CITY OF ROCHESTER
201 4TH STREET SE, ROOM 108
ROCHESTER, MN 55904-3742
********PROPOSAL*********

FOR HIGHWAY CONSTRUCTION
AND MAINTENANCE PROJECTS WITH
BIDS RECEIVED UNTIL **11:00 O'CLOCK A.M.** ON **JUNE 20, 2013**

PROPOSAL OF _____
(Name of Firm) (Phone No.)

_____
(Address) (Fax No.)

_____
(City) (State) (Zip)

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

CITY PROJECT NO. _____ J NO. **(J9563)**

STATE PROJECT NO. **159-130-004**

MINNESOTA PROJECT NO. _____

LOCATION: **TH 52 East Frontage Road, Rochester, MN**

TYPE OF WORK **Road Reconstruction – Grading, Bituminous Mill, Bituminous Pavement, Storm Sewer, Concrete Curb & Gutter, Concrete Sidewalk, Traffic Signal**

LENGTH **0.803** MILES STARTING DATE: **July 22, 2013**

COMPLETION DATE: **October 11, 2013**

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.

Craig N Britton 05/30/13
Craig Britton License Number 44228 (Date)

****

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

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CITY OF ROCHESTER, MN
NOTICE OF BIDS

Notice is hereby given that bids will be received at the office of the City Clerk until **11:00 A.M. on Thursday June 20, 2013,** for the construction of the following described local improvement, pursuant to Minnesota Statutes, Chapter 429, as amended, in accordance with the plans and specifications for the same which are on file in the Office of the City Clerk of said City:

Project No: S.A.P. 159-130-004, J-9563

Title: "Reconstruct TH52 East Frontage Rd from 41st St NW to Pennington Court NW"

Immediately following expiration of the time for receiving bids, the City Clerk and two designated City officials will publicly open said bids in the City Hall and tabulate them in advance of the Council meeting. The Common Council will consider the bids in the Council/Board Chambers at the Government Center at **7:00 P.M. July 1, 2013**.

Said Construction generally consists of **Street Construction**. The work includes the following approximate quantities of work:

Common Excavation (P)	**5912**	**C Y**
Aggregate Base (Cv) Class 5 (P)	**6360**	**Ton**
Type Sp 9.5 Wearing Course Mix (3,C)	**2520**	**Ton**
Type Sp 12.5 Wearing Course Mix (3,C)	**895**	**Ton**
Type Sp 12.5 Non Wear Course Mix (3,B)	**895**	**Ton**
Concrete Curb & Gutter Design B624	**6125**	**L F**
12-30" RCP Storm Sewer	**336**	**LF**
Revise Traffic Control Signal System	**1**	**LS**
Sodding Type Mineral	**3155**	**S Y**
Top Soil Borrow	**1105**	**CY**

Plan, Specifications and Contract Documents may be examined at the Department of Public Works, 201 4th St. SE, Room 108, Rochester, MN 55904, (507) 328-2400 or the City's website at https://egram.rochestermn.gov/.

Each bid must be sealed and accompanied by a cash deposit, bid bond, cashier's check or a certified check payable to the City of Rochester, Minnesota, for at least **5%** the amount of the bid, which amount shall be forfeited to the City of Rochester, Minnesota, as liquidated damages if the bidder, upon the letting of the contract to him shall fail to enter into the contract so let; the Common Council reserving the right to reject any and all bids.

All proposals must be addressed to the City Clerk, City of Rochester, 201 4th St. SE, Room 135, Rochester, Minnesota 55904-3742 and shall have endorsed thereon:

Project No: S.A.P. 159-130-004, J-9563

Title: "Reconstruct TH52 East Frontage Rd from 41st St NW to Pennington Court NW"

Dated at Rochester, Minnesota this 21st day of May 2013.

_____
JUDY K. SCHERR, CMC, City Clerk

NOTICE TO ALL BIDDERS -- TO REPORT BID RIGGING

To report bid rigging activities call:

1-800-424-9071

The U.S. Department of Transportation (DOT) operates the above tollfree "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.

Department of Public Works
201 4th Street SE, Room 108
Rochester, MN 55904-3740
(507) 328-2400

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

The Department of Administration in accordance with Minnesota Rules 1230.1150 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.

Rev. 12/18/2006

STATE FUNDED CONSTRUCTION CONTRACTS
SPECIAL PROVISIONS DIVISION A - LABOR

April 7, 2006

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, MNDOT's Standard Specifications for Construction, MNDOT's Contract Administration Manual, MNDOT's State Aid Manual** and applicable federal labor regulations.

