

G.5 Production Test Requirements

Determine the planned tonnage [metric tons] for each mixture planned for production during the production day. Divide the planned production by 1,000 and round to the next highest whole number. The result is

the number of production tests required for the mixture. Table 2360-11, "Production Testing Rates" shows the required production tests.

Split the planned production into even increments and select sample locations as described above. If actual tonnage is greater than the planned tonnage, repeat the calculation above and provide additional tests if the calculation results in a higher number of production tests. During production, the Department will not require mixture volumetric property tests if mix production is no greater than 300 ton [270 tonne]. Provide production tests if the accumulative weight on successive days is greater than 300 ton [270 tonne].

If there is a choice of more than one MnDOT approved test procedure, select one method at the beginning of the project with the approval of the Engineer and use that method for the entire project. The Contractor and Engineer may agree to change test procedures during the construction of the project.

G.5a Establishing an Ignition Oven Correction Factor.....MnDOT Lab. Manual 1853 Appendix

On the first day of production, for each mixture type, both the Contractor and the Agency will establish an ignition oven correction factor from the produced mixture. Re-establish correction factors when:

There are aggregate or RAP substitutions

There are 3 or more tolerance failures on the extracted asphalt content between the Agency and the Contractor as defined by Table 2360-9, "Allowable Differences between Contractor and Department Test Results".

G.6 Production Testing Rates

G.6.a Start –Up

At the start of production, for the first 2,000 ton [1,800 tonne] of each mix type, perform testing at the following frequencies:

Table 2360-10 Production Start-Up Testing Rates			
Production Test	Testing Rates	Laboratory Manual Method	**Section**
Bulk Specific Gravity	1 test per 500 ton [450 tonne]	1806	2360.2.G.7.b
Maximum Specific Gravity	1 test per 500 ton [450 tonne]	1807	2360.2.G.7.c
Air Voids (calculated)	1 test per 500 ton [450 tonne]	1808	2360.2.G.7.d
Asphalt Content	1 test per 500 ton [450 tonne]	1853	2360.2.G.7.a
Add AC/Total AC Ratio (calculated)	1 test per 1000 ton [900 tonne]	1853	2360.2.G.7.a
Adj. AFT (Calculated)	1 test per 500 ton [450 tonne]	1854	2360.2.E.6.b
Gradation	1 test per 500 ton [450 tonne]	1203	2360.2.G.7.f
Coarse Aggregate Angularity	1 test per 1,000 tons [900 tonne]	1214	2360.2.G.7.g
Fine Aggregate Angularity (FAA)	1 test per 1,000 ton [900 tonne]	1206	2360.2.G.7.h
Fines to Effective Asphalt Ratio (calculated)	1 test per 500 ton [450 tonne]	1203 & 1853	2360.2.G.7.f & 2360.2.G.7.a

G.6.b **Production**

After producing the first 2,000 ton [1,800 tonne] of each mix type test at the following frequencies:

Table 2360-11 Production Testing Rates			
Production Test	Sampling and Testing Rates	Test Reference	**Section**
Bulk Specific Gravity	Divide the planned production by 1,000. Round the number to the next higher whole number	Laboratory Manual 1806	2360.2.G.7.b
Maximum Specific Gravity	Divide the planned production by 1,000. Round the number to the next higher whole number.	Laboratory Manual 1807	2360.2.G.7.c
Air Voids (calculated)	Divide the planned production by 1,000. Round the number to the next higher whole number	Laboratory Manual 1808	2360.2.G.7.d
Asphalt Content	Divide the planned production by 1,000. Round the number to the next higher whole number	Laboratory Manual 1853	2360.2.G.7.a
Add AC/Total AC Ratio (calculated)	Divide the planned production by 1,000. Round the number to the next higher whole number	Laboratory Manual 1853	2360.2.G.7.a
Adj. AFT (Calculated)	Divide the planned production by 1,000. Round the number to the next higher whole number	Laboratory Manual 1854	2360.2.E.7.e
Gradation	1 gradation per 1,000 tons [900 tonne], or portion thereof (at least one per day)	Laboratory Manual 1203	2360.2.G.7.f
Coarse Aggregate Angularity	2 tests per day for at least 2 days, then 1 per day if CAA is met. If CAA >8% of requirement, 1 sample per day but test 1 per week.	Laboratory Manual 1214	2360.2.G.7.g
Fine Aggregate Angularity (FAA)	2 tests per day for at least 2 days, then 1 per day if FAA is met. If FAA >5% of requirement, 1 sample per day but test 1 per week.	Laboratory Manual 1206	2360.2.G.7.h
Fines to Effective Asphalt Ratio (calculated)	Divide the planned production by 1,000. Round the number to the next higher whole number	Laboratory Manual 1203 & 1853	2360.2.G.7.f & 2360.2.G.7.a
TSR	As directed by the Engineer	Laboratory Manual 1813	2360.G.7.i
Aggregate Specific Gravity	As directed by the Engineer	Laboratory Manual 1204, 1205, and 1815	2360.G.7.j
Mixture Moisture Content	Daily unless otherwise required by the Engineer	Laboratory Manual 1855	2360.G.7.k
Asphalt Binder	Sample first load (each grade), then 1 per 250,000 gal sample size 1 qt [1,000,000 L]	MnDOT Bituminous Manual 5-693.920	2360.G.7.l

G.7 Production Tests

G.7.a Asphalt Binder Content

Spotchecks are required only when the Engineer has waived the requirements of 2360.2G8 relating to furnishing a computerized printout of the plant blending control system. A minimum of 1 spotcheck per day per mixture blend is required to determine the new added asphalt binder.

Use an incinerator oven meeting the requirements of the Laboratory Manual Method 1853. Do not use the incinerator oven if the percentage of Class B material is greater than 50 percent within the composite blend, unless the Contractor determines a correction factor approved by the Engineer.

Perform chemical extraction meeting the requirements of Laboratory Manual Method 1851 or 1852.

G.7.b Gyratory Bulk Specific Gravity, Gmb

Use two specimens to determine gyratory bulk specific gravity meeting the requirements of Laboratory Manual Method 1806. Set Gyratory to an internal angle of 1.16° ± 0.02° according to AASHTO TP 71.

G.7.c Maximum Specific Gravity, Gmm

Determine maximum specific gravity meeting the requirements of Laboratory Manual Method 1807.

G.7.d Air Voids – Individual and Isolated (Calculation)

Calculate the individual and isolated air voids meeting the requirements of Laboratory Manual Method 1808. Use the maximum mixture specific gravity and corresponding bulk specific gravity from a single test to calculate the isolated air voids. Use the maximum specific gravity moving average and the bulk specific gravity from a single test to calculate the individual air voids.

Compact gyratory design to N_{design} in accordance with Table 2360-7, "Mixture Requirements" for the specified traffic level.

G.7.e Adjusted Asphalt Film Thickness (AFT) (Calculation)

Calculate the Adj. AFT meeting the requirements of the Laboratory Manual Method 1854.

G.7.f Gradation – Blended Aggregate

Determine the gradation of blended aggregate sample, from an extracted bituminous mixture, meeting the requirements of Laboratory Manual Method 1203.

G.7.g Coarse Aggregate Angularity

Test the Coarse Aggregate Angularity (CAA) meeting the requirements of Laboratory Manual Method 1214 to determine the CAA on composite blend from aggregates used in production of hot mix asphalt. Ensure CAA test results meet the requirements in accordance with Table 3139-3.

The Contractor may test mixtures containing virgin aggregates from composite belt samples. Test mixtures containing RAP from extracted aggregates taken from standard production samples. Test the percentage of fractured faces of the composite aggregate blend less than 100 percent twice a day for each mixture blend for at least two days, then one test per day if the test samples meet the CAA requirements. If the CAA crushing test results are greater than 8 percent of the requirements, take one sample per day and perform one test per week.

Report CAA results on the test summary sheet. The Department may reduce payment in accordance with Table 2360-15, "Reduced Payment Schedule for Individual Test Results," for mixture placed and represented by results below the minimum requirement in accordance with Tahle 3139-3. The Department will calculate tonnage subjected to reduced payment as the tons placed from the sample point of the failing test to the sampling point where the test result meets the specifications.

G.7.h Fine Aggregate Angularity

Use Laboratory Manual Method 1206 to test the composite blend from aggregates used in production of asphalt mixtures for Fine Aggregate Angularity (FAA) meeting the requirements of Table 3139-3. The Contractor may test mixtures that contain virgin aggregates from composite belt samples. Test mixtures that contain RAP from extracted aggregates taken from standard production samples. Perform two tests per day for each mixture blend for at least two days to test the percentage of uncompacted voids from the composite aggregate blend, then one test per day if the samples meet FAA requirements. If FAA test results are greater than 5 percent of the requirement, take one sample per day and one test per week.

Report FAA results on the test summary sheet. The Department may reduce payment in accordance with Table 2360-16, "Reduced Payment Schedule for Individual Test Results," for mixture placed and represented by results below the minimums in accordance with Table 3139-3. The Department will calculate tonnage subjected to reduced payment as the tons placed from the sample point of the failing test to the sampling point where the test result meets the specifications.

G.7.i Field Tensile Strength Ratio (TSR) ..... Laboratory Manual Method 1813

If the Engineer requires sampling and testing of the mixture to verify tensile strength ratio (TSR), both the Contractor and the Department will be required to test these samples within 72 h after sampling. The Contractor shall obtain a sample weighing at least 110 lb [50 kg] and split the sample in half to provide a sample for the Department and the Contractor. Label the Department companion of this split with the following information:

(1) Date,
(2) Time,
(3) Project number, and
(4) Cumulative tonnage to date.

After the sample is split and labeled, give the Department's companion sample to the Department Street Inspector or Plant Monitor or to the Materials Engineer within 24 h of sampling as directed by the Engineer. When using Option 2, obtain the sample within the first 5,000 ton [4,500 tonne] of plant mixed asphalt produced or by the second day of production, whichever comes first, to verify tensile strength ratio (TSR).Take mixture samples from the windrow or truck box. Provide a 6 in [150 mm] specimen for gyratory design. The Contractor may test the sample at a permanent lab site or a field lab site.

Refer to Table 2360-12, "Mixture Type, Minimum TSR," for the minimum acceptable TSR values for production. Stop production immediately if the material does not meet minimum TSR requirements. Do not resume production until after adding anti-strip to the asphalt binder. Determine the responsible party for the cost of the anti-strip in accordance with the Department and Contractor TSR values in Table 2360-13. If the Department is responsible for the cost of the anti-strip, the Department will only pay for the cost of the anti-strip for mixtures placed on that project. The Department will not pay for delay costs associated with making changes related to this testing.

Table 2360-12
Mixture Type, Minimum TSR

Traffic Level 2 – 3, %		Traffic Level 4 – 5, %	
Contractor	MnDOT	Contractor	MnDOT
75	65	80	70

Table 2360-13 Anti-Strip Cost Responsibility			
Gyratory Level	**Contractor TSR**	**MnDOT TSR**	**Responsibility**
2 – 3	≥ 75	≥ 65	No anti-strip required
		< 65	Contractor
	< 75	≥ 65	Department
		< 65	Contractor
4 – 5	≥ 80	≥ 70	No anti-strip required
		< 70	Contractor
	< 80	≥ 70	Department
		< 70	Contractor

Take another sample and test within the first 500 ton [450 tonne] after production resumes. Stop production if the re-test fails to meet the minimum specified value. Discuss a proposal to resolve the problem with the Engineer before resuming production. Do not operate below the specified minimum TSR if at least 2 successive tests fail the TSR requirements.

A new sample and retest is automatically required if a proportion changes by greater than 10 percent from the currently produced mixture for a single stockpile aggregate or the Engineer directs the Contractor to sample and retest.

G.7.j Aggregate Specific Gravity(Gsb) ..... Laboratory Manual Methods 1204, 1205, 1815

Sample and test aggregate stockpiles to verify aggregate specific gravity if directed by the Engineer in conjunction with the District Materials Engineer. Provide 90 lb [40 kg] representative stockpile samples for each aggregate component. Split samples in half to provide material for both the Department and the Contractor. Label the Department companion with the following information:

(1) Date,
(2) Time,
(3) Project number, and
(4) Approximate cumulative tonnage to date.

Give the Department companion to the Department Street Inspector or Plant Monitor immediately after splitting or to the Materials Engineer within 24 h of sampling as directed by the Engineer. The Materials Engineer will compare the aggregate specific gravity results to the Contractor's values on the current Mix Design Report. If the results deviate beyond the tolerance in accordance with Table 2360-16, "Allowable Differences between Contractor and Department Test Results," the Materials Engineer will notify the Contractor and issue a new Mix Design Report with the current specific gravity results. Base new mixture placed after receiving notification of new specific gravity values on the Department results. The Engineer will notify the Contractor regarding new specific gravity values. The dispute resolution procedure for aggregate specific gravity is on the Bituminous Office website.

G.7.k Moisture Content ..... Laboratory Manual Method 1855

Provide a mixture with moisture content no greater than 0.3 percent. Measure moisture content in the mixture behind the paver or, if approved by the Engineer, in the truck box. Sample and test as directed by the Engineer. Store the sample in an airtight container. Do not perform microwave testing.

Do not provide plant mixed asphalt with a moisture content greater than 0.3 percent.

G.7.l Asphalt Binder Samples

Obtain asphalt binder samples from a sampling valve located between the pump and the drum. Sample each type of asphalt binder used in mixture production after 50 tons of mixture has been produced, then sample at a rate of one per 250,000 gal [1,000,000 L. A minimum of 1 gallon of binder must be drawn and wasted

from the sampling valve before the actual sample is drawn. For batch plants, obtain the asphalt binder sample from the weigh pod. Provide a 1 qt [1.0 L] sized sample. The Inspector will monitor the sampling the Contractor performs. Record sample information on an Asphalt Sample Identification Card. Submit the sample to the Central Materials Laboratory. Contact the Department Chemical Laboratory Director for disposition of failing asphalt binder samples.

G.8 Documentation

Maintain documentation, including test summary sheets and control charts, on an ongoing basis. Maintain a file of gyratory specimen heights for gyratory compacted samples and test worksheets. File reports, records, and diaries developed during the work as directed by the Engineer. These documents become the property of the Department.

Number test results in accordance with the MDR and record on forms approved and provided by the Department.

Send production test results on test summary sheets to the District Materials Laboratory and to other sites as directed by the Engineer by 11 AM of the day following production by facsimile, or e-mail when approved by the Engineer.

Include the following production test results and mixture information on the Department approved test summary sheet:

(1) Percent passing on all sieves in accordance with Table 3139-2 (including No. 16, No. 30, No. 50, No. 100),
(2) Coarse and fine aggregate crushing,
(3) Maximum specific gravity (G_{mm}),
(4) Bulk specific gravity (G_{mb}),
(5) Percent total asphalt binder content (P_b),
(6) New added asphalt binder content,
(7) Ratio of % new added asphalt binder to total asphalt binder,
(8) Calculated production air voids (V_a),
(9) Calculated adjusted AFT (Adj. AFT),
(10) Composite aggregate specific gravity (G_{sb}) reflecting current proportions,
(11) Aggregate proportions in use at the time of sampling,
(12) Tons where sampled,
(13) Tons represented by a test and cumulative tons produced,
(14) Fines to effective asphalt ratio (F/A_e),
(15) Signature Line for MnDOT and Contractor Representative,
(16) Mixture Moisture Content, and
(17) MnDOT verification sample test result.
(18) Identify, when used, the WMA additive or process and dosing rates.

Submit copies of failing test results to the Engineer on a daily basis.

Provide the Engineer with asphalt manifests or bill of lading's (BOL) on a daily basis.

Provide a daily plant diary, including a description of QC actions taken. Include changes or adjustments on the test summary sheets.