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.

1 Minnesota Statute 177.41
2 MNDOT 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.

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]

[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/.

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 **MNDOT, 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 f all subcontractors, throughout the course of a construction project and retain all records for 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]

[14] Minnesota Statute 177.44, Subdivision 7
[15] MnDOT 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 MNDOT's Payroll Maintenance Program. The guidelines for the implementation and administration of this program are outlined in the **MNDOT 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)**.

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]

[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]

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.

[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 **MNDOT, 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. 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, (NONCOMPLIANCE AND ENFORCEMENT)**.

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.

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 MNDOT Labor Compliance Unit at (651) 296-6503.

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)**.

[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

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.

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 **MNDOT, 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]

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] MNDOT 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 MNDOT 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.

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]

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] MNDOT 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 **MNDOT, TP-90550 - Month-End Trucking Report and MNDOT, 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 **MNDOT, 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).**

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]

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]

[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] MNDOT Standard Specifications for Construction, Section 1701
[68] MNDOT Standard Specifications for Construction, Section 1801
[69] MNDOT 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] MNDOT 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

Prompt Payment
December 2002

NOTICE TO BIDDERS

Minnesota Statutes that require prompt payment to subcontractors:

16A.1245 Prompt payment to subcontractors.

Each state agency contract must require the prime contractor to pay any subcontractor within ten days of the prime contractor's receipt of payment from the state 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: 1990 c 541 s 1

337.10 Building and construction contracts; prohibited provisions.

Subd. 3. Prompt payment to subcontractors. A building and construction contract shall be deemed to require the prime contractor and all subcontractors to promptly pay any subcontractor or material supplier contract within ten days of receipt by the party responsible for payment of payment for undisputed services provided by the party requesting payment. The contract shall be deemed to require the party responsible for payment to pay interest of 1-1/2 percent per month to the party requesting payment on any undisputed amount not paid on time. 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 party responsible for payment shall pay the actual penalty due to the party requesting payment. A party requesting payment who prevails in a civil action to collect interest penalties from a party responsible for payment must be awarded its costs and disbursements, including attorney fees incurred in bringing the action. This subdivision does not apply to construction of or improvements to residential real estate as defined in section 326.83, subdivision 17, or to construction of or improvements to attached single-family dwellings, if those dwellings are used for residential purposes and have fewer than 13 units per structure.

HIST: 1997 c 127 s 1; 1998 c 289 s 1,2; 1999 c 116 s 2

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: 06

Counties within region:

- DODGE-20
- FILLMORE-23
- FREEBORN-24
- GOODHUE-25
- HOUSTON-28
- MOWER-50
- OLMSTED-55
- RICE-66
- STEELE-74
- WABASHA-79
- WINONA-85

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	23.61	14.43	38.04
	2013-05-01	23.57	14.72	38.29
102 LABORER, SKILLED (ASSISTING SKILLED CRAFT JOURNEYMAN)	2012-10-29	23.61	14.43	38.04
	2013-05-01	23.57	14.72	38.29
103 LABORER, LANDSCAPING (GARDENER, SOD LAYER AND NURSERY OPERATOR)	2012-10-29	15.00	0.00	15.00
104 FLAG PERSON	2012-10-29	23.61	14.43	38.04
	2013-05-01	23.57	14.72	38.29
105 WATCH PERSON	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
106 BLASTER	2012-10-29	26.61	14.43	41.04
	2013-05-01	26.57	14.72	41.29
107 PIPELAYER (WATER, SEWER AND GAS)	2012-10-29	25.61	14.43	40.04
	2013-05-01	25.57	14.72	40.29
108 TUNNEL MINER	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
109 UNDERGROUND AND OPEN DITCH LABORER (EIGHT FEET BELOW STARTING GRADE LEVEL)	2012-10-29	24.31	14.43	38.74
	2013-05-01	24.27	14.72	38.99
110 SURVEY FIELD TECHNICIAN (OPERATE TOTAL STATION, GPS RECEIVER, LEVEL, ROD OR RANGE POLES, STEEL TAPE MEASUREMENT; MARK AND 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.	2012-10-29	26.00	12.70	38.70
111 TRAFFIC CONTROL PERSON (TEMPORARY SIGNAGE)	2012-10-29	23.61	14.43	38.04
	2013-05-01	23.57	14.72	38.29
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	2012-10-29	15.80	4.03	19.83

CONTRACTOR.

SPECIAL EQUIPMENT (201 - 204)

201	ARTICULATED HAULER	2012-10-29	28.66	16.70	45.36
202	BOOM TRUCK	2012-10-29	28.66	16.70	45.36
		2013-05-01	28.81	16.70	45.51
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	25.00	0.00	25.00
204	OFF-ROAD TRUCK	2012-10-29	28.66	16.70	45.36
		2013-05-01	28.81	16.70	45.51
205	PAVEMENT MARKING OR MARKING REMOVAL EQUIPMENT (ONE OR TWO PERSON OPERATORS); SELF-PROPELLED TRUCK OR TRAILER MOUNTED UNITS.	2012-10-29	26.29	13.90	40.19
		2013-05-01	26.99	13.90	40.89

HIGHWAY/HEAVY POWER EQUIPMENT OPERATOR

GROUP 2	2012-10-29	29.41	16.70	46.11
	2013-05-01	29.56	16.70	46.26

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	28.96	16.70	45.66
	2013-05-01	29.11	16.70	45.81

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	28.66	16.70	45.36
	2013-05-01	28.81	16.70	45.51

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	26.09	16.70	42.79
	2013-05-01	26.24	16.70	42.94

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	25.22	16.70	41.92
	2013-05-01	25.37	16.70	42.07

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	24.80	13.15	37.95

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	20.80	16.60	37.40
604 FOUR OR MORE AXLE UNIT, STRAIGHT BODY TRUCK				
GROUP 3	2012-10-29	24.65	13.65	38.30
	2013-05-01	24.80	14.00	38.80
605 BITUMINOUS DISTRIBUTOR DRIVER				
606 BITUMINOUS DISTRIBUTOR (ONE PERSON OPERATION)				
607 THREE AXLE UNITS				
GROUP 4	2012-10-29	24.45	13.65	38.10
	2013-05-01	24.60	14.00	38.60
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	18.50	0.71	19.21
702 BOILERMAKERS	2012-10-29	31.87	24.40	56.27
	2013-01-01	33.52	24.40	57.92
703 BRICKLAYERS	2012-10-29	32.20	17.96	50.16
704 CARPENTERS	2012-10-29	26.66	17.46	44.12
	2013-05-01	27.16	17.46	44.62
705 CARPET LAYERS (LINOLEUM)	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
706 CEMENT MASONS	2012-10-29	34.36	7.90	42.26
707 ELECTRICIANS	2012-10-29	31.08	15.59	46.67
708 ELEVATOR CONSTRUCTORS	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			

709	GLAZIERS	2012-10-29	30.84	9.50	40.34
710	LATHERS	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
711	GROUND PERSON	2012-10-29	17.61	9.06	26.67
712	IRONWORKERS	2012-10-29	34.15	21.20	55.35
713	LINEMAN	2012-10-29	37.30	16.00	53.30
		2013-03-31	38.42	16.33	54.75
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	26.29	13.90	40.19
		2013-05-01	26.99	13.90	40.89
716	PILEDRIVER (INCLUDING VIBRATORY DRIVER OR EXTRACTOR FOR PILING AND SHEETING OPERATIONS)	2012-10-29	26.66	17.46	44.12
		2013-05-01	27.16	17.46	44.62
717	PIPEFITTERS . STEAMFITTERS	2012-10-29	34.71	17.05	51.76
		2012-10-29	36.26	15.50	51.76
718	PLASTERERS	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
719	PLUMBERS	2012-10-29	31.20	13.55	44.75
720	ROOFER	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
721	SHEET METAL WORKERS	2012-10-29	35.08	1.89	36.97
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	2012-10-29	32.09	12.39	44.48
728	WIRING SYSTEMS INSTALLER	2012-10-29	22.46	10.61	33.07

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			

DEPARTMENT OF LABOR AND INDUSTRY **May 1, 2012**
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]

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

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[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.

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

		Tractor				
	Effective Date	602 Driver Rate	Operating Cost	Tractor Only Truck Rental Rate	Plus Trailer Operating Cost	Tractor Trail 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.

KEN B. PETERSON
COMMISSIONER

4

DIVISION S

S - 1 DESCRIPTION

The Contract stipulations that follow are general in scope and may refer to conditions that will not be encountered on the work covered by the Contract. Any provision of these general requirements that pertains to a nonexistent condition or is not applicable to the work to be performed here under, or that conflicts with any provision of the Special Provisions or with any special instructions to bidders, shall have no meaning in the Contract and shall be disregarded.