Provide weekly truck scale spot checks.

Provide a Department approved accounting system for mixes and provide a daily and final project summary of material quantities and types.

Provide a final hard and electronic copy of QC test summary sheets and control charts, and density worksheets at completion of bituminous operations on the project to the Engineer.

Provide an automated weigh scale and computer generated weigh ticket. Ensure the ticket indicates the following information:

(1) Project number,
(2) Mix designation, including binder grade,
(3) Mixture Design Report number,
(4) Truck identification and tare,
(5) Net mass, and
(6) Date and time of loading.

Do not include deviations from the minimum information on the computer generated weigh ticket unless otherwise approved by the Engineer in writing.

Continue test summary sheets, charts, and records for a mixture produced at one plant site from contract to contract. Begin new summary sheets and charts annually for winter carry-over projects. Begin new summary sheets and charts when an asphalt plant is re-setup in the same location after it has moved out.

Furnish an electronic printout (long form recordation) from an automated plant blending control system at 20 minute intervals when the plant is producing mixture. The Engineer may waive this requirement if the plant does not have the capability to produce the automated blending control information; however, the Contractor must then perform daily spotchecks to determine percent new asphalt added.

Include the following information on the plant control printout for Drum Plants:

(1) Both the virgin and recycle belt feed rates (tons/hr),
(2) Feeder bin proportions (%),
(3) Total % asphalt cement in the mixture,
(4) Virgin asphalt cement added (%)
(5) Mixture Temperature °F [°C],
(6) Mixture code,
(7) Date and time stamp, and
(8) Current tons of mixture produced and daily cumulative tons of mixture produced at time of printout.

Provide a daily electronic printout of the plant calibration (SPAN) numbers for each bin and meter.

Include the following information on the plant control printout for Batch Plants:

(1) Both the virgin and recycle belt feed rates (tons/hr),
(2) Feeder bin proportions (%),
(3) Mixture Temperature °F [°C],
(4) Mixture code,
(5) Date and time stamp, and
(6) Current tons of mixture produced and daily cumulative tons of mixture produced at time of printout.

Provide a daily electronic printout of the plant calibration (SPAN) numbers for each bin and meter.

G.9 Control Charts

Provide control charts and summary sheets computer generated from software approved by the Engineer. The Contractor may use software available at the Bituminous Office. Record the following data on standardized control charts:

(1) Blended aggregate gradation, include sieves in accordance with Table 3139-2 for specified mixture;
(2) Percent asphalt binder content (P_b);
(3) Maximum specific gravity (G_{mm});
(4) Production air voids (V_a); and
(5) Adj. AFT.

Unless otherwise directed by the Engineer, plot individual test results for eacb test point and connect individual points with a solid line. Plot tbe moving average for each test variable starting with the fourth test and connect with a dashed line. Plot the Department's QA and verification test results with triangles. Plot the specification JMF limits on the control charts using a dotted line.

G.10 JMF Limits

Base the production air voids and Adj. AFT on the minimum specified requirements in accordance with Table 2360-7, "Mixture Requirements." Base gradations and asphalt binder content limits on the current Department reviewed Mixture Design Report. Provide gradation control sieves in accordance with Table 3139-2. Refer to the Mixture Design Report for the mixture production targets. JMF limits are the target plus or minus the limits in accordance with Table 2360-14, "JMF Limits (N=4)." Use JMF limits as the criteria for acceptance of materials based on the moving average.

Table 2360-14
JMF Limits (N=4)

Item	JMF Limits
Adj. AFT	- 0.5
Production air voids, %	± 1.0
Asphalt binder content, %	- 0.4
Sieve, *% passing:*	
1 in [25.0 mm], ¾ in [19.0 mm], ½ in [12.5 mm], ⅜ in [9.5 mm], No. 4 [4.75 mm]	Broad band limits
No. 8 [2.36 mm]	Broad band limits
No. 200 [0.075 mm]	Broad band limits

G.11 Moving Average Calculation

Calculate a moving average as the average of the last four test results. Continue the calculation without interruption, except begin new summary sheets and charts annually for winter carry-over projects and if an asphalt plant is re-setup in the same site after it has been moved out.

G.12 JMF Bands

JMF Bands are the area between the target, as identified on the Mixture Design Report, and the JMF limits.

G.13 JMF Adjustment

Begin mixture production with aggregate proportions within 5 percent of the design proportions and mixture parameters in Table 2360-14 within the JMF limits shown. Use all the aggregate proportions included on the Mixture Design Report unless the aggregate proportion is shown as 0 percent. If the Contractor provides the District Materials Laboratory with prior documented production data showing how production affects the mixture properties or if the Contractor provides the District Materials Laboratory with a written justification or explanation of material changes since the original mixture submittal waive the preceding requirements.

G.13.a JMF Request for Adjustment

The Contractor may make a request to the Bituminous Engineer or District Materials Engineer for a JMF adjustment to the mix design if the QC test results indicate a necessary change to achieve the specified properties. Do not use aggregates or materials not part of the original mix design to make adjustments unless otherwise approved by the Engineer, in conjunction with the District Materials Engineer or the Department Bituminous Engineer.

A Certified Level II Bituminous QM Mix Designer will review the requested change for the Department. If the request meets the design requirements in Table 3139-2,"Aggregate Gradation Broad Bands", Table 3139-3,"Mixture Aggregate Requirements", and Table 2360-7, "Mixture Requirements," the Department will issue a revised Mixture Design Report. Each trial mixture design submittal in accordance with 2360.2.E, "Mixture Design" may have three JMF adjustments per mixture per project without charge. The Department will charge the Contractor $500 for each additional JMF adjustment requests.

Perform an interactive process with the Engineer before making JMF adjustments. Make JMF adjustments only within the mixture specification gradation design broadbands in accordance with Table 3139-2. Submit a new JMF if redesigning the mixture. Only reduce the JMF asphalt content if the moving average Adj. AFT is 8.5μ or more and Individual Adjusted AFT is at least 7.5 μ.

The department will not allow consecutive requests for a JMF adjustment without production data. Continue calculation of the moving average after the approval of the JMF.

G.13.b JMF Request for Adjustment for Proportion Change > 10%

If requesting a JMF adjustment for a proportion change greater than 10 percent from the currently produced mixture for a single stockpile aggregate, provide supporting production test data from at least four tests run at an accelerated testing rate of one test per 500 ton [450 tonne] with the adjustment request. The Department will base acceptable verification and approval of the requested JMF on individual and moving average test results in addition to the requirements listed above. Individual test results must be within twice the requested JMF limits for percent asphalt binder, production air voids, and Adj. AFT. Individual gradations must be within the Broad Bands. The moving average values must be within the control limits in accordance with Table 2360-14. Continue to calculate the moving average after the change in proportions.

If the mixture meets the design requirements as discussed in G.13.a, the District Materials Laboratory will sign the request for JMF adjustment effective from the point of the proportion change. If the mixture fails to meet the design requirements, the Department will either reduce the payment or direct the Contractor to remove and replace. Do not make consecutive requests for JMF adjustments without production data.

G.13.c JMF Request for Adjustment When Cumulative Proportion Changes > 10%

Submit a request for JMF adjustment when the cumulative change on any one product exceeds 10% from the original MDR. The Department will issue a revised MDR provided the mixture meets the requirements in Table 3139-2,"Aggregate Gradation Broad Bands", Table 3139-3,"Mixture Aggregate Requirements", and Table 2360-7, "Mixture Requirements".

G.14 Failing Materials

The Department will base material acceptance on individual and moving average test results. The Department will use isolated test results for acceptance of air voids at the start of mixture production. The Department will consider individual test results greater than two times the JMF bands as failing. The Department will fail moving average test results exceeding the JMF limits. Begin new summary sheets annually for winter carry-over projects.

Stop production and make adjustments if the moving average values exceed the JMF limits. Restart production after performing the adjustments and notifying the Engineer. Resume testing at the accelerated rates and for the tests listed in Table 2360-10, "Production Start-Up Testing Rates," for the next 2,000 ton [1,800 tonne] of mixture produced. Continue calculating the moving average after the stop in production.

The Department will consider mixture produced where the moving average of four exceeds the JMF limits as unsatisfactory in accordance with 2360.2.G.14.d, "Moving Average Failure at Mixture Start-Up – Production Air Voids," 2360.2.G.14.e, "Moving Average Failure at Mixture Start-Up — Adjusted AFT," 2360.2.G.14.f, "Moving Average Failure - Production Air Voids," and 2360.2.G.14.g, "Moving Average Failure — Percent Asphalt Binder Content, Gradation, and Adj. AFT."

If the total production of a mixture type for the entire project requires no greater than four tests the Department will accept the material in accordance with 2360.2.G.14.b, "Isolated Failures at Mixture Start-Up — Production Air Voids," and 2360.2.G.14.c, "Individual Failure — Gradation, Percent Asphalt Binder, Production Air Voids, and Adj. AFT."

If the Contractor's testing data fails to meet the tolerances in accordance with Table 2360-9, "Allowable Differences between Contractor and Department Test Results," the Department will substitute QA and verification data to determine the payment factor.

G.14.a Ratio of New Added Asphalt Binder to Total Asphalt Binder – Acceptance Criteria

Minimum design ratio of new added asphalt binder to total asphalt binder is shown in Table 2360-15 below. During production the ratio must meet individual and moving average requirements as listed in Table 2360-15,"Ratio of New Added Asphalt Binder to Total Asphalt Binder Acceptance Criteria". If the individual or moving average ratio drops below the minimum requirement, the Contractor must stop production and make adjustments to correct the process. Restart production only after notifying the Engineer of the adjustments made. The calculation of the moving average will continue after the stop in production.

Table 2360-15
Ratio of New Added Asphalt Binder to Total Asphalt Binder Acceptance Criteria

Specified Asphalt Grade	Recycled Material		
	RAS Only	RAS + RAP	RAP Only
PG XX-28, PG 52-34, PG 49-34, PG 64-22			
Wear (ind./moving average)	66/70	66/70	66/70
Non-Wear (ind./moving average)	66/70	66/70	61/65
PG 58-34, PG 64-34, PG 70-34			
Wear & Non-Wear (ind./moving average	76/80	76/80	76/80

G.14.b Isolated Failures at Mixture Start-Up – Production Air Voids

At the start-up of mixture production, use the first three isolated test results for production air voids before establishing a moving average of four. Calculate isolated production air voids using the maximum mixture specific gravity and the corresponding bulk specific gravity from that single test. After testing four samples and establishing a moving average of four, the Department will base acceptance on individual and moving average production air voids.

The Department will not accept the material if any of the first three isolated test results for production air voids exceeds twice the JMF bands from the target listed on the Mixture Design Report at the start of production. The Department will reduce payment for unacceptable material in accordance with Table 2360-16, "Reduced Payment Schedule for Individual Test Results." The Department will calculate the quantity of unacceptable material on the tonnage placed from the sample point of the failing test to the sample point when the isolated test result is back within twice the JMF bands. If the failure occurs at the first test after the start of production, the Department will calculate the tonnage subject to reduced payment as described above, including the tonnage from the start of production.

If isolated air voids are less than 1.0 percent or greater than 7.0 percent, the Engineer will either reduce the payment or order the material removed and replaced at no additional cost to the Department. The Engineer may require the Contractor to test in-place mixture to better define the removal and replacement limits. The Engineer may require the Contractor to test in-place mixture placed before the failing test result. If the Engineer reduces the payment, the Department will pay for the material at 50 percent of the contract unit price.

G.14.c Individual Failure – Percent Asphalt Binder, Production Air Voids, and Adj. AFT

Table 2360-16
Reduced Payment Schedule for Individual Test Results

Item	Pay Factor, % *
Coarse and fine aggregate crushing	90
Asphalt binder content	90
Production air voids, individual ‖ and isolated†	80

* Apply the lowest pay factor when using multiple reductions on a single test.
‖ Calculate individual air voids using the moving average maximum specific gravity and the bulk specific gravity from that single test.
† Calculate the isolated air voids from the maximum specific gravity and the bulk specific gravity from that single test. The Engineer will only use isolated void test results for acceptance for the first three tests after mixture production start-up.

If the individual test result for adjusted AFT is less than 7.5μ, the Department may either reduce payment in accordance with Table 2360-17, "Reduced Payment Schedule for Individual Test Results, Adjusted AFT," or order the material removed and replaced represented by the individual test. This tonnage includes all material placed from the sample point of the failing test to the sample point when the test result meets specification requirements. If the failure occurs at the first test after the start of daily production, the Department will include the tonnage from the start of production that day with the tonnage subject to reduced payment or removal and replacement.

Table 2360-17
Reduced Payment Schedule for Individual Test Results, Adjusted AFT

Individual Adjusted AFT, μ	Pay Factor, %
≥ 7.5	100
7.4 – 7.0	90
6.9 – 6.1	75
≤ 6.0	R&R(*)

* Remove and replace at no expense to the Department.

The Department will not accept material if the individual tests for percent asphalt binder content or production air voids exceeds twice the JMF bands from the target listed on the Mix Design Report. The Department will reduce payment in accordance with Table 2360-16, "Reduced Payment Schedule for Individual Test Results." The Department will calculate the material subject to reduced payment as the material placed from the sample point of the failing test until the sample point when the test result is back within twice the JMF limits. If the failure occurs at the first test after the start of daily production, the Department will include tonnage from the start of production that day with the tonnage subjected to reduced payment.

The Department will not accept material if individual air voids are less than 1.0 percent or greater than 7.0 percent, Remove and replace unacceptable material at no additional cost to the Department as directed by the Engineer. Test in-place mixture to better define the area to be removed and replaced as directed by the Engineer. Test mixture placed before the failing test result as directed by the Engineer. The Department may reduce payment for unacceptable material at 50 percent of the relevant contract unit price.

G.14.d Moving Average Failure at Mixture Start-Up — Production Air Voids

If a moving average failure occurs within any of the first three moving average results after mixture start-up (tests 4, 5, 6), the Department will accept the mixture if the individual air void, corresponding to the

moving average failure meets the JMF limits. The Department will not accept material if the individual air void fails to meet the JMF limit. The Department will reduce payment for unacceptable material unless the Engineer determines that the isolated air void corresponding to the individual air void meets the JMF limit. The Department will pay for unacceptable material at 70 percent of the relevant contract unit price. The Department will calculate the quantity of material subject to reduce payment as the tons placed from the sample point of the failing moving average result and corresponding individual air void beyond the JMF limit to the sampling point when the individual test result is back within the JMF limit. If the failure occurs at the first test after the start of daily production, the Department will include tonnage from the start of production that day with the tonnage subjected to reduced payment.

G.14.e Moving Average Failure at Mixture Start-Up — Adj. AFT

The Engineer will calculate the Moving Average (n=4) Adj. AFT during the sixth test after the beginning of mixture production of that specific mixture. The Engineer will include the individual results of calculations for tests No. 3, No. 4, No. 5, and No. 6 with this calculation.

G.14.f Moving Average Failure — Production Air Voids

A moving average production air void failure occurs when the individual production air void moving average of four exceeds the JMF limit. The Department will consider the mixture unacceptable and subject to reduced payment. The Department will pay for unacceptable mixture at 70 percent of the contract unit price. The Department will calculate the quantity of mixture subject to reduced payment as the tons placed from the sample point of all individual test results beyond the JMF limits, which contributed to the moving average value that exceeded the JMF limit, to the sampling point where the individual test result meets the JMF limits. If the failure occurs at the first test after the start of daily production, the Department will include the tonnage from the start of production that day with the tonnage subject to reduced payment.

Table 2360-18
Reduced Payment Schedule for Moving Average Test Results

Item	Pay Factor, % *
Gradation	90
Coarse and fine aggregate crushing	NA (individual failures only)
Adjusted AFT	80
Asphalt binder content	80
Production air voids	70

* Lowest Pay Factor applies when there are multiple reductions on a single test.