S - 2 REFERENCE DOCUMENTATION

Reference Documentation shall be the latest edition, including amendments and published updates, issued prior to the date of advertisement for bids or the date of request for quotations, of the following:

1. Minnesota Department of Transportation (MnDOT) Standard Specifications for Construction, except that Section 1903 shall not apply to any contract pay items.
2. City of Rochester Ordinances.
3. City of Rochester Standard Detail Plates.
4. City of Rochester Standard Specifications for Street & Utility Construction.
5. Minnesota Manual on Uniform Traffic Control Devices (MN MUTCD).

S - 3 DESIGNATION OF PARTIES

s 3.1 "City"

"City" shall mean the City of Rochester, 201 4th Street SE, Room 108, Rochester, MN 55904.

s 3.2 "Owner"

"Owner" shall mean the City of Rochester, 201 4th Street SE, Room 108, Rochester, MN 55904 or as named in the contract documents.

s 3.3 "Department"

"Department" shall mean the City of Rochester, 201 4th Street SE, Room 108, Rochester, MN 55904 or as named in the contract documents.

s 3.4 "Engineer"

"Engineer" shall mean the City Engineer or other authorized representative of the Owner as named in the contract documents.

s 3.5 "Inspector"

"Inspector" shall mean the Engineer's authorized representative assigned to make inspections of Contract performance.

s 3.6 "Bidder"

"Bidder" shall mean any individual or entity submitting a Proposal for the advertised work.

s 3.7 "Contractor"

"Contractor" shall mean the individual or entity designated in the Contract documents to construct the project pursuant to plans and specifications.

s 3.8 "Sub-Contractor"

"Sub-Contractor" shall mean the individual or entity acting for or on behalf of the Contractor in performing any part of the Contract.

s 3.9 "MnDOT"

"MnDOT" shall mean the Minnesota Department of Transportation.

S - 4 DEFINITION OF TERMS

s 4.1 Amount of Contract

For the purpose of awarding the Contract and determining the amount of the Bond, the Contract amount shall be the total amount of the bid.

s 4.2 Date of Acceptance

Date of Acceptance shall be the day when final inspection reveals that the work has been completed in strict accordance with the provisions of the Plans and other Contract documents, and with previous inspection documents.

s 4.3 Date of Final Acceptance

Date of Final Acceptance shall be a day, at least two (2) years after the Date of Acceptance, at which time the City determines that the work continues to be in strict accordance with the provisions of the Plans and other Contract and inspection documents. The Date of Final Acceptance denotes the termination of Contractor's maintenance obligation.

s 4.4 Liquidated Damages

Liquidated damages are the amount prescribed in MnDOT Section 1807 to be paid to the Owner, or to be deducted from any payments due or to become due to the Contractor, for each day that work remains uncompleted after expiration of the Contract time as determined and extended in accordance with MnDOT Section 1806.

s 4.5 "Incidental"

Whenever in any section of the Contract documents, Plans or Specifications, any item, material or application is defined as incidental, Payment shall be incidental to the Contract and no direct compensation will be made.

s 4.6 "Or Approved Equal" Clause

Whenever in any section of the Contract documents, Plans or Specifications, any article, material or equipment is defined by describing a proprietary product, or by using the name of manufacturer or vendor, the term "or approved equal" if not inserted, shall be implied.

The specific article, material, or equipment mentioned shall be understood as indicating the type, function, minimum standard of design, efficiency, and quality required and shall not be construed in such a manner as to exclude manufactured products of comparable quality, design, and efficiency. The Engineer shall determine the acceptability of articles, materials, or equipment proposed "as equal".

s 4.7 Standard Documents

Standard Documents are those that are referred to but not included in the Plans, Specifications and Special Provisions. Standard Documents are available to the public and it is the Contractor's sole responsibility to obtain and understand the requirements of any Standard Documents noted in the Plans, Specifications and Special Provisions. Examples of Standard Documents include but are not limited to:

Bid documents (Advertisement, Information to Bidders, Proposal and Bid Security)

Performance and Payment Bond forms

Project Specifications and Special Provisions

City of Rochester, Minnesota, Department of Public Works documents:

Standard Specifications for Street and Utility Construction

Standard Detail Plates

Minnesota Department of Transportation documents:

Standard Specifications for Construction.

Standard Plates Manual.

Standard Plans Manual.

ASTM Material Specifications.

S - 5 CONTRACT WORDING

Whenever in these Contract documents the words "As Ordered", "As Directed", "As Required", "As Permitted", "As Allowed", or words or phrases of like import are used, it shall be understood that the order, direction, requirement, permission, or allowance of the Owner and Engineer is intended. Similarly the words "Approved", "Reasonable", "Suitable", "Acceptable", "Properly", "Satisfactory", or words of like effect and import, unless otherwise particularly specified therein, shall mean approved, reasonable, suitable, acceptable, proper, or satisfactory in the judgment of the Owner and Engineer.

S - 6 SECTION 01240 – VALUE ENGINEERING

Section 01240 –Value Engineering is hereby included in the attachments section of the proposal.

S - 7 BIDDING REQUIREMENTS AND CONDITIONS

s 7.1 PREPARATION OF PROPOSAL

The Bidder shall submit his/her proposal on the complete booklet Bid Form obtained from the City or by a third party employed by the City to prepare and/or supply the Bid Form and other bid documents. The Bid Form will identify the Project and may describe the Work by listing estimated quantities, units of measure, items of work, and Materials to be furnished. The bidder shall specify unit prices, extensions, a total of the extensions and summations, initialing any and all changes made. The bidder must acknowledge receipt of and agree that the proposal is based on all addenda received after receipt of the initial bid packet. The quantities and unit prices identified on the Bid Forms will be used to develop the bid, and as a basis for establishing partial payment and change order values. Final payment will be based on final unit quantities measured in the field, on the lump sum contract amount, or a combination of both as specified in the bid packet for each project. All bids must state the price bid for all items listed on the Bid Forms, which price shall include all labor and materials required for the complete execution of the work. All prices must be stated in figures. The unit prices will be considered to be the offer in case of any variation between unit prices and totals stated by the bidder. All amounts and totals will be subject to verification between unit prices and totals stated by the bidder. All amounts and totals will be subject to verification by the City of Rochester. All bid prices must be clear, legible and must be written in ink or typed. If prices and/or totals are unclear, illegible or written in pencil, the City reserves the right not to read the bid and/or reject it. The place of residence of each bidder must be given after his/her signature, which must be written in full. Two proposals under different names will not be received from on firm or association, and shall be cause for each bid to be rejected.

s 7.2 BID SUBMITTAL

The authorized Bid Forms shall be submitted at the time and place specified in the Advertisement for Bids.

In submitting the bid, you must:

Return the complete booklet containing the completed bid Form of Proposal and Special Provisions together with the Bid Guaranty and such other documentation as is required, in a sealed envelope to:

City Clerk
City of Rochester
201 4th St. SE, Room 135,
Rochester, MN 55904-3742

Write the Project title, the name and address of the bidder, and the date of the opening on the sealed envelope. Fill in all blanks in the Schedule of Prices and initial any and all changes made. Acknowledge any and all addenda. Enclose the Proposal Guaranty: submit a bid bond, cashier's check or a certified check payable to the City of Rochester, Minnesota, for at least five (5) percent of the amount of the bid. Visit the site and become familiar with the general, local and site conditions that may affect cost, progress, and performance of the Work. If the Bid is sent through the mail or other delivery system, the sealed envelope shall be enclosed in a separate envelope, with a notation "BID ENCLOSED" on the face of the envelope. The Bidder shall assume full responsibility for the timely delivery at the location designated in the advertisement for Bids for receipt of Bids. Bids turned in or received after that time will not be read, and will be returned, unopened.

s 7.3 QUALIFICATIONS OF BIDDERS

BIDDERS may be required to submit satisfactory evidence that they have a practical knowledge of the particular work bid upon, and that they have necessary financial and material resources to complete the proposed work. Such data shall be submitted upon request of the Owner. In determining the responsibility of a particular bidder, the following elements will be considered:
Whether the Bidder:

(a) maintains a permanent place of business;
(b) has adequate equipment and personnel to do work properly and expeditiously within the Contract time;
(c) has suitable financial status to meet obligations incident to the work; and
(d) has appropriate technical experience.