G.14.g Moving Average Failure - Percent Asphalt Binder Content, Gradation, and Adj. AFT

The Engineer will consider the mixture unacceptable and subject to reduced payment for mixture properties, including asphalt binder content and gradation, where the moving average of four exceeds the JMF limits. The Department may reduce payment for unacceptable mixture properties in accordance with Table 2360-18, "Reduced Payment Schedule for Moving Average Test Results." The Department will calculate the quantity of material subject to replacement or reduced payment as the tons placed from the sample point of all individual test results beyond the JMF limits, which contributed to the moving average value that exceeded the JMF limit, to the sampling point when the individual test result is back within the JMF limits. If the failure occurs at the first test after the start of daily production, the Department will include the tonnage from the start of production that day with the tonnage subjected to reduced payment.

The Engineer will calculate the Moving Average (n=4) Adjusted AFT during the sixth test after the beginning of mixture production of that specific mixture. The Engineer will include the individual results of calculations for tests No. 3, No. 4, No. 5, and No. 6 with this calculation. The Department will consider material with the Moving Average (n=4) of the Adjusted AFT is less than 8.0 μ as unsatisfactory and will pay for the material at 80 percent of the relevant contract unit price. The Department will calculate the quantity of material subject to replacement or reduced payment as the tons placed from the sample point of all Individual Adjusted AFT results less than 8.0μ, which contributed to the Moving Average value that was less than 8.0μ, to the sample point

where the Individual Adjusted AFT is at least 8.0μ. If the failure occurs at the first test after the start of daily production, the Department will include the tonnage from the start of production that day with the tonnage subject to reduced payment.

G.14.h Coarse and Fine Aggregate Crushing Failure

If any CAA or FAA test results do not meet the requirements specified in Table 3139-3, the Department may reduce payment for the placed material in accordance with Table 2360-16, "Reduced Payment Schedule for Individual Test Results." The Department will calculate the quantity of material subject to reduced payment as the tons placed from the sample point of the failing test until the sampling point where the test result meets the specifications. If the failure occurs at the first test after the start of daily production, the Department will include the tonnage from the start of production that day with the tonnage subjected to reduced payment.

2360.3 CONSTRUCTION REQUIREMENTS

A Restrictions

A.1 Asphalt Release Agents

Do not use petroleum distillates to prevent adhesion of asphalt mixtures to equipment. An asphalt release agent must meet the criteria for "Effect on Asphalt" as described in the most recent Asphalt Release Agent on file in MnDOT's Office of Environmental Services.

A.2 Edge Drop Off

When construction is under traffic, the requirements of 2221.3.D will apply.

A.3 Surge and Storage Bins

Store the asphalt mixture for no more than 18 h at storage facilities that prevent segregation of the mix and drainage of asphalt from the mix. Maintain the mixture at within 9 °F [5 °C] of the temperature when discharged from the silo or mixer and prevent excessive cooling or overheating.

A.4 Weather Limitations and Paving Date

Do not perform work within the roadway in the spring until removal of seasonal load restrictions on roads in the vicinity unless otherwise approved by the Engineer.

Do not place asphalt mixtures when weather or roadbed conditions or moisture conditions of the roadway surface are judged unfavorable by the Engineer.

Do not place asphalt pavement final wearing course lift after October 15 north of an east-west line between Browns Valley and Holyoke, or after November 1 south of an east-west line between Browns Valley and Holyoke. The Engineer may waive these restrictions when:

(1) The Contractor is not placing asphalt mixture on the traveled portion of the roadway,
(2) The roadway involved is closed to traffic during the following winter, or
(3) The Engineer provides written direction to place the mixture.

A.5 Mixing and Discharge of Materials

Notify the Engineer of the recommended plant mixing temperatures as provided from the asphalt supplier. Unless authorized by the Engineer, do not produce the mixture more than 30°F above the recommended maximum mixing temperature. Use the automated plant control printout to monitor discharge temperature. The Department will not pay for or allow placement of any mixture produced at more than 30°F above the recommended maximum mixing temperature unless the higher mixing temperatures have been approved by the Engineer.

B **Equipment**

B.1 **Plant**

B.1.a **Segregation**

Provide plant mixed asphalt from a plant capable of producing a uniform mix free of segregation.

B.1.b **Scales**

Test and calibrate scales in accordance with 1901.

B.1.c **Mineral Filler**

Add mineral filler to the mixture using a storage silo equipped with a device to ensure a constant and uniform feed.

B.1.d **Storage Tanks**

Provide storage tanks equipped to heat and maintain the material at the temperatures recommended by the certified asphalt supplier. Place the discharge end of the circulating line below the surface of the asphalt material. Provide agitation for modified asphalt as recommended by the supplier.

Provide an outage table or chart and measuring stick for each storage or working tank. Equip tanks with provisions to take asphalt binder material samples. After delivery of asphalt binder material to the project, do not heat the material at temperatures greater than 350° F [175° C]. Do not store modified asphalt at temperatures greater than the manufacturer's recommendation.

B.1.e **Asphalt Binder Control**

If proportioning asphalt binder material by volume, equip the plant with either a working tank or a metering system to determine asphalt binder content of the mixture.

Provide a working tank with a capacity from 1,000 gal to 2,000 gal [3,800 L to 7,600 L]. Calibrate and supply the working tank with a calibrated measuring stick. The Contractor may connect the tank to a mixing unit and use it only during spot check operations as long as it is available at all times. Return feedback to the working tank during spot check operations.

Provide a metering system with at least one approved asphalt binder flow meter and a asphalt binder pump. Connect the flow meter to the asphalt binder supply to measure and display only the asphalt binder being fed to the mixer unit. Position the meter readout for convenient observation. Provide a means to compare the flow meter readout with tbe calculated output of the asphalt binder pump. Provide a system to display that shows the accumulated asphalt binder quantity being delivered to the mixer in gallons [liters] or to the nearest 0.001 ton [0.001 tonne]. Calibrate and adjust the system to maintain an accuracy of ±1 percent error for each plant set-up before producing the mixture.

Provide an outage table or chart and measuring stick for each storage or working tank. Equip tanks with provisions to take asphalt binder material samples. After delivery of aspbalt binder material to the project, do not heat the material at temperatures greater than 350° F [175° C]. Do not store modified asphalt at temperatures greater than the manufacturer's recommendation.

B.1.e (1) **Asphalt Binder Sampling Valve**

Provide an asphalt binder sampling valve located between the pump and the drum. Sample asphalt binder from the weigh pod for batch plants.

B.1.f Dryer

The Department will not allow unburned fuel in the mix.

B.1.g Temperature Control

Equip the plant with enough temperature sensors to ensure temperature control of the aggregate and asphalt binder.

B.1.h Pollution 1717

B.2 Street Equipment

B.2.a Paver

Provide a paver capable of spreading and finishing to widths as shown on the plans and with an operational vibratory screed and automatic screed control to place mix without segregation.

Use an asphalt paver to place the mixture. When necessary, the Contractor may use a motor grader, when approved by the Engineer, to spread mixtures in areas that are inaccessible to a paver or when the quantity of mixture makes it impractical to place with a paver.

Use a shouldering machine to spread the mixture on shoulder surfacing and uniform width widening, when the placement width is too narrow for a paver.

Using a screed or strike-off assembly, produce a finished surface of the required evenness and texture without tearing, shoving, or gouging. For mainline paving, if the paving width is greater than the basic screed, auger and mainframe extensions, which meet manufacturer's recommendations for the paving width, are required unless otherwise directed by the Engineer. The Department will not allow strike-off only extension assemblies for mainline wearing course paving, unless the Engineer directs otherwise.

Equip all pavers with an approved automatic screed control. Sensor-operated devices need to include automatic controls that follow reference lines, or surfaces on one or both sides of the paver as required. Adjust the speed of the paver to produce the best results. A string line is only required if stated in the contract.

Spread all mixtures without segregation to the cross sections shown on the plans (excluding tight blade and scratch course applications) . The objective on the leveling layer is to secure a smooth base of uniform grade and cross section so that subsequent courses will be uniform in thickness. The Contractor may spread the leveling layer with a properly equipped paver or, when approved by the Engineer, a motor grader equipped with a leveling device or with other means for controlling the surface elevation of the leveling layer.

Place each course over the full width of the section under construction on each day's run, unless the Engineer directs otherwise.

B.2.b Trucks

Provide trucks with tight, clean, and smooth truck haul beds. Do not allow mixture to adhere to the truck beds. When directed by the Engineer, provide a cover that extends at least 1 ft [300 mm] over the truck bed sides and attach to tie-downs, if the truck is not equipped with a mechanical or automated covering system.

B.2.c Motor Graders

Use a motor grader with the following characteristics:

(1) Self-propelled,
(2) Equipped with pneumatic tires with a tread depth of ½ in [13 mm] or less,
(3) Equipped with a moldboard blade that is at least 10 feet [3 m], and
(4) With a wheelbase of at least 15 feet [4.5 m].

B.2.d Distributor

Provide a distributor capable of uniformly applying material up to 15 ft [4.6 m] wide and equipped with the following:

(1) An accurate volume measuring device with tachometer,
(2) Pressure gauges,
(3) Thermometer for measuring temperatures of tank contents,
(4) Power-operated pump, and
(5) Full circulation spray bars with lateral and vertical adjustments.

B.2.e Rollers

Compact each lift of asphalt to the density require in 2360.3.D, "Compaction."

B.2.e(1) Steel-Wheeled Rollers

Self-propelled steel wheeled compacting equipment must weigh at least 8 ton [7.3 tonne]. If using vibratory rollers, provide rollers that produce 3,085 lbf per ft [45 kN per m] of width and a vibratory frequency of at least 2,400 vpm using the low amplitude setting. Provide a roller capable of reversing without backlash and equipped with spray attachments for moistening rollers on both sets of wheels.

B.2.e(2) Pneumatic Tired Rollers

Self-propelled pneumatic tired compacting equipment must have a compactiion width of at least 5 ft [1.5 m] and a gross wheel load force of at least 3,000 lb [13 kN] per wheel for traffic level 2 and level 3 mixtures, 5,000 lb [22 kN] per wheel for traffic level 4 and level 5 mixtures, and, if using vibratory, at least 8 ton [7.3 tonne] total mass. Provide a roller with a tire arrangement that obtains full compaction over the full width with each pass of the roller.

B.2.e(3) Trench Rollers

Self-propelled trench rollers must weigh at least 2,960 lb per foot [4,400 kg per meter] of width.

B.3 Tack Coat

Apply a uniform asphalt tack coat to the clean and dry existing asphalt or concrete surface and to the surface of each course or lift constructed, except for the final course or lift, in accordance with 2357. Coat the contact surfaces of all fixed structures and the edge of the inplace mixture in all courses at transverse joints and in the wearing course at longitudinal joints. Do not coat the longitudinal joint if a rubberized asphalt joint adhesive will be applied to the vertical face of the joint. A uniform application will not have streaks (corn rows), bare spots, puddles, or other irregular patterns. Allow emulsified asphalt tack coats to break, as indicated by a color change from brown to black, before placing subsequent lifts. Take tack samples from the asphalt distributor according to rates provided in the Material Control Schedule. The Inspector will monitor the sampling the Contractor performs.

C Joints

C.1 Construction Joints

Compact joints to produce a neat, tightly bonded joint that meets surface tolerances as described in 2360.3.E. Transverse and longitudinal joints are subject to the density requirement in accordance with 2360.3.D, "Compaction."

C.2 Transverse Joints

Construct a transverse joint, the full width of the paver, at right angles to the centerline when mixture placement operations are suspended. When work resumes, cut the end vertically for the full depth of the layer unless constructing a formed edge as approved by the Engineer.

C.3 Longitudinal Joint

Construct the longitudinal joint between strips and parallel to the pavement centerline. In multiple lift construction, construct the longitudinal joints between strips in each lift at least 6 in [150 mm] measured transversely from the longitudinal joints in the previously placed lift. If constructing a wearing course in an even number of strips, place one longitudinal joint on the centerline of the road. When constructing a wearing course in an odd number of strips, locate the centerline of one strip on the centerline of the road, provided that no joint is located in the wheel path area of a traffic lane. The Contractor will align longitudinal joints in multiple lift construction over portland cement concrete pavements directly over the concrete pavement longitudinal joints as approved by the Engineer.

At longitudinal joints formed by placing multiple strips, ensure the adjoining surface is higher but does not exceed ⅛ in [3 mm], after final compaction of the previously placed strip. When constructing a strip adjoining a previously placed strip or a concrete pavement, remove to the longitudinal joint line, any fresh mixture that overlaps a previously placed strip or pavement before rolling.

D Compaction

After spreading each course, compact in accordance with the maximum density method as described in 2360.3.D.1, unless the ordinary compaction method is called for in the special provisions or as described in 2360.3.D.2, "Ordinary Compaction." Do not allow rollers to stand on the uncompacted mixture or newly rolled pavement with a surface temperature greater than 140 °F [60 °C]. Do not roll with steel-wheeled rollers if rolling produces aggregate that is crushed, cracked, or pulverized or causes displacement of the mixture.

To maintain a true surface, correct the following by removing and replacing the material in the defective areas as directed by the Engineer at no additional cost to the Department:

(1) Variations such as depressions or high areas, which may develop during rolling operations; and
(2) Lean, fat, or segregated areas.

When spreading mixtures with a motor grader, compact the mixture with pneumatic tired rollers simultaneously with the spreading operation.

D.1 Maximum Density

Compact the pavement to at least the minimum required maximum density values in accordance with Table 2360-19, "Required Minimum Lot Density (Mat)," and Table 2360-20, "Longitudinal Joint Density Requirement." Density evaluation will include compacted mat density and compacted longitudinal joint density. Density evaluation will not include longitudinal joint density on lifts with a 1 percent reduced density requirement.

Table 2360-19 Required Minimum Lot Density (Mat)				
	SP Wear Mixtures* ‖	SP Non-Wear Mixtures* ‖	SP Shoulders* ‖	
			Designed at 3% Voids	Designed at 4% voids
% Gmm	92	93	93	92

* Reduce the minimum by 1 percent on the first lift constructed over PCC pavements.

‖ Reduce the minimum by 1 percent for the first lift constructed on aggregate base (mainline and shoulder), reclaimed or cold in place recycled base courses and first lift of an overlay on roadway with a spring load restriction no greater than 7 ton [6.35 tonne], including shoulders.

Table 2360-20 Longitudinal Joint Density Requirement		
Location	Confined Edge of Mat*	Unconfined Edge of Mat ‖
Long joint wear and shoulder (4% air voids)	89.5	88.1
Long joint non-wear and shoulder (3% air voids)	90.5	89.1

* The Department defines "confined" as the edges of the placed mat abutting another mat, pavement surface, or curb and gutter.

‖ The Department defines "unconfined" or "unsupported" as no abutment on the side of the mat being placed with another mat or pavement surface.

D.1.a Shoulders Greater Than 6 ft [1.8 m]

Unless otherwise shown on the plans or required by the special provisions, compact shoulders wider than 6 ft [1.8 m] paved using the maximum density method. When shoulders are compacted hy the maximum density method and are paved separately from the driving lane, or have a different required minimum density than the driving lane, delineate the lot tonnage placed on the shoulder in separate lots from the driving lanes for the day paving was conducted.

D.1.b Shoulders Equal to or Less Than 6 ft [1.8 m]

Unless otherwise shown on the plans or required by the special provisions, use the ordinary compaction method in accordance with 2360.3.D.2 to compact a narrow shoulder no wider than 6 ft [1.8 m] paved in the same pass as a driving lane or paved separately. The Department will exclude mixture compacted under ordinary compaction from lot density requirements and from incentive or disincentive payment.