Each Bidder may be required to show that former work performed by Bidder's company has been handled in such a manner that there are no just or proper claims pending against such work. No Bidder will be considered responsible if it is engaged in other work that impairs its ability to finance this Contract or to provide adequate labor and equipment for the proper execution of the work required. Each Bidder shall demonstrate its ability to meet all requirements of the Contract by evidence satisfactory to the City.

s 7.4 PROPOSAL REGISTRATION

All persons requesting a Proposal will be required to register as a Plan holder and provide the Owner with their name, address, phone number and fax number. Failure to provide the requested information will relieve the City of any responsibility to provide that Plan holder with any Addenda that may be issued.

s 7.5 BID SECURITY

A certified check, cashier's check or bidders bond in an amount equal to at least five percent (5%) of the total bid amount must accompany each bid as a guarantee that the Bidder will execute the Contract and give a Performance Bond as required if awarded the Contract. The Rochester Home Rule Charter requires this bid security and failure to comply is a material bid defect that may not be waived. The Bid Security shall be made payable to the City of Rochester, Minnesota. Upon failure or refusal, on the part of the successful Bidder to enter into the Contract and furnish the necessary Bond within the time specified, the Bid Security shall be forfeited to the City.

s 7.6 WRITTEN ADDENDA

Written Addenda is the only method acceptable for changes to the Contract Documents prior to the Bid Date. Verbal comments, statements, or instructions made by any representative of the Owner shall not be considered a part of the Contract Documents. Written Addenda shall be made part of the Contract Documents. The Engineer may either fax or mail the Addenda to all registered Plan holders. The Bidder shall acknowledge receipt of each Addendum on the face of the envelope containing its bid.

S - 8 AWARD AND EXECUTION OF CONTRACT

s 8.1 Payment and Performance Bonds

The successful Bidder, at the time of the execution of the Contract, shall furnish a Payment Bond equal to the Contract amount and a Performance Bond equal to the Contract amount, as required by Minn. Stat. Section 574.26. The bonds shall be issued by sureties satisfactory to the City and authorized to do business in the State of Minnesota.

The Payment Bond and Performance Bond shall guarantee that the Contractor will perform each and every part of the agreement, cover all guarantees called for in these Specifications, including the provisions for maintenance and repair, and insure the prompt payment to all persons furnishing material and labor required in the prosecution of the work. The Performance Bond shall be written in such a manner that it shall remain effective until the Date of Final Acceptance (two (2) years after the Date of Acceptance by the City, provided the work is in accordance with the Specifications and any inspection instructions, and all defects identified during the two (2) year period have been corrected).

In the event the Surety on any Bond furnished by the Contractor is declared bankrupt or becomes insolvent, or its right to do business in Minnesota is terminated, or it otherwise ceases to meet the requirements set forth herein, the Contractor shall, within five days thereafter, substitute another Bond and Surety, both of which shall be subject to Owner's acceptance.

If notice of any change affecting the general scope of the Work or change in the Contract Price is required by the provisions of any Bond to be given to the Surety, it will be the Contractor's responsibility to so notify the Surety, and the amount of each applicable Bond shall be adjusted accordingly. Contractor shall furnish proof of such adjustment to the Owner.

s 8.2 Execution of Contract

The Contractor shall not, under any circumstance, assign the Contract or any payments due hereunder without written permission by the City.

The Contract will be made on the forms used by the City of Rochester, and made a part of the General Requirements and Covenants, copies of which are also on file at the office of the City Clerk, Room 135, City Hall, Rochester, Minnesota.

S - 9 CONTROL OF WORK

s 9.1 Drawing and Specification

The Specifications and Plans are intended to supplement, but not necessarily duplicate each other, and together constitute one complete set of Specifications and Plans so that any work exhibited in the one and not in the other, shall be executed as if it has been set forth in both, in order that the work shall be completed according to the complete design or designs as decided and determined by the Engineer.

Should anything be omitted from the Specifications and Plans that is necessary to a clear understanding of the work, or should it appear various instructions are in conflict, the Contractor shall secure written instructions from the Engineer before proceeding with the construction affected by such omissions or discrepancies. It is understood and agreed that the work shall be performed and completed according to the true spirit, meaning, and intent of the Contract, Plans, and Specifications.

All Drawings, Specifications and copies thereof furnished by the City are its property. They are not to be used on other work and, with the exception of the signed Contract, plan sets are to be returned to the City upon request at the completion of the work.

Contractor shall keep and maintain one complete set of all drawings and specifications, addenda, approved shop drawings, change orders and other modifications at the job site that shall be available to the Engineer at all times.

s 9.2 Surveys, Staking and Monument Preservation

The Contractor shall give the Engineer at least 2 working days notice before requiring any stakes to be set or before commencing work on any portion of the Contract, or at any new place, as well as at any place where work has been relinquished or stopped for any reason.

Any work done without being properly located and established by base lines, offset stakes, bench marks, or other basic reference points located, established, or checked by the Engineer, may be ordered removed and replaced at the Contractor's cost and expense.

The Contractor shall carefully protect and preserve any permanent monuments or benchmarks that must of necessity be removed or disturbed in the construction of the work, until they can be properly referenced for relocation.

s 9.3 Other Contracts and Contractors

The Owner reserves the right to award contracts to other Contractors who do additional work at the site of this Project pursuant to MnDOT section 1505.

s 9.4 Testing of Completed Work

Before final acceptance, all parts of the work shall be tested and each part shall be in good condition and working order, or shall be placed in such condition and order at the expense of the Contractor. All tests of completed work required under this Contract shall be made under the direction of the Engineer or others so designated and at the expense of the Contractor, who shall repair at its own expense all damage resulting there from.

S - 10 LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

s 10.1 Permits, Public Utilities and Code Requirements

The Contractor shall make the necessary arrangements for the use or installation of, and shall pay for, any and all utility service that may be necessary in conducting its work. The Contractor must obtain permission from the City of Rochester Water Department if it is necessary to use City water, and said use of water shall be under the City's direction and supervision. The use of existing private water services adjacent to the work shall be arranged and paid for by the Contractor.

If work is to be performed in State of Minnesota Right-Of-Way, the City shall apply for a "Utilities on Trunk Highway" Permit from the Minnesota Department of Transportation. The Contractor shall not initiate the work prior to receipt of the permit. All regulations and rules contained in this permit shall apply and will be considered a part of the Special Provisions. The Contractor shall furnish a certified check or surety bond in the amount required by and in favor of the State of Minnesota, Commissioner of Transportation.

s 10.2 CONTRACTOR'S INSURANCE

The Contractor shall not commence work under this Contract until it has obtained and submitted to the City written evidence of all insurance required under this paragraph and such insurance has been approved by the City, nor shall the Contractor allow any sub-contractor to commence work on its subcontract until all similar insurance required of the sub-Contractor has been obtained and approved.

Compensation Insurance

Worker's Compensation Insurance shall be as required by the laws of the State of Minnesota.

General Liability and Property Damage Insurance

The Contractor shall take out and maintain during the life of the Contract such General Liability and Property Damage Insurance as shall protect him and any sub-Contractor from claims while performing work covered by this Contract. The certificates of insurance shall indicate that the City is an additional insured. The required amounts of such insurance are as follows:

General Liability, Personal injury and Property damage

1. Injury or death of one person $1,000,000
2. Injury to more than one person in a single accident or occurrence $1,000,000
3. Property damage $1,000,000
4. Products – Comp/Op Aggregate $1,000,000
5. General Aggregate $2,000,000

UX-C-U Hazards

Same limits as above. Basic exclusions for eUxUplosions, UCUollapse, and UUUnderground hazards shall be removed from the policy, and so indicated as covered in the declarations on the certificates of insurance.

UAutomobile Liability and Property Damage Insurance

The Contractor shall take out and maintain during the life of the Contract, Automobile Liability and Property Damage Insurance on all self-propelled vehicles used in connection with the Contract whether owned, not owned, or hired site and the amounts of such insurance shall be as follows:

1. Injury or death of one person..... $1,000,000
2. Injury to more than one person in a single accident or occurrence $1,000,000
3. Property damage $1,000,000

Satisfactory Coverage

In the event that the form of any policy or certificates or the amount of the insurance is not satisfactory to the City, the Contractor shall secure other policies or certificates in a form and amount satisfactory to the City.

The Contractor shall not cause any policies to be canceled or permit them to lapse, and all insurance policies shall include a clause to the effect that the policy shall not be canceled or changed until 30 days after the City has received written notice as evidenced by the return receipt of registered letter.

Proof of Carriage of Insurance

Written evidence of insurance shall contain true transcripts from the policy, authenticated by the proper officer of the, insurer, evidencing in particular those insured, the extent of the insurance, the location and operations to which the insurance applies, the effective date and expiration date and the notice of cancellation clause mentioned herein above.