When compacting a narrow shoulder using the maximum density method, compact to densities in accordance with Table 2360-19. If the minimum required density of the shoulder is different than the driving lane, delineate the tonnage placed on the shoulder in separate lots from the driving lane.

D.1.c Echelon Paving

The Department considers echelon paving, two pavers running next to each other in adjacent lanes, as separate operations.

D.1.d Density Determiuation (Core Bulk Density)

Calculate each individual lot's maximum density by averaging the results of the cores within the lot expressed as the percentage of the maximum specific gravity. Use Laboratory Test Method 1810 to determine core density unless the mixture is considered coarse graded. If 45 percent or less of the aggregate material passes the No. 4 [4.75 mm] sieve the Engineer may require bulk specific gravity be determined in accordance with Laboratory Manual Method 1816, Corelok.

Obtain the maximum specific gravity value for calculating the percentage density for the lot from the maximum gravity values taken from production tests during that day's paving. If the production tests during that day's paving result in only one or two maximum specific gravity values, use the moving average value at that test point. If production tests during that day's paving result in three or more maximum specific gravity values, use the average of those tests alone as indicated above.

D.1.e Timeline

Complete compaction within 8 h of mixture placement and before obtaining core samples. Only use pneumatic tired or static steel rollers for compaction performed between 6 h and 8 h after mixture placement. Do not reroll compacted mixtures with deficient densities.

D.1.f Stop Production

If all the lots in a day's production or greater than 50 percent of the lots on multiple days fail to meet the minimum density requirement stop production and determine the source of the problem. Discuss with the Engineer what corrective action will be taken to bring the work into compliance with specified minimum required density.

D.1.g Lot Determination

Table 2360-21
Lot Determination

Daily Production, *ton [tonne]*	Lots
300* – 600 [270* – 545]	1
601 – 1,000 [546 – 910]	2
1,001 – 1,600 [911 – 1,455]	3
1,601 – 2,600 [1,456 – 2,360]	4
2,601 – 4,600 [2,361 – 4,175]	5
> 4,600 [4,175]	‖

* If producing no greater than 300 ton [270 tonne] of mix, establish the first lot when the total weight is greater than 300 ton [270 tonne].
‖ Add one lot for each additional 900 tons [820 tonne] or part thereof.

D.1.h Mat Density Cores

Obtain four cores in each lot. Take two cores from random locations as directed by the Engineer. Take the third and fourth cores, the companion cores, within 1 ft [0.3 m] longitudinally from the first two cores. Submit the companion cores to the Engineer immediately after coring and sawing. If the random core location falls on a longitudinal joint, cut the core with the outer edge of the core barrel 1 ft [0.3 m] away laterally from the edge of the top of the mat. Do not take cores for compacted mat density within 1 ft [300 mm] of any longitudinal joint. The Contractor is responsible for maintaining traffic, coring, patching the core holes, and sawing the cores to the paved lift thickness before density testing.

The Engineer may require additional density lots to isolate areas affected by equipment malfunction, heavy rain, or other factors affecting normal compaction operations.

D.1.i Contractor Core Testing

Take and test cores at least 4 in [100 mm] in diameter at locations determined and marked by the Engineer.

Mark samples with the lot number and core number or letter. Transport the cores to the laboratory daily taking care to prevent damage to them. Schedule the approximate time of testing during normal project work

hours to allow the Engineer to observe the test and to record the saturated surface dry and immersed weight of the cores.

Determine the density by the end of the next working day after compaction. Measure each core three times for thickness before saw cutting. Report the average lift thickness on the core sheet. If placing multiple layers in a single day, saw and separate cores for each layer, test, and report by the end of the next working day. Place and compact mix into the coring hole to restore the surface within 24 h after coring or the Department will fine the Contractor $100 per working day per lot until restored.

D.1.j Companion Core Testing

The Department will select at least one of the two companion cores per lot to test for verification. For lots designated as longitudinal joint density lots, the Department will test at least one of the mat density companion cores and at least one of the longitudinal joint density companion cores.

D.1.k Tolerance Comparison

D.1.k(1) Tolerance Comparison – Individual

Compare the individual core bulk specific gravities obtained by the Contractor and by the Department. If the bulk specific gravity between the Contractor and the Department cores differ by more than 0.030, use the Department's bulk specific gravity.

D.1.k(2) Tolerance Comparison – Day's Shrinking Tolerance

For a second comparison of the cores that pass the individual tolerance criteria, compare the average of the Contractor's bulk specific gravities with the average of the Department's bulk specific gravities. Determine the tolerance by dividing 0.030 by the square root of the number of samples compared. Use all the Department's results for the day's paving if the cores do not fall within the determined tolerance.

D.1.l Recoring

The Engineer may allow the Contractor to re-core a sample if the sample was damaged in the coring process or damaged in transit to the laboratory through no fault of the Contractor.

D.1.m One Percent Reduced Density

The Department will exclude incentive payments for reduced minimum density in accordance with Table 2360-19, "Required Minimum Lot Density (Mat)." The Contractor may elect to waive the reduced density requirement and reevaluate the density in accordance with Table 2360-19, "Required Minimum Lot Density (Mat)," including incentives, for all cases except the first lift constructed over concrete pavement. The Contractor must notify the Engineer, in writing, after the first day's paving and by the end of the third day of paving of their intent to waive reduced density. Once reduced density bas been waived the normal maximum density will remain in effect for the duration of mixture placement on that lift. For multi-year projects, the waiving of reduced density will be for that year only and will be re-evaluated for subsequent years on an annual basis. The Contractor is required to comply with any construction requirements on subsequent lifts.

D.1.n Longitudinal Joint Density

Evaluate longitudinal joint density in one lot per day unless the total daily weight is greater than 5,000 ton [5,000 tonne]. If the total daily weight is greater than 5,000 ton [5,000 tonne], evaluate two lots per day. Randomly select the location to take cores for longitudinal joint density from the mat density core locations. Take six cores at this location. Take cores for longitudinal joint density with the outer edge of the core barrel within 6 in [150 mm] from the edge of the top of the mat for both sides of the mat. Take a companion core 1 ft [0.3 m] longitudinally from each core. Take two cores for mat density at either 2 ft [0.61 m] right or 2 ft [0.61 m] left of the center of the mat the Contractor is paving, regardless of random number generation.

D.1.o Imaginary Joint

An actual longitudinal joint will not exist if pulling the shoulder and driving lane in the same paving pass. Do not cut a core on the imaginary line where a joint would have existed had the shoulder and the drive lane been paved separately.

D.1.p Shoulders

D.1.p(1) Shoulder – Ordinary Compaction

If compacting the shoulder under the ordinary density specification, do not take longitudinal joint cores in shoulders. Core at the centerline longitudinal edge cores (6 in [150 mm] from the joint) and at the mat density cores (2 ft [0.61 m] right or left of the center of the paving pass).

D.1.p(2) Shoulder-Maximum Density Specification

Core at the following locations:

(1) Centerline longitudinal edge cores (6 in [150 mm] from the joint),
(2) Mat density cores (2 ft [0.61 m] right or left of the center of the paving pass), and
(3) Edge of the shoulder (6 in [150 mm] from the outside edge).

Do not cut cores on the imaginary line at the edge of the shoulder adjacent to the driving lane. Move coring locations on imaginary lines to 6 in [150 mm] inside the edge of the shoulder.

D.1.q Payment Schedule

Table 2360-22
Payment Schedule for Maximum Mat Density

SP Wear and SP Shoulders (4% Void) Density, %*	SP Non-Wear and SP Shoulders (3% Void), Density, %*	Mat Density Pay Factor A	
		Traffic Level 2 & 3	Traffic Level 4 & 5
≥ 93.6	≥ 94.6	1.03 ‖	1.05 ‖
93.1 – 93.5	94.1 – 94.5	1.02 ‖	1.04 ‖
92.0 – 93.0	93.0 – 94.0	1.00	1.00
91.0 – 91.9	92.0 – 92.9	0.98	0.98
90.5 – 90.9	91.5 – 91.9	0.95	0.95
90.0 – 90.4	91.0 – 91.4	0.91	0.91
89.5 – 89.9	90.5 – 90.9	0.85	0.85
89.0 – 89.4	90.0 – 90.4	0.70	0.70
< 89.0	< 90.0	†	†

* Calculate the percent of maximum specific gravity to the nearest tenth.

‖ Payment will only apply if the day's weighted average individual production air voids fall within - ½ percent of the target air void value. Base the weighted average air voids on all the mixture production tests in accordance with 2360.2.G.7, "Production Tests" for the corresponding day and weight by the tons the corresponding test represents.

† The Department will pay for the HMA material represented by the lot at 70 percent of the relevant contract unit price; unless a single core density in the lot is less than 87.0 percent of the maximum specific gravity (G_{mm}). If a single core density is less than 87.0 percent of Gmm, the Engineer will decide if the mixture is subject to removal and replacement or if will be accepted at a reduced payment of 50 percent of the relevant contract unit price. If the Engineer decides the material is to be removed and replaced, the Contractor will do so at no additional cost to the Department. Take additional core samples to determine the limits of the removal and replacement area or 50% payment using the same offset from centerline as the original core. If the original low density core was taken within 1½ ft [0.45 m] of an edge of the paver pass, take the additional cores at 1½ ft [0.45 m] from the edge of the paver pass. Determine the densities at 50 ft [15 m] intervals both ahead and behind the point of unacceptable core density until finding a point of acceptable core density (>89.0% for 4% void and 1% reduced voids and >90.0% for 3% voids). If the 50 ft (15 m) incremental testing extends into a previously accepted lot, removal and replacement may be required, but, these results will not be used to recalculate the previously accepted lot density. Perform the additional coring and testing at no cost to the Department. The Department will calculate the area of unacceptable pavement as the product of the longitudinal limits as determined by the 50 ft [15 m] cores and the full width of the paver pass, laying in the traffic lane or lanes. The Department will exempt shoulders from this calculation unless density failure occurred in the shoulder area.

Establish an additional density lot for the pavement that has been removed and replaced. Cut 2 cores randomly with companions for the Department (total 4 cores) and determine average density. Make payment in accordance with Table 2360-22 or Table 2360-23 excluding any incentive payment.

Determine the density for the remainder of the lot by averaging the original acceptable core density value with the first two acceptable core densities taken ahead and behind the unacceptable core density. Make payment in accordance with Table 2360-22 or Table 2360-23 excluding any incentive payment.

Table 2360-23* 1 Percent Reduced Table		
SP Wear and SP Shld (4% Void) Maximum Specific Gravity, %‖	**SP Non-Wear, and SP Shld (3% Void), Maximum Specific Gravity, %‖**	**Payment, %**
≥ 91.0	≥ 92.0	100
90.0 – 90.9	91.0 – 91.9	98
89.7 – 89.9	90.5 – 90.9	95
89.4 – 89.6	90.0 – 90.4	91
89.2 – 89.3	89.5 – 89.9	85
89.0 – 89.1	89.0 – 89.4	70
< 89.0†	< 89.0	†

* Reduce the minimum by 1 percent for the first lift constructed on aggregate base (mainline and shoulder), reclaimed or cold inplace recycled base courses and first lift of an overlay on a roadway with a spring load restriction (including shoulders) no greater than 7 ton [6.35 tonne]. Reduce the minimum by 1 percent on the first lift constructed on PCC pavements (reduced density cannot be waived on PCC).

‖ Calculate the percent of maximum specific gravity to the nearest tenth.

† The Department will pay for the HMA material represented by the lot at 70 percent of the relevant contract unit price; unless a single core density in the lot is less than 87.0 percent of the maximum specific gravity (G_{mm}). If a single core density is less than 87.0 percent of Gmm, the Engineer will decide if the mixture is subject to removal and replacement or if will be accepted at a reduced payment of 50 percent of the relevant contract unit price. If the Engineer decides the material is to be removed and replaced, the Contractor will do so at no additional cost to the Department. Take additional core samples to determine the limits of the removal and replacement area or 50% payment using the same offset from centerline as the original core. If the original low density core was taken within 1½ ft [0.45 m] of an edge of the paver pass, take the additional cores at 1½ ft [0.45 m] from the edge of the paver pass. Determine the densities at 50 ft [15 m] intervals both ahead and behind the point of unacceptable core density until finding a point of acceptable core density (>89.0% for 4% void and 1% reduced voids and >90.0% for 3% voids). If the 50 ft (15 m) incremental testing extends into a previously accepted lot, removal and replacement may be required, but, these results will not be used to recalculate the previously accepted lot density. Perform the additional coring and testing at no cost to the Department. The Department will calculate the area of unacceptable pavement as the product of the longitudinal limits as determined by the 50 ft [15 m] cores and the full width of the paver pass, laying in the traffic lane or lanes. The Department will exempt shoulders from this calculation unless density failure occurred in the shoulder area.

Establish an additional density lot for the pavement that has been removed and replaced. Cut 2 cores randomly with companions for the Department (total 4 cores) and determine average density. Make payment in accordance with Table 2360-22 or Table 2360-23 excluding any incentive payment.

Determine the density for the remainder of the lot by averaging the original acceptable core density value with the first two acceptable core densities taken ahead and behind the unacceptable core density. Make payment in accordance with Table 2360-22 or Table 2360-23 excluding any incentive payment.

Table 2360-24*
Payment Schedule for Longitudinal Joint Density
(SP Non-wear and SP Shoulders, 4% Void)

Longitudinal Joint (Confined Edge) Density, %‖	Pay Factor B Longitudinal (Confined Edge)		Longitudinal Joint (Unsupported Edge) Density, %‖	Pay Factor C (Unsupported Edge)	
	Traffic Level 2 & 3	Traffic Level 4 & 5		Traffic Level 2 & 3	Traffic Level 4 & 5
≥ 92.1	1.02†	1.03†	≥ 91.0	1.02†	1.03†
91.6 – 92.0	1.01†	1.02†	90.1 – 90.9	1.01†	1.02†
89.5 – 91.5	1.00	1.00	88.1 – 90.0	1.00	1.00
88.5 – 89.4	0.98	0.98	87.0 – 88.0	0.98	0.98
87.7 – 88.4	0.95	0.95	86.0 – 86.9	0.95	0.95
87.0 – 87.6	0.91	0.91	85.0 – 85.9	0.91	0.91
< 87.0	0.85	0.85	< 85.0	0.85	0.85

* The Department will limit incentive payment for longitudinal joint density to lots with evaluated longitudinal joint densities.
‖ Calculate the percent of maximum specific gravity to the nearest tenth.
† Payment will only apply if the day's weighted average individual production air voids fall within ± ½ percent of the target air void value. Base the weighted average air voids on all the mixture production tests in accordance with 2360.2.G.7, "Production Tests" for the corresponding day and weight by the tons the corresponding test represents.

Table 2360-25*
Payment Schedule for Longitudinal Joint Density
(SP Non-wear and SP Shoulders, 3% Void)

Longitudinal Joint (Confined Edge) Density, % ‖	Pay Factor B Longitudinal (Confined Edge)		Longitudinal Joint (Unsupported Edge) Density, % ‖	Pay Factor C (Unsupported Edge)	
	Traffic Level 2 & 3	Traffic Level 4 & 5		Traffic Level 2 & 3	Traffic Level 4 & 5
≥ 93.1	1.02†	1.03†	≥ 92.0	1.02†	1.03†
92.6 – 93.0	1.01†	1.02†	91.1 – 91.9	1.01†	1.02†
90.5 – 92.5	1.00	1.00	89.1 – 91.0	1.00	1.00
89.5 – 90.4	0.98	0.98	88.0 – 89.0	0.98	0.98
88.7 – 89.4	0.95	0.95	87.0 – 87.9	0.95	0.95
88.0 – 88.6	0.91	0.91	86.0 – 86.9	0.91	0.91
< 88.5	0.85	0.85	< 86.0	0.70	0.85

* The Department will limit incentive payment for longitudinal joint density to lots with evaluated longitudinal joint densities.
‖ Calculate the percent of maximum specific gravity to the nearest tenth.
† Payment will only apply if the day's weighted average individual production air voids fall within ½ percent of the target air void value. Base the weighted average air voids on all the mixture production tests in accordance with 2360.2.G.7, "Production Test" for the corresponding day and weight by the tons the corresponding test represents.

D.1.r Pay Factor Determination

Determine the pay factor in accordance with the following:

(1) Case 1: Total Pay Factor = (Pay Factor A) × (Pay Factor B) × (Pay Factor C)
(2) Case 2: Total Pay Factor = (Pay Factor A) × (Pay Factor B) × (Pay Factor B)
(3) Case 3: Total Pay Factor = (Pay Factor A) × (Pay Factor C) × (Pay Factor C)

Where:

Pay Factor A = Mat density,
Pay Factor B = Confined edge density,
Pay Factor C = Unsupported edge density.

Use a pay factor of 1.00 for Pay Factor B, Pay Factor C, or both in lots where no cores are taken at the longitudinal joint.

D.2 Ordinary Compaction

Perform ordinary compaction for the following:

(1) Layers identified in the typical sections with a minimum planned thickness less than 1½ in [40 mm],
(2) Thin lift leveling,
(3) Wedging layers,
(4) Patching layers,
(5) Driveways, and
(6) Areas the Contractor cannot compact with standard highway construction equipment and practices.
(7) Bike paths, walking paths, and other similar non-traffic paving areas

If using the ordinary compaction method to evaluate density, use a control strip to establish a rolling pattern. Use the rolling pattern to compact the asphalt mixture for the layer on which the control strip is constructed or until constructing a new control strip. The Engineer may waive the control strip requirement in small localized areas or other areas not conducive to its establishment.

D.2.a Control Strip

Construct a control strip at least 395 sq. yd [330 sq. m] and of the same thickness as the lift the control strip represents at the beginning of the work on each lift of each course. Begin compacting immediately after spreading the mixture. Continue compacting until additional roller coverage does not produce appreciable increase in density. Determine densities by means of a portable nuclear testing device or approved alternate and create a growth curve to determine the optimum rolling pattern. Provide documentation of the growth curve to the Engineer. Roll the remainder of that course in accordance with the pattern developed in the test strip for that roller. Provide a new control strip in accordance with the following:

(1) If using a new JMF with a proportion change greater than 10 percent when compared to the currently produced mixture for a single stockpile aggregate,
(2) If changing the source of either aggregate or binder, or
(3) After 10 days of production.

D.2.b Equipment

Use rollers that meet the requirements in 2360.3.B.2.e. Use the same equipment type and weight on the remainder of the pavement course that was used to construct the control strip. Provide at least two rollers. Provide a tandem steel wheeled roller for final rolling. The Contractor may use trench rollers or mechanical tampers to compact areas inaccessible to the conventional type rolling equipment.

D.2.c Mixture Temperature

Refer to Table 2360-26, "Minimum Temperature Control" for the minimum laydown temperatures in all courses of the asphalt mixture as measured behind the paver or spreading machine. Do not pave when the air temperature is less than 32° F [0° C] unless otherwise directed by the Engineer in writing.

Table 2360-26* Minimum Temperature Control				
Air Temperature, °F [°C]	Compacted Mat Thickness, †			
	1 in [25 mm]	1½ in [40 mm]	2 in [50 mm]	≥3 in [75 mm]
32 – 40 [0-5]	—	265[129] ‖	255 [124]	250 [121]
41 – 50 [6-10]	270 [130] ‖	260 [127]	250 [121]	245 [118]
51 – 60 [11-15]	260 [127] ‖	255 [124]	245 [118]	240 [115]
61 – 70 [16-21]	250 [121] ‖	245 [118]	240 [115]	235 [113]
71 – 80 [22-27]	245 [118]	240 [115]	235 [113]	235 [113]
81 – 90 [28-32]	235 [113]	230 [110]	230 [110]	230 [110]
≥ 91 [33]	230 [110]	230 [110]	230 [110]	225 [107]

* Not applicable if using a Warm Mix Asphalt (WMA) additive or process

‖ Use at least one pneumatic-tire roller for intermediate rolling unless otherwise directed by the Engineer. The Engineer may specify or modify the minimum laydown temperature in writing.

† Based on the lift thicknesses shown on the plans.

D.3 Mat Density Cores (Optional Department Only Core Testing)

The Contractor can request all density cores be tested by the Department. The written request should be made at the pre-construction meeting and a written response, from the Department, either approving or denying the request will be made within 5 calendar days from the date of the request. Once approval is granted, Department Only Core Testing will remain in effect for the duration of the project. For multi-year projects, Department core testing will be for that year only. Cores will be tested in either the Department's Field Lab or in the Contractor's Field Lab. The Contractor is permitted to observe and record all weighing of the cores.

D.3.a Contractor Coring Responsibilities

Obtain two cores in each lot. Take cores of at least 4 in [100 mm] in diameter at locations determined and marked by the Engineer. If the random core location falls on a longitudinal joint, cut the core with the outer edge of the core barrel 1 ft [0.3 m] away laterally from the edge of the top of the mat. Do not take cores for compacted mat density within 1 ft [300 mm] of any longitudinal joint. Label samples with the lot number and core number or letter. The Contractor is responsible for maintaining traffic, coring, patching the core holes.

Measure each core three times for thickness before saw cutting. Report the average lift thickness to the Engineer. If placing multiple layers in a single day, measure and record lift thickness and then saw and separate cores for each layer. Place and compact mix into the coring hole to restore the surface within 24 h after coring or the Department will fine the Contractor $100 per working day per lot until restored.

The Engineer may require additional density lots to isolate areas affected by equipment malfunction, heavy rain, or other factors affecting normal compaction operations.

D.3.b Department Testing Responsibilities

The Department will take possession of the cores after they have been measured and cut. The Department will test all cores. Density results will be determined by the end day in which the cores were cut provided they are in the Department's possession by 10:00am, otherwise, results will be available the next working day. Test results will be reported on the Core Density Sheet.

D.3.c Longitudinal Joint Density

Evaluate longitudinal joint density in one lot per day unless the total daily weight is greater than 5,000 ton [5,000 tonne]. If the total daily weight is greater than 5,000 ton [5,000 tonne], evaluate two lots per day. Randomly select the location to take cores for longitudinal joint density from the mat density core locations. Take three cores at this location. Take cores for longitudinal joint density with the outer edge of the core barrel within 6 in [150 mm] from the edge of the top of the mat for both sides of the mat. Take one core for mat density at either

2 ft [0.61 m] right or 2 ft [0.61 m] left of the center of the mat the Contractor is paving, regardless of random number generation.

E Surface Requirements

After compaction, the finished surface of each lift shall be reasonably free of segregated, open and torn sections, and shall be smooth and true to the grade and cross section shown on the plans with the following tolerances:

Table 2360-26
Surface Requirements

Course/Location	Description	Tolerance
Leveling/1st lift using automatics	Tolerance also applies to 1st lift placed other than leveling when automatics are used.	½ in [15 mm]
Wear	Tolerance of final 2 lifts from the edge of a 10 foot [3 m] straightedge laid parallel to or at right angles to the centerline.	¼ in [6 mm]
Shoulder Wear, Temporary Wear & bypasses	Tolerance from the edge of a 10 foot [3 m] straightedge laid parallel to or at right angles to the centerline.	¼ in [6 mm]
Transverse joints/construction joints	Tolerance from the edge of a 10 foot [3 m] straightedge centered longitudinally across the transverse joint. Correction by diamond grinding required when directed by the Engineer.	¼ in [6 mm]
Transverse Slope	Tolerance for surface of each lift exclusive of final shoulder wear.	Not to vary by more than 0.4 % from plans.
Distance from edge of each lift and established centerline.	No less than the plan distance or more than 3 inches [75 mm] greater than the plan distance. The edge alignment of the wearing lift on tangent sections and on curve sections of 3 degrees or less can't deviate from the established alignment by more than 1 inch [25 mm] in any 25 foot [7.5 m] section.	See Description
Final wear adjacent to concrete pavements.	After compaction the final lift wear adjacent to concrete pavements must be slightly higher but not to exceed 1/4" [6mm] than the concrete surface.	See Description
Final wear adjacent to fixed structures.	After compaction the final lift wear adjacent to gutters, manholes, pavement headers, or other fixed structures must be slightly higher but not to exceed 1/4" [6mm] than the surface of the structure.	See Description
Finished surface of each lift.*	Must be free of segregated and open and torn sections and deleterious material. *Excluding tight blade and scratch courses.	See Description

Cut or saw and then remove and replace material placed outside the described limitations at no additional cost to the Department. If the Engineer determines the material can remain in place outside the limits, the Department will pay for the material at a reduced cost of $10 per sq. yd [$12 per sq. m]. The Department will consider any single occurrence of material outside the limitations to have a minimum dimension of at least 1 sq. yd [1 sq. m] in any dimension.

In addition to the list the above the pavement surface must meet requirements of 2399 (Pavement Surface Smoothness) requirements.

E.1 Lift Thickness

After compaction, the thickness of each lift shall be within a tolerance of ¼ in [6 mm] of the thickness shown on the plans, except that, if automatic grade controls are used, this thickness requirement will not apply to the first lift placed. This thickness requirement will not apply to a leveling lift whether or not automatic

grade controls are required. The Engineer may require removal and replacement of any part of any lift that is constructed to less than the minimum required thickness, at no additional cost to the Department.

Measure cores taken for density determination for thickness also. Measure each core three times for thickness before sawing. Report the average of these three measurements. Document each lot's average core thickness and submit to the Engineer. If the average of the two Contractor cores exceed the specified tolerance, an additional two cores may be taken in the lot in question. The Engineer will use the average of all core thickness measurements per day per lift to determine daily compliance with thickness specifications.

On that portion of any lift constructed to more than the maximum permissible thickness, the materials used in the excess mixture above that required to construct that portion of the lift to the plan thickness plus ¼ in [6 mm] may be excluded from the pay quantities or at the discretion of the Engineer and at the Contractor's expense may be required to be removed and replaced.

F Asphalt Mixture Production (FOB Department Trucks)

Produce asphalt mixture for the Department. Load the mixture being produced onto Department furnished trucks at the mixing plant at a time agreed on by the Engineer and Contractor. The Engineer will notify the Contractor of the total quantity of mixture required not less than 2 weeks prior to completion of the final wearing course. The Engineer will not accept the asphalt mixture if it is unsuitable for the intended use.

G Small Quantity Paving

A MDR is not required for planned project quantities less than 9,000 sq. yd inches (4,500 sq. yd per 2-inch thickness, etc) [191,200 m^2 mm] or 500 ton [450 tonne]. Verify in writing that the asphalt mixture delivered to the project meets the requirements of Table 3139-3 and Table 2360-7, "Mixture Requirements." The Department will obtain samples, as determined by the Engineer, to verify mixture requirements and to perform material acceptance in accordance with 2360.2.G.14.b, "Isolated Failures at Mixture Start-Up — Production Air Voids," 2360.2 G.14.c, "Individual Failure — Gradation, Percent Asphalt Binder, Production Air Voids, and Adj. AFT," and 2360.2.G.14.h, "Coarse and Fine Aggregate Crushing Failure."

2360.4 METHOD OF MEASUREMENT

When paying for material by weight, the Engineer will measure separately asphalt mixture of each type by weight based on the total quantity of material hauled from the mixing plant. The Engineer will not make deductions for the asphalt materials.

When paying for material by area, the Engineer will separately measure asphalt mixture of each type and for each specific lift by area and by thickness on the basis of actual final dimensions placed.

2360.5 BASIS OF PAYMENT

The contract unit price for asphalt mixture used in each course includes the cost of constructing the asphalt surfacing and providing and incorporating asphalt binder, mineral filler, hydrated lime. Anti-stripping additives may he permitted or required as indicated in 2360.2.C.

The Department will pay for additives required by the contract at the relevant contract unit price for the mixture. The Department will pay for additives incorporated as directed by the Engineer as extra work in accordance with 1403, "Extra Work."

The Department will apply reduced payment if the mixture includes steel slag as one of the aggregate proportions and the production lab density at the design gyrations at the recommended or established asphalt content is greater than 160 lb per cu. ft [2,565 kg per cu. m]. The Department will pay for the mixture at the contract unit price, calculated as follows:

$$\%Payment = \frac{100 - (100 \times (production\_density\_at\_design\_gyrations - 160)}{160}$$

$$\left[\%Payment = \frac{100 - (100 \times (production\_density\_at\_design\_gyrations - 2{,}565)}{2{,}565}\right]$$

If the plans do not show a contract pay item for shoulder surfacing and other special construction, the Department will include payment for the quantities of material used for these purposes in the payment for the wearing course materials.

Complete yield checks and monitor thickness determinations to construct the work as shown on the plans. Use the tolerances for lift thickness in accordance with 2360.3.E, "Surface Requirements" and surface smoothness requirements in accordance with 2399 for occasional variations and not for continuous over-running or under-running, unless otherwise required hy the Engineer.

The contract unit price for asphalt mixture production includes the cost of the material and loading onto Department-provided trucks at the mixing plant.

The Department will pay for plant mixed asphalt pavement on the basis of the following schedule:

Item No.:	Item:	Unit:
2360.501	Type SP* Wearing Course Mixture †‡	ton [metric ton]
2360.502	Type SP* Non-Wearing Course Mixture †‡	ton [metric ton]
2360.503	Type SP* ‖ Course Mixture †‡# in [mm] thick,	square yard [square meter]
2360.504	Type SP* ‖ Course Mixture †‡	square yard [square meter]
2360.505	Type SP * Bituminous Mixture for Specified Purpose	ton [metric ton]
2360.506	Type SP * Bituminous Mixture Production	ton [metric ton]

* Aggregate size Designation, 9.5, 12.5 or 19 as appropriate, see 2360.1.A.3.
‖ "Wearing" or "Non Wearing" as appropriate.
† Traffic level in accordance with Table 2360-1, "Traffic Levels."
‡ AC binder grade designation (Table 2360-2).
\# Lift thickness shown on the plans.

EQUAL EMPLOYMENT OPPORTUNITY (EEO) SPECIAL PROVISIONS

This section of Special Provisions contains the Equal Employment Opportunity (EEO) rules and regulations for highway construction projects in Minnesota which are federally and/or State funded.

The source of funding determines which EEO regulations and goals (Federal and/or State goals) apply to a specific project. When a project contains funding from both Federal and State sources, both sets of regulations apply, and the Minnesota Department of Transportation (MnDOT) monitors and reviews projects at both levels.

If the project contains any Federal funding, and has a total dollar value exceeding $10,000, Federal EEO regulations and goals apply (pages 2, 6, 7-8, 9-14, 15, 16-17, 22-26, 27-38). The MnDOT Office of Civil Rights monitors and reviews these projects on behalf of the Federal Highway Administration (FHWA), under Federal statutes (23 USC 140) and rules (23 CFR 230).

If the project contains any State funding, and has a total dollar value exceeding $100,000, State EEO regulations and goals apply (pages 2, 3, 4, 5, 6, 9-14, 16-22). MnDOT's Office of Civil Rights monitors and reviews these projects in conjunction with the Minnesota Department of Human Rights under Minnesota Statutes §363A.36 and its accompanying rules.

MnDOT has established a single review and monitoring process which meets both Federal and State requirements.

Please note that Pages 23-38 of these Special Provisions may be omitted from projects with no Federal funding.