The Contractor shall comply with all federal, state, and local laws and ordinances applicable to the work to be done under this agreement. The Contractor shall defend, save and hold harmless the City of Rochester and its officers, agents, employees, and members, from all claims, suits, or actions of whatsoever nature resulting from or arising out of the activities of the Contractor or its subcontractors, agents, or employees under the Contract.

s 10.3 Mediation

The resolution of any dispute, controversy or claim arising out of or relating to this Contract or the relationship between the parties shall first be attempted through a mediation process. Such mediation shall be conducted in the City of Rochester, Minnesota, or such other location as the parties may mutually agree. The parties shall share the mediator's fee equally. The mediation shall be conducted by a mediator mutually agreed upon between the parties. If the parties are unable to agree upon a single mediator within thirty days after one party has delivered written notice to the other party requesting mediation of a stated dispute, each party shall select one mediator and the selected mediator shall select a third mediator who alone shall attempt resolution of the dispute. Either party may take action in Olmsted District Court should mediation not result in a resolution of the dispute.

s 10.4 Use of Explosives

The Contractor shall obtain a User Permit from the Chief of Police for the City of Rochester prior to the transporting, storage or use of explosives, and shall comply with all conditions imposed therein.

s 10.5 Noise Control

The Contractor shall comply with the requirements of Chapter 85, Section 85.10 of the Rochester Code of Ordinances:

"Noises Prohibited"

Subdivision 1 Unnecessary Noises Generally. No person shall make, continue, or cause to be made or continued any loud, unnecessary or unusual noise which unreasonably annoys, disturbs, injures or endangers the comfort, convenience, safety, health, welfare or repose of persons in the vicinity thereof, unless the making, continuing, or causing to be made or continued of such noise cannot be prevented and is necessary for the protection or preservation of property or of the health, safety, life or limb of some person.

Subdivision 2 Construction or Repair of Buildings, or Construction work.

I. The erection (including excavation), demolition, alteration or repair of any building requiring a building permit or the performance of any construction work occurring between the hours of 10:00 p.m. and 7:00 a.m. on Monday through Saturday, from 10:00 p.m. Saturday through 12:00 p.m. Sunday, and from 10:00 p.m. Sunday through 7:00 a.m. Monday is a violation of this section. For purposes of this section, "construction work" shall mean any and all activity incidental to the erection of buildings, structures, roads, flood control facilities, or appurtenances thereto, including land clearing, grading, excavating, and filling.

II. Notwithstanding this section, a permit may be obtained to allow construction work to occur during the prohibited hours described in (a) in cases of urgent necessity in the interest of public health and safety. The permit shall be granted for a period not to exceed three days, shall continue only so long as the necessity continues, and may be extended for periods of three days or less so long as the necessity continues.

III. Notwithstanding this section, a permit may be obtained to allow construction work to occur during the prohibited hours described in (a) if it is determined that the public health and safety is not impaired by the erection, demolition, alteration, or repair of any building, or the performance of construction work occurring during such hours, and further determines that loss or inconvenience would result to any party in interest. Application for a permit may be made at the time the permit for the work is awarded or during the progress of the work.

IV. The permits described in (b) and (c) shall be issued by the building inspector in cases involving a building for which a building permit is required. In all other cases, the permit shall be issued by the City Engineer.

S - 11 WEEKLY CONSTRUCTION PROGRESS MEETINGS

s 11.1 The Contractor shall participate in a weekly construction progress meeting with the City Engineer's representative(s). The meeting day and time will be determined at the pre-construction conference. The Contractor shall provide written updates of the Project status, describing and detailing the schedule, identifying the following weeks work items, summary of meetings or contacts, and resolution of complaints. For the meetings, the Contractor shall provide oral and written information reasonably requested by the City's Engineer's representative(s), including the following items:

1. The progress of work and schedule.
2. The location of utility work and schedule.
3. The implementation of street and pedestrian detours.
4. Schedule of the subsequent week's construction activities.
5. Relevant project information requested by the City Engineer's representative(s).

S - 12 MEASUREMENT & PAYMENT

s 12.1 Partial Payment

Unless the terms of the contract provide otherwise, progress payments shall be made monthly as the work progresses. Payments shall be based upon estimates of work completed as approved by the City. A progress payment shall not be considered acceptance or approval of any work or waiver of any defects therein.

The City may reserve as retainage from any progress payment an amount not to exceed five percent of the payment. The City may reduce the amount of the retainage and may eliminate retainage on any monthly contract payment if, in the City's opinion, the work is progressing satisfactorily.

For further details refer to MnDOT specification 1906 “Partial Payments”.

s 12.2 Acceptance and Final Payment

When final inspection reveals that the work has been completed in strict accordance with the provisions of the Plans, other Contract documents, and previous inspection instructions, the Engineer shall, within ninety (90) days thereafter, prepare a final estimate which shall be based on accurate