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NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (23 USC 140, 23 CFR 230 and Minnesota Statute §363A.36)

1. The offerer's or bidder's attention is called to the "Minnesota Affirmative Action Requirements" (EEO Page 4), the "Specific Federal Equal Employment opportunity Responsibilities" (EEO Pages 7-8), the "Standard Federal and State Equal Employment Opportunity Construction Contract Specifications" (EEO Pages 9-14), the "Equal Opportunity Clause" (EEO Page 15) and "Required Contract Provisions - Federal-Aid Construction Contracts" (EEO Pages 27-38).

2. The goals and timetables for minority and women participation, expressed in percentage terms of hours of labor for the Contractor's aggregate work force in each trade on all construction work in the covered area, are as shown on EEO Pages 16-17.

   These goals are applicable to all the Contractor's construction work (whether or not it is State or State assisted, Federal or federally assisted) performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the Contractor also is subject to the goals for both its federally involved and non-federally involved construction.

   The Contractor's compliance with the regulations in 41 CFR Part 60-4, and/or Minnesota Statutes §363A.36 and its accompanying rules shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a) for Federal or federally assisted projects, and Minnesota Statutes §363A.36, and its accompanying rules for State or State assisted projects, and its efforts to meet the goals established for the geographical area where the contract resulting from this solicitation is to be performed. The hours of minority and women employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority and women employees or trainees from contractor to contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4 for Federal or federally-assisted projects and/or Minnesota Statutes §363A.36 and its accompanying rules for state or state-assisted projects. Compliance with the goals will be measured against the total work hours performed.

3. If the contract is federally funded, the Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs (OFCCP) within ten working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. If the contract is state funded, the Contractor shall provide written notification to the Compliance Division, Minnesota Department of Human Rights, Freeman Building, 625 Robert Street North, Saint Paul, Minnesota 55155 within ten working days of award of any construction subcontract in excess of $100,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the Subcontractor; employer identification number of the Subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the contract is to be performed.

4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is the county or counties of the State of Minnesota where the work is to be performed.

NOTICE TO ALL PRIME AND SUBCONTRACTORS
PRE-AWARD REPORTING REQUIREMENTS

In order to ensure compliance with Federal and State laws and regulations (23 USC 140, and 23 CFR 230, and Minnesota Statutes §363A.36) and to ensure Mn/DOT's ability to monitor and enforce compliance efforts, the following requirements apply if the apparent low bid exceeds $ 5,000,000.00:

1) The Apparent Low Bidder ("ALB") must provide to Mn/DOT the "EEO-8 Form" (also entitled "EEO Compliance Review Report"), which must provide detail on the contractor's total company workforce in the State of Minnesota during the twelve month period preceding July 30th of the previous year (Office and/or clerical personnel need not to be included).

2) The ALB must provide to Mn/DOT a work plan for meeting the minority and women employment goals established by the Minnesota Department of Human Rights, for the project in question. The work plan must include, at a minimum (1) how the ALB will incorporate its current minority and women employees in the ALB's efforts to meet the established goals; and (2) a contingency plan if the ALB has determined that its current workforce is not sufficient in order to achieve the established employment goals. If the ALB relies in whole or in part upon unions as a source of employees, then the ALB must (1) include a list of established organizations that are likely to yield qualified minority and women candidates if those union(s) are unable to provide a reasonable flow of minority and women candidates in their work plan; and (2) document the method by which these organizations will refer candidates to the ALB for employment opportunities. All bidders are hereby notified that the U.S. Department of Labor has determined that a contractor will not be excused from complying with the Federal and State laws and regulations cited above based solely on the fact that a contractor has a collective bargaining agreement with a union providing for the union to be the exclusive source of referral and that the union failed to refer minority employees. A contractor may obtain a list of organizations likely to yield qualified minority and women candidates from the Mn/DOT Office of Civil Rights.

3) The ALB must provide to Mn/DOT the ALB's total workforce and labor projections for the project (represented in hours), the ALB's projected total number of minority hours for the project, and the ALB's projected total number of women hours for the project. The details must include the trade(s) that will be utilized in order to complete the project.

The ALB must submit documents as required to comply with this section no later than five business days after the date that bids for the contract are opened. The five day period starts the business day following the date that bids were opened. The required documents must be received prior to Contract Award, and must be sent to the Mn/DOT Office of Civil Rights – 395 John Ireland Blvd., Mail Stop 170 St. Paul, MN 55155-1899. Submittal of the documents described in (1), (2) and (3) is required for contract award to the ALB. The submitted documents will be used as a tool to assist contractors in meeting employment goals; the content itself will not be evaluated for the purpose of determining contract award.

MINNESOTA AFFIRMATIVE ACTION REQUIREMENTS

1. It is hereby agreed between the parties to this contract that Minnesota Statutes, Section §363A.36, and its accompanying rules are incorporated into any contract between these parties based upon this specification or any modification of it. A copy of Minnesota Statutes, Section §363A.36, and its accompanying rules is available upon request from the contracting agency. The Contractor hereby agrees to comply with the rules and relevant orders of the Minnesota Department of Human Rights issued pursuant to the Minnesota Human Rights Act.

2. It is hereby agreed between the parties to this contract that this agency requires that the Contractor meet affirmative action criteria as provided for by Minnesota Statutes §363A.36 and its accompanying rules. It is the intent of the Minnesota Department of Transportation to fully carry out its responsibility for requiring affirmative action, and to implement sanctions for failure to meet these requirements. Failure by a contractor to implement an affirmative action plan, meet project employment goals for minority and women employment or make a good faith effort to do so may result in revocation of his/her Certificate of Compliance or suspension or revocation of the contract (Minnesota Statutes §363A.36).

3. Under the affirmative action obligation imposed by the Human Rights Act, Minnesota Statutes, Section §363A.36, contractors shall take affirmative action to employ and advance in employment minority, female, and qualified disabled individuals at all levels of employment. Affirmative action must apply to all employment practices, including but not limited to hiring, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation, and selection for training, including apprenticeship. The Contractor shall recruit, hire, train and promote persons in all job titles, without regard to race, color, creed, religion, sex, national origin, marital status, status with regard to public assistance, physical or mental disability, sexual orientation or age except where such status is a bona fide occupational qualification. These affirmative action requirements of the Minnesota Human Rights Act are consistent with but broader than the Federal requirements as covered in this contract.

4. Affirmative Action for disabled workers. The Contractor shall not discriminate against any employee or applicant for employment because of a physical or mental disability in regard to any position for which the employee or applicant for employment is qualified. The Contractor agrees to take affirmative action to employ, advance in employment, and otherwise treat qualified disabled individuals without discrimination based upon their physical or mental disability in all employment practices such as employment, upgrading, demotion or transfer, recruitment, advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training (including apprenticeship). In the event of the Contractor's noncompliance with the requirements of this clause, actions for noncompliance may be taken in accordance with Minnesota Statutes, section §363A.36 and the rules and relevant orders of the Minnesota Department of Human Rights pursuant to the Minnesota Human Rights Act.

5. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices in a form to be prescribed by the commissioner of the Minnesota Department of Human Rights. Such notices shall state the Contractor's obligation under the law to take affirmative action to employ and advance in employment minority, women and qualified disabled employees and applicants for employment, and the rights of applicants and employees. **A poster entitled "Contractor Non-discrimination is the Law" may he obtained from: Compliance Unit, Minnesota Department of Human Rights, Freeman Building, 625 Robert Street North, Saint Paul, Minnesota 55155.** (651) 539-1100, TTY 296-1283, Toll Free 1-800-657-3704.

6. The Contractor shall notify each labor union or representative of workers with which he/she has a collective bargaining agreement or other contract understanding, that the Contractor is bound by the terms of Minnesota Statutes, section §363A.36 of the Minnesota Human Rights Act, and is committed to take affirmative action to employ and advance in employment minority, women and qualified physically and mentally disabled individuals.

APPROPRIATE WORK PLACE BEHAVIOR ON Mn/DOT CONSTRUCTION PROJECTS UTILIZING STATE FUNDS

It is the Minnesota Department of Transportation's (MnDOT's) policy to provide a workplace free from violence, threats of violence, harassment and discrimination. MnDOT has established a policy of zero tolerance for violence in the workplace. Contractors who perform work on MnDOT construction projects, or local government entities or public agencies utilizing state funds on highway construction projects, shall maintain a workplace free from violence, harassment and discrimination (See definitions, below).

Definitions:

1. Violence is the threatened or actual use of force which results in or has a high likelihood of causing fear, injury, suffering or death. Employees are prohibited from taking reprisal against anyone who reports a violent act or threat.

2. Harassment is the conduct of one employee (toward another employee) which has the purpose or effect of 1) unreasonably interfering with the employee's work performance, and/or 2) creating an intimidating, hostile or offensive work environment. Harassment is not legitimate job-related efforts of supervisor to direct/evaluate an employee or to have an employee improve work performance.

A. Unlawful discriminatory harassment is harassment which is based on these characteristics: race, color, creed, religion, national origin, sex, disability, age, marital status, status with regard to public assistance or sexual orientation. Managers, supervisors and employees shall not take disciplinary or retaliatory action against employees who make complaints of sexual harassment.

Sexual harassment is unwelcome sexual advances, requests for sexual favors, or sexually motivated physical contact, or other verbal or physical conduct or communication of a sexual nature, when submission to that conduct or communication is 1) made a term or condition, either explicitly or implicitly, of obtaining employment; or 2) is used as a factor in decisions affecting an individual's employment; or 3) when that conduct or communication has the purpose or effect of substantially interfering with an individual's employment or creating an intimidating, hostile or offensive work environment, and the employer knows or should have known of the existence of the harassment and fails to take timely and appropriate action. Examples include but are not limited to insulting or degrading sexual remarks or conduct; threats, demands or suggestions that status is contingent upon toleration or acquiescence to sexual advances; displaying in the workplace sexually suggestive objects, publications or pictures, or retaliation against employees for complaining about the behavior cited above or similar behaviors.

B. General harassment is harassment which is not based on the above characteristics. Examples may include, but are not limited to: physically intimidating behavior and/or threats of violence; use of profanity (swearing), vulgarity; ridiculing, taunting, belittling or humiliating another person; inappropriate assignments of work or benefits; derogatory name calling.

3. Discrimination includes actions which cause a person, solely because of race, color, creed, religion, national origin, sex, disability, age, marital status, status with regard to public assistance or sexual orientation to be subject to unequal treatment.

Prime Contractors who work on MnDOT projects shall ensure that their managers, supervisors, foremen/women and employees are familiar with MnDOT's policy on appropriate work place behavior; and shall ensure that their subcontractors are familiar with this policy. Managers, supervisors and foremen/women will respond to, document, and take appropriate action in response to all reports of violence, threats of violence, harassment or discrimination. Failure to comply with this policy may result in cancellation, termination or suspension of contracts or subcontracts currently held and debarment from further such contracts or subcontracts as provided by statute. If you need additional information or training regarding this policy, please contact the Office of Civil Rights at (651) 366-3073.

NOTICE TO ALL PRIME AND SUBCONTRACTORS REPORTING REQUIREMENTS

1. In order to monitor compliance with Federal Statutes 23 USC 140 and 23 CFR 230, and Minnesota Statutes §363A.36, all prime contractors and subcontractors are required to complete a Mn/DOT Monthly Employment Compliance Report each month for each project (Form EEO-13, sample copy at EEO Pages 20-21.) Prime contractors are also required to complete a Contractor Employment Data Report (Form EEO-12, sample copy at EEO Pages 18-19) once prior to work commencing on the project, unless one has been completed already within the calendar year.

   The prime contractor of each project collects Monthly Employment Compliance Reports from each subcontractor who performed work during the month, and completes a Monthly Employment Compliance Report on its own work force. **For the month of July only, an EEO-13 is required for each payroll period within the month of July.** The prime contractor submits the EEO-13 forms to the Mn/DOT Project Engineer by the 15th day of the subsequent month.

   Failure to submit the required reports in the allowable time frame will be cause for the imposition of contract sanctions.

   It is the intent of Mn/DOT to implement monitoring measures on each project to ensure that each prime contractor and subcontractor is promoting the full realization of equal employment opportunities. Any project may be scheduled for an in depth on-site contract compliance review. During the scheduled on-site review, the Contractor will be required to provide to Mn/DOT documentation of its "good faith efforts" as shown in EEO Pages 10-13, at 7 a-p of this contract.

2. If a Federally funded project requires On-the-Job-Training (OJT) participation, information is provided in the contract and can be located by referring to the Table of Contents for Division S. (OJT is also listed as a bid line item under Trainees.) When a contract requires OJT participation, the Prime Contractor shall submit a training plan as indicated in the Proposal. The training plan shall include the job classification titles of trainees, planned training activities and the approximate start date of trainees.

3. When a Contractor selects a trainee applicant for OJT, the Contractor completes an On the Job Training Program-Trainee Assignment form (sample copy at EEO Page 23) and submits it to the Contract Compliance Specialist (CCS) assigned to the project for approval. The CCS notifies the Contractor and Project Engineer when the applicant is approved.

4. Hours of work performed by OJT employees shall be documented on a monthly basis on the Certification of On-The-Job Training Hours form, (Mn/DOT Form No. 21860, sample copy at EEO Page 24). The Contractor shall submit the original and one copy to the Project Engineer, and one copy to the CCS assigned to the project.

Do not remove forms from this contract. Please duplicate forms from the copies in this contract, or the Mn/DOT Office of Civil Rights will provide these forms upon request. Please call the Office of Civil Rights, (651) 366-3073.

SPECIFIC FEDERAL EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 CFR 230, Subpart A, Appendix A, FAPG June 6, 1996)

1. General.
a. Equal employment opportunity requirements not to discriminate and to take affirmative action to assure equal opportunity as required by Executive Order 11246 and Executive Order 11375 are set fortb in Required contract Provisions (Form PR-1273 or 1316, as appropriate) and these Special Provisions whicb are imposed pursuant to Section 140 of title 23, U.S.C., as established by Section 22 of the Federal-Aid Highway Act of 1968. The requirements set forth in these Special Provisions shall constitute the specific affirmative action requirements for project activities under this contract and supplement the equal employment opportunity requirements set forth in the Required Contract Provisions.
b. The contractor will work with the State highway agencies and the Federal Government in carrying out equal employment opportunity obligations and in their review of his/her activities under the contract.
c. The contractor and all his/her subcontractors holding subcontracts not including material suppliers, of $10,000 or more, will comply with the following minimum specific requirement activities of equal employment Opportunity: (The equal employment opportunity requirements of Executive Order 11246, as set forth in volume 6, Chapter 4, Section 1, Subsection 1 of the Federal-Aid Highway program Manual, are applicable to material suppliers as well as contractors and subcontractors.) The contractor will include these requirements in every subcontract of $10,000 or more with such modification of language as is necessary to make them binding on the subcontractor.

2. Equal Employment Opportunity Policy.
The contractor will accept as his operating policy the following statement which is designed to further the provision of equal employment opportunity to all persons without regard to their race, color, religion, sex, or national origin, and to promote their full realization of equal employment through a positive continuing program:

It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, or national origin. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre apprenticeship, and/or on-the-job training.

3. Equal Employment Opportunity Officer.
The contractor will designate and make known to State highway agency contracting officers an equal employment opportunity officer (hereinafter referred to as the EEO Officer) who will have the responsibility for and must be capable of effectively administering and promoting an active contractor program of equal employment opportunity and who must be assigned adequate authority and responsibility to do so.

4. Dissemination of Policy.
a. All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action will be made fully cognizant of, and will implement, the contractor's equal employment opportunity policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:
(1). Periodic meetings of supervisory and personnel office staff will be conducted before the start of work and then not less often than once every six months, at which time the contractor's equal employment opportunity policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer or other knowledgeable company official.
(2). All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer or other knowledgeable company official, covering all major aspects of the contractor's equal employment opportunity obligations within thirty days following their reporting for duty with the contractor.
(3). All personnel who are engaged in direct recruitment for the project will be instructed by the EEO officer or appropriate company official in the contractor's procedures for locating and hiring minority group employees.
b. In order to make the contractor's equal employment policy known to all employees, prospective employees and potential sources of employees, i.e., schools, employment agencies, labor unions (where appropriate), college placement officers, etc., the contractor will take tbe following actions:
(1). Notices and posters setting forth the contractor's equal employment opportunity policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.
(2). The contractor's equal employment opportunity policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

5. Recruitment.
a. When advertising for employees, the contractor will include in all advertisements for employees the notation "An Equal Opportunity Employer." All such advertisements will be published in newspapers or other publications baving a large circulation among minority groups in the area from which the project work force would normally be derived.
b. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority group applicants, including, but not limited to, State employment agencies, schools, colleges and minority group organizations. To meet this requirement, the contractor will, through his/her EEO Officer, identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority group applicants may be referred to the contractor for employment consideration.
In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, he is expected to observe the provisions of that agreement to the extent that the system permits the contractor's compliance with equal employment opportunity contract provisions. (The U.S. Department of Labor has held that where the implementation of such agreements have the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Executive Order 11246, as amended.)
c. The contractor will encourage his present employees to refer minority group applicants for employment by posting appropriate notices or bulletins in areas accessible to all such employees. In addition, information and procedures with regard to referring minority group applicants will be discussed with employees.

6. Personnel Actions. Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, or national origin. The following procedures shall be followed:
a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.
b. The contractor will periodically evaluate the spread of wages paid within each

SPECIFIC FEDERAL EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES *(cont.)*

classification to determine any evidence of discriminatory wage practices.
c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.
d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with his/her obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all his avenues of appeal.

7. Training and Promotion.
a. The contractor will assist in locating, qualifying, and increasing the skills of minority group and women employees and applicants for employment.
b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e. apprenticeship, and on-the-job training programs for the geographical area of contract performance. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. In the event the Training Special Provision is provided under this contract, this subparagraph will be superseded as indicated in Attachment 2.
c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.
d. The Contractor will periodically review the training and promotion potential of minority group and women employees and will encourage eligible employees to apply for such training and promotion.

8. Unions. If a contractor relies in whole or in part upon unions as a source of employees, the contractor will use his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the contractor either directly or through a contractor's association acting as agent will include the procedures set forth below:
a. The contractor will use best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group members and women so that they may qualify for higher paying employment.
b. The contractor will use best efforts to incorporate an equal employment opportunity clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, or national origin.
c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the State highway department and shall set forth what efforts have been made to obtain such information.
d. In the event the union is unable to provide the contractor with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, or national origin; making full efforts to obtain qualified and/or qualifiable minority group persons and women. (The U.S. Department of Labor has held that it shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.) In the event the union referral practice prevents thecontractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the State highway agency.

9. Subcontracting.
a. The contractor will use his best efforts to solicit bids from and to utilize minority group subcontractors or subcontractors with meaningful minority group and female representation among their employees. Contractors shall obtain lists of minority-owned construction firms from State highway agency personnel.
b. The contractor will use his best efforts to ensure subcontractor compliance with their equal employment opportunity obligations.

10. Records and Reports:
a. The contractor shall keep such records as necessary to determine compliance with the contractor's equal employment opportunity obligations. The records kept by the contractor will be designed to indicate:
(1) The number of minority and non minority group members and women employed in each work classification on the project.
(2) The progress and efforts being made in cooperation with unions to increase employment opportunities for minorities and women (applicable only to contractor's who rely in whole or in part on unions as a source of their work force),
(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees, and
(4) The progress and efforts being made in securing the services of minority group subcontractors with meaningful minority and female representation among their employees.
b. All such records must be retained for a period of three years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the State highway agency and the Federal Highway Administration.
c. The contractors will submit an annual report to the State highway agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form PR-1391. If on-the-job training is being required by a "Training Special Provision", the contractor will be required to furnish Form FHWA 1409.

STANDARD FEDERAL AND STATE EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS (41 CFR 60-4.3 and Minnesota Statute §363A.36)

Unless noted, the following apply to both Federal/federally assisted projects and State/state assisted projects. Item 3 applies to Federal/federally assisted projects only

1. As used in these specifications:
   a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;
   b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;
   c. "Employer Identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.
   d. "Minority" includes:
      (i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
      (ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
      (iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
      (iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 ($100,000 for State projects) the provisions of these specifications and the Notice which contains the applicable goals for minority and women participation and which is set forth in the solicitations from which this contract resulted.

3. If the Contractor is participating (pursuant to 41 CFR 60-4, 5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work on the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered contractor's or subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7(a) to (p) of these specifications (itemized as 4 [a] to [o], Minnesota Rules

STANDARD FEDERAL AND STATE EEO CONSTRUCTION CONTRACT SPECIFICATIONS *(cont.)*

5000.3535). The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minorities and utilization the Contractor should (shall, for State or state assisted projects) reasonably be able to achieve in each construction trade in which it has employees in the covered area. The Contractor shall make substantially uniform progress toward its goals in each craft during the period specified. Covered construction contractors performing construction work in geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Federal goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any office of Federal Contract Compliance programs or from Federal procurement contracting officers. State goals are published periodically in the State Register in notice form, and may be obtained from the Minnesota Department of Human Rights or the Minnesota Department of Transportation Office of Civil Rights. The Contractor is expected to make substantially uniform progress toward its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement nor the failure by a union, with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications and Executive Order 11246 and its associated rules and regulations for Federal or federally assisted projects, and Minnesota Statutes, Section §363A.36 of the Minnesota Human Rights Act, or the rules adopted under the Act for State or state assisted projects.

6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees shall be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees shall be trained according to training programs approved by the Minnesota Department of Human Rights, the Minnesota Department of Labor and Industry, or the United States Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications must be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following (referred to in Minnesota Rules 5000.3535 as items 4(a) to (o):

(a) Ensure and maintain, or for State or state assisted projects make a good faith effort to maintain, a working environment free of harassment, intimidation, and coercion at all sites and in all facilities at which the Contractor's employees are assigned to work. For

STANDARD FEDERAL AND STATE EEO CONSTRUCTION CONTRACT SPECIFICATIONS *(cont.)*

Federal or federally assisted projects, the Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or women individuals working at such sites or in such facilities.

(b) Establish and maintain a current list of minority and women recruitment sources, provide written notification to minority and women recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

(c) Maintain a current file of the names, addresses, and telephone numbers of each minority and woman off-the-street applicant and minority or woman referral from a union, a recruitment source, or community organization and of what action was taken with respect to each individual. If the individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefore along with whatever additional actions the Contractor may have taken.

(d) Provide immediate written notification to the commissioner of the Minnesota Department of Human Rights for State or state assisted projects, or the director of the Office of Federal Contract Compliance for Federal or federally assisted projects, when the union, or unions with which the Contractor has a collective bargaining agreement, has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

(e) Develop on-the-job training opportunities and/or participate in training programs for the areas which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the State of Minnesota for State or state assisted projects or the Department of Labor, for Federal or federally assisted projects. The Contractor shall provide notice of these programs to the sources compiled under (b).

(f) Disseminate the Contractor's equal employment opportunity policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its equal employment opportunity obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and women employees at least once a year; and by posting the company equal employment opportunity policy on bulletin boards accessible to all employees at each location where construction work is performed.

STANDARD FEDERAL AND STATE EEO CONSTRUCTION CONTRACT SPECIFICATIONS *(cont.)*

(g) Review, at least annually, the company's equal employment opportunity policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination, or other employment decisions; including specific review of these items with onsite supervisory personnel such as superintendents, general foremen, etc., prior to the first day of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

(h) Disseminate the Contractor's equal employment opportunity policy externally by including it in any advertising in the news media, specifically including minority and women news media, and providing written notification to and discussing the Contractor's equal employment opportunity policy with other contractors and subcontractors with whom the Contractor does or anticipates doing business.

(i) Direct its recruitment efforts, both oral and written, to minority, women, and community organizations; to schools with minority and women students; and to minority and women recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations, such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

(j) Encourage present minority and women employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and women youth, both on the site and in other areas of a Contractor's work force.

(k) Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3. (This requirement applies only to Federal and federally assisted projects.)

(l) Conduct, at least annually, an inventory and evaluation at least of all minority and women personnel for promotional opportunities; and encourage these employees to seek or to prepare for, through appropriate training, such opportunities. (This is Item 4(k) in Minnesota Rules.)

(m) Ensure that seniority practices, job classifications, work assignments, and other personnel practices do not have a discriminatory effect by continually monitoring all personnel and employment-related activities to ensure that the equal employment opportunity policy and the Contractor's obligations under these specifications are being carried out. (This is item 4(l) in Minnesota Rules.)

STANDARD FEDERAL AND STATE EEO CONSTRUCTION CONTRACT SPECIFICATIONS *(cont.)*

(n) Ensure that all facilities and company activities are non segregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes. (This is item 4(m) in Minnesota Rules.)

(o) Document and maintain a record of all solicitations or offers for subcontracts from minority and women construction contractors and suppliers, including circulation of solicitations to minority and women contractor associations and other business associations. (This is item 4(n) in Minnesota Rules.)

(p) Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's equal employment opportunity policies and affirmative action obligations. (This is item 4(o) in Minnesota Rules.)

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7(a) to (p) for Federal or federally assisted projects, and 4(a)-(o) for State or state assisted projects). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the Contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7(a) to (p) or 4(a) to (o) of these specifications provided that the Contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and women work force participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor however, is required to provide equal employment opportunity and to take affirmative action for all minority groups both male and female, and all women both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order for Federal or federally assisted projects, or Minnesota Rules for State or state assisted projects, if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order or Minnesota Rules part 5000.3520 if a specific minority group is under-utilized).

10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, creed, religion, sex, or national origin. Minnesota Statutes §363A.36, part 5000.3535 (Subp. 7) also prohibits discrimination with regard to marital status, status with regard to public assistance, disability, age, or sexual orientation.

STANDARD FEDERAL AND STATE EEO CONSTRUCTION CONTRACT SPECIFICATIONS *(cont.)*

11. The Contractor shall not enter into any subcontract with any person or firm debarred from government contracts under the federal Executive Order 11246 or a local human rights ordinance, or whose certificate of compliance has been suspended or revoked pursuant to Minnesota Statutes, Section §363A.36.

12. The Contractor shall carry out such sanctions for violation of these specifications and of the equal opportunity clause, including suspension, termination, and cancellation of existing contracts as may be imposed or ordered pursuant to Minnesota Statutes, Section §363A.36, and its implementing rules for State or state assisted projects, or Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs for Federal or federally assisted projects. Any contractor who fails to carry out such sanctions shall be in violation of these specifications and Minnesota Statutes, Section §363A.36, or Executive Order 11246 as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications (paragraph 4 in Minnesota Rules 5000.3535), so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of these Specifications or Minnesota Statutes, Section §363A.36 and its implementing rules, or Executive Order 11246 and its regulations, the commissioner or the director shall proceed in accordance with Minnesota Rules part 5000.3570 for State or state assisted projects, or 41 CFR 60-4.8 for Federal or federally assisted projects.

14. The Contractor shall designate a responsible official to monitor all employment-related activity to ensure that the company equal employment opportunity policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Minnesota Department of Human Rights or the Government, and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (for example, mechanic, apprentice trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing provided in this part shall be construed as a limitation upon the application of other state or federal laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents.

EQUAL OPPORTUNITY CLAUSE

(41 CFR Part 60-1.4 b, 7-1-96 Edition)

The applicant hereby agrees that it will incorporate or cause to be incorporated into any contract for construction work, or modification thereof, as defined in the regulations of the Secretary of Labor at 41 CFR Chapter 60, which is paid for in whole or in part with funds obtained from the Federal Government or borrowed on the credit of the Federal Government pursuant to a grant, contract, loan, insurance, or guarantee, the following equal opportunity clause:

During the performance of this contract, the Contractor agrees as follows:

1. The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoffs or termination; rates of pay or other forms of compensation; and, selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the State Highway Agency (SHA) setting forth the provisions of this nondiscrimination clause.
2. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.
3. The Contractor will send to each labor union or representative of workers with which the Contractor has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representative of the Contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
4. The Contractor will comply with all provisions of Executive Order 11246, Equal Employment Opportunity, dated September 24, 1965, and of the rules, regulations (41 CFR Part 60), and relevant orders of the Secretary of Labor.
5. The Contractor will furnish all information and reports required by Executive Order 11246 and by rules, regulations, and orders of the Secretary of Labor, pursuant thereto, and will permit access to its books, records, and accounts by the Federal Highway Administration (FHWA) and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
6. In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract, or with any of such rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part, and the Contractor may be declared ineligible for further Government contracts or federally-assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions as may be imposed and remedies invoked as provided in Executive Order 11246 or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
7. The Contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraph (1) through (7) in every subcontract or purchase order so that such provisions will be binding upon each subcontractor or vendor, unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246. The Contractor will take such action with respect to any subcontract or purchase order as the Secretary of Labor, SHA, or the Federal Highway Administration (FHWA) may direct as a means of enforcing such provisions, including sanctions for noncompliance. In the event a contractor becomes a party to litigation by a subcontractor or vendor as a result of such direction, the contractor may request the SHA to enter into such litigation to protect the interest of the State. In addition, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

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

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

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

Minority and Women Employment Goals

County	Federal Goals		State Goals	
	Minority Goal	Women Goal	Minority Goal	Women Goal
Aitkin	2.2%	6.9%	5%	6%
Anoka	2.9%	6.9%	22%	6%
Becker	0.7%	6.9%	6%	6%
Beltrami	2.0%	6.9%	6%	6%
Benton	0.5%	6.9%	3%	6%
Big Stone	2.2%	6.9%	4%	6%
Blue Earth	2.2%	6.9%	4%	6%
Brown	2.2%	6.9%	4%	6%
Carlton	1.2%	6.9%	5%	6%
Carver	2.9%	6.9%	22%	6%
Cass	2.2%	6.9%	6%	6%
Chippewa	2.2%	6.9%	4%	6%
Chisago	2.9%	6.9%	3%	6%
Clay	0.7%	6.9%	6%	6%
Clearwater	2.0%	6.9%	6%	6%
Cook	1.2%	6.9%	5%	6%
Cottonwood	0.8%	6.9%	4%	6%
Crow Wing	2.2%	6.9%	6%	6%
Dakota	2.9%	6.9%	22%	6%
Dodge	0.9%	6.9%	4%	6%
Douglas	2.2%	6.9%	6%	6%
Faribault	2.2%	6.9%	4%	6%
Fillmore	0.9%	6.9%	4%	6%
Freeborn	0.9%	6.9%	4%	6%
Goodhue	2.2%	6.9%	4%	6%
Grant	2.2%	6.9%	6%	6%
Hennepin	2.9%	6.9%	32%	6%
Houston	0.6%	6.9%	4%	6%
Hubbard	2.0%	6.9%	6%	6%
Isanti	2.2%	6.9%	3%	6%
Itasca	1.2%	6.9%	5%	6%
Jackson	0.8%	6.9%	4%	6%
Kanabec	2.2%	6.9%	3%	6%
Kandiyohi	2.2%	6.9%	3%	6%
Kittson	2.0%	6.9%	6%	6%
Koochiching	1.2%	6.9%	5%	6%
Lac Qui Parle	2.2%	6.9%	4%	6%
Lake	1.2%	6.9%	5%	6%
Lake of the Woods	2.0%	6.9%	6%	6%
Le Sueur	2.2%	6.9%	4%	6%
Lincoln	0.8%	6.9%	4%	6%
Lyon	0.8%	6.9%	4%	6%

County	Federal Goals		State Goals	
	Minority Goal	Women Goal	Minority Goal	Women Goal
Mahnomen	2.0%	6.9%	6%	6%
Marshall	2.0%	6.9%	6%	6%
Martin	2.2%	6.9%	4%	6%
McLeod	2.2%	6.9%	3%	6%
Meeker	2.2%	6.9%	3%	6%
Mille Lacs	2.2%	6.9%	3%	6%
Morrison	2.2%	6.9%	6%	6%
Mower	0.9%	6.9%	4%	6%
Murray	0.8%	6.9%	4%	6%
Nicollet	2.2%	6.9%	4%	6%
Nobles	0.8%	6.9%	4%	6%
Norman	2.0%	6.9%	6%	6%
Olmsted	1.4%	6.9%	4%	6%
Otter Tail	2.2%	6.9%	6%	6%
Pennington	2.0%	6.9%	6%	6%
Pine	2.2%	6.9%	3%	6%
Pipestone	0.8%	6.9%	4%	6%
Polk	1.2%	6.9%	6%	6%
Pope	2.2%	6.9%	6%	6%
Ramsey	2.9%	6.9%	32%	6%
Red Lake	2.0%	6.9%	6%	6%
Redwood	0.8%	6.9%	4%	6%
Renville	2.2%	6.9%	3%	6%
Rice	2.2%	6.9%	4%	6%
Rock	0.8%	6.9%	4%	6%
Roseau	2.0%	6.9%	6%	6%
Scott	2.9%	6.9%	22%	6%
Sherburne	0.5%	6.9%	3%	6%
Sibley	2.2%	6.9%	4%	6%
St. Louis	1.0%	6.9%	5%	6%
Stearns	0.5%	6.9%	3%	6%
Steele	0.9%	6.9%	4%	6%
Stevens	2.2%	6.9%	6%	6%
Swift	2.2%	6.9%	4%	6%
Todd	2.2%	6.9%	6%	6%
Traverse	2.2%	6.9%	6%	6%
Wabasha	0.9%	6.9%	4%	6%
Wadena	2.2%	6.9%	6%	6%
Waseca	2.2%	6.9%	4%	6%
Washington	2.9%	6.9%	22%	6%
Watonwan	2.2%	6.9%	4%	6%
Wilkin	0.7%	6.9%	6%	6%
Winona	0.6%	6.9%	4%	6%
Wright	2.9%	6.9%	3%	6%
Yellow Medicine	2.2%	6.9%	4%	6%

Minnesota Department of Transportation Office of Civil Rights Contractor Employment Data	**1. Contractor Name and Address:** **Phone:** _____

	2. Employment Data a) Name: Last Name, First Name, MI	**b) Social Security #**	c) New Hire (Y or N)	d) Ethnicity	e) Gender (M or F)	f) Trade/Foreman, Supervisors, Managers	g) Level (A, J, or T)
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27.							

EEO-12 Rev. 5/09

INSTRUCTIONS FOR EEO-12
CONTRACTOR EMPLOYMENT DATA

This form should be submitted at the Pre-Con to the Project Engineer prior to the start of your first MnDOT construction project for the calendar year (Prime and Subs)

1. Contractor Name and Address self-explanatory.

2. Employment Data information will coincide with your employment records.

   2a. Name should be listed First Name, Middle Initial, and Last Name. This will enable MnDOT EEO staff to readily identify individuals on all projects.

   2b. Social Security Number self-explanatory.

   2c. New Hire is to be indicated with a "Y" for Yes or an "N" for No. "New Hire" is an employee who has not worked for you in any capacity or on any other project within the current calendar year.

   2d. Ethnicity can be indicated by Black (B), Hispanic (H), American Indian/Alaskan Native (AI), Asian/Pacific Islander (AP), or White (W).

   2e. Gender is to be indicated with an "M" for Males or an "F" for Females.

   2f. Trade/Foreman, Supervisors, Managers self-explanatory. List trade that applies unless the employee fits one of the other three categories.

   2g. Level "A" is for an Apprentice, "J" is for a Journey Worker, and "T" is for a MnDOT approved Trainee.

If you have questions about filling out this form, contact the Office of Civil Rights at (651) 366-3073.
(Please make copies as you need them.)

This information can be submitted electronically via the web, through MnDOT's Work force Information Tracking Initiative (WITI) Program. To open a free account to gain access to WITI or to find out more about this possibility please contact MnDOT's Office of Civil Rights at (651) 366-3015.

EEO-12 Rev. 05/09

Minnesota Department of Transportation **Office of Civil Rights** **Monthly Employment Compliance Report** **EEO-13**	**1. SP** ☐ **SAP** ☐ (Check one) **SP#**	**3. Contractor Name:**	**4. Prime** ☐ **Subcontractor** ☐ (check one)
	County or City	Street Address:	5. Dollar Amount of Contract:
	2. Reporting Period to _____	City, State Zip	6. Percent of Completion:

7. Employment Data **a) Name: Last, First Middle Initial**		**b)** **Social Security #**	**c)** **New Hire** **(Y or N)**	**d)** **Ethnicity**	**e) Gender** **M or F)**	**Trade/Foreman, Supervisors, Managers**	**g)** **Level** **(A, J or T)**	**h) Hours Worked This Period**
1.								
2.								
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20.								

8. Contract Goals		**9. Prepared by:** (Signature)	**10. Reviewed by:** (Signature)
MINNESOTA GOALS	**%OBTAINED**		
_____ % Minority	_____ %	Print Name:	Print Name:
_____ % Women	_____ %	Title:	Title:
		Date:	Date:
		Phone: Fax:	Phone: Fax:

EEO-13 Rev. 05/09

INSTRUCTIONS FOR EEO-13

MONTHLY EMPLOYMENT COMPLIANCE REPORT

1.-5. Self-explanatory – State Project #, county project is located in, are you a prime or sub, and contract value.

6. Percent of Completion is the estimated percentage of work completed including this reporting period.

7. Employment Data information will coincide with your employment records. All professional, supervisory and managerial hours actually worked on the project site must be included, whether or not they appear on the certified payroll.

- 7a. Name should be listed Last Name, First Name, and Middle Initial. This will enable MnDOT EEO staff to readily identify individuals on all projects.
- 7b. Social Security Number self-explanatory.
- 7c. New Hire is to be indicated with a "Y" for Yes or an "N" for No. "New Hire" is an employee who has not worked for you in any capacity or on any other project within the current calendar year.
- 7d. Ethnicity can be indicated by Black (B), Hispanic (H), American Indian/Alaskan Native (AI), Asian/Pacific Islander (AP), or White (W).
- 7e. Gender is to be indicated with an "M" for Males or an "F" for Females.
- 7f. Trade/Foreman, Supervisors, Managers list the trade that applies unless the employee fits one of the other three categories.
- 7g. Level "A" is for an Apprentice, "J" is for a Journey Worker, and "T" is for a MnDOT approved Trainee.
- 7h. Hours Worked for This Period will be all hours worked by the individual, for each trade, during the specified reporting period.

8. Contract Goals are the percent of total project hours to be worked by minority and women employees. The goals are determined by the geographic location and source of funding for the project. Projects in excess of $100,000 with any State funding must meet the State Employment Goals. Projects in excess of $10,000 with any Federal funding must meet the Federal Employment Goals. (See chart on EEO Pages 16-17.) Minority and women employee hours shall be distributed evenly throughout the length of the project and in every trade and craft that performs work on the project.

   % Obtained is the percent of the total project hours worked by minority and women employees, up to and including this reporting period.

9. Prepared by Contractor Designee is the signature of the prime or subcontractor's EEO officer/designee.

10. Reviewed by Project Engineer is the signature of the MnDOT staff monitoring the project.

The Prime Contractor will submit EEO-13 forms for its workforce and all subcontractors to the MnDOT Project Engineer by the 15th day of the month following the month when work was performed. If you have questions about filling out this form, contact the Office of Civil Rights at (651) 366-3073.
(Please make copies as you need them.)

This information can be submitted electronically via the web, through MnDOT's Workforce Information Tracking Initiative (WITI) Program. To open a free account to gain access to WITI or to find out more about this possibility please contact MnDOT's Office of Civil Rights at (651) 366-3321.

EEO-13 Rev. 05/09

EEO COMPLIANCE REVIEW REPORT

Total Company Workforce

(For 12 Month Period Preceding July 30th of the previous year)

Name and Address of Contractor

_____

_____

_____

Name and Title of Corporate Officer

_____

Name of EEO Officer

_____

Job Categories	Total Employees		Total Minorities		Blacks		Asian/ Pacific Is.		American Indian		Hispanic		On-the-Job Trainees	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Officials (Managers)														
Supervisors														
Foremen/Women														
Clerical														
Equipment Operators														
Mechanics														
Truck Drivers														
Iron Workers														
Carpenters														
Cement Masons														
Electricians														
Pipefitters & Plumbers														
Painters														
Laborers														
Misc. Trades														
Total														
On-the-Job Trainees														

EEO-8 Rev. 07/07

AFFIRMATIVE ACTION STATEMENT

I, we, fully intend to comply with the standards of equal employment and anti-discrimination as cited in the Civil Rights Act of 1964, as amended in 1972 by the Equal Employment Opportunity Report.

Signed:_____

Title:_____

LYON COUNTY

DEPARTMENT OF HIGHWAYS

"I hereby certify that I am in compliance with Minnesota Statutes Section 363 as amended by Laws of 1969, and (check one of the four below, as applicable):

( ) I have a Certificate of Compliance issued by the Department of Human Rights and will provide a copy to the County.

( ) I have applied for a Certificate of Compliance to the Commissioner of Human Rights, which is pending.

( ) I am exempt from the EEO requirements because the value of this Contract does not exceed $100,000.

( ) I am exempt from the EEO requirements because, though the Contract value exceeds $100,000, I have not employed more than 40 full time employees on a single working day in the twelve months previous to the letting date of this project. Attached herewith is a notarized letter on my company letterhead certifying the above to be true and specifically referencing the project numbers within this Contract.

_____
Signature of Bidder

_____
Position

_____
Name of Firm

_____
Date

This form shall **NOT** be considered sole proof of necessary compliance with Minnesota Statutes, Section 363, implementing the Rules and Regulations of the Minnesota Department of Human Rights. A Certificate of Compliance or Certified Letter must be provided to the County before any work may begin. All questions should be referred to the Minnesota Department of Human Rights, Room 60, State Office Building, St. Paul, Minnesota. Telephone 612-296-5682.

ATTACHMENT
CM 32-34 March 26, 1969

THE FOLLOWING CERTIFICATION WITH REGARD TO THE PERFORMANCE OF PREVIOUS CONTRACTS OR SUBCONTRACTS SUBJECT TO THE EQUAL OPPORTUNITY CLAUSE AND THE FILING OF REQUIRED REPORTS SHALL BE EXECUTED BY THE BIDDER.

The bidder hereby certifies the he/she has _____, has not _____, participated in a previous contract or subcontract subject to the equal opportunity clause, as required by Executive Orders 10925, 11114 or 11246, and that he/she has _____, has not _____, filed with the Joint Reporting Committee, the Director of the Office of Federal Contract Compliance, a Federal Government contracting or administering agency, or the former President's Committee on Equal Employment Opportunity, all reports due under the applicable filing requirements.

_____
(Company)

By: _____

_____
(Title)

Date: _____

Note: The above certification is required by the Equal Employment Opportunity Regulations of the Secretary of Labor (41CFR 60-1.7(b)(1)), and must be submitted by bidders and proposed subcontractors only in connection with contracts and subcontracts which are exempt from the equal opportunity clause. Contracts and subcontracts which are exempt from the equal opportunity clause are set forth in 41 CFR 60-1.5. (Generally only contracts or subcontracts of $10,000 or under are exempt.)

Currently, Standard Form 100 (EEO-1) is the only report required by Executive Orders or their implementing regulations.

Proposed prime contractors and subcontractors who have participated in a previous contract or subcontract subject to the Executive Orders and have not filed the required reports should note that 41 CFR 60-1.7(b)(1) prevents the award of contracts and subcontracts unless such contractor submits a report covering the delinquent period or such other period specified by the Federal Highway Administration or by the Director, Office of Federal Contract Compliance, U.S. Department of Labor.

NON-COLLUSION AFFIDAVIT

The following Non-Collusion Affidavit shall be executed by the bidder:

State Project No. _____

Federal Project No. _____

State of Minnesota _____)

) ss

County of _____)

I, _____, do state under penalty of
(name of person signing this affidavit)

perjury under 28 U.S.C. 1746 of the laws of the United States:

(1) that I am the authorized representative of _____

_____
(name of person, partnership or corporation submitting this proposal)

and that I have the authority to make this affidavit for and on behalf of said bidder;

(2) that, in connection with this proposal, the said bidder has not either directly or indirectly entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding;

(3) that, to the best of my knowledge and belief, the contents of this proposal have not been communicated by the bidder or by any of his/her employees or agents to any person who is not an employee or agent of the bidder or of the surety on any bond furnished with the proposal and will not be communicated to any person who is not an employee or agent of the bidder or of said surety prior to the official opening of the proposal, and

(4) that I have fully informed myself regarding the accuracy of the statements made in this affidavit.

Signed: _____
(bidder or his authorized representative)

THE SCHEDULE OF PRICES SHEETS HAVE INTENTIONALLY BEEN LEFT OUT OF THE PDF PRINT OUT OF THIS PROPOSAL. TO REQUEST THE SCHEDULE OF PRICES SHEETS, PLEASE VISIT OUR WEBSITE, WWW.LYONCO.ORG, FOR INSTRUCTIONS OR CONTACT THE LYON COUNTY HIGHWAY DEPARTMENT AT 507-532-8205. THE SCHEDULE OF PRICES SHEETS WILL BE EMAILED TO YOU FOR INSERTION INTO THE PROPOSAL TO MAKE IT COMPLETE.

State Aid Project No. 42-607-026 and 42-607-027

GRAND TOTAL $_____

PROPOSAL GUARANTY required by 1208 of the Specifications: "A (certified check) (bond), prepared as required by 1208 of the Specifications and payable to the Jackson County Treasurer, in an amount equal to at least 5% of the total amount of the bid is submitted herewith as a proposal guaranty.

DISADVANTAGED BUSINESS ENTERPRISE CERTIFICATION: Our firm will meet a minimum goal of ____% of this contract to Disadvantaged Business Enterprises. A bidder who fails to indicate a specific goal above must fulfill the total goals indicated in the proposal.

NON-COLLUSION AFFIDAVIT: A Non-Collusion Affidavit is found in this proposal which must be signed by each bidder.

RECEIPT OF ADDENDA as required by 1210 of the Specifications:

The undersigned hereby acknowledges receipt of and has considered:

Addendum No. ____ Dated _____ Addendum No. ____ Dated

Addendum No. ____ Dated _____ Addendum No. ____ Dated

Signed

EXECUTION OF PROPOSAL as required by 1206 of the Specifications:

This proposal dated the ____ day of _____, 20

Signed: _____, P.O. Address _____ as an individual.

Signed: _____, P.O. Address _____ as an individual.

doing business under the name and style of

Signed: _____, for _____ a partnership.

NAME BUSINESS ADDRESS

Signed: _____, for _____ a corporation,

incorporated under the laws of the State of Minnesota

Name of President _____ Business Address

Name of Vice-President _____ Business Address

Name of Secretary _____ Business Address

Name of Treasurer _____ Business Address

(NOTE: Signatures shall comply with 1206 of the Specifications.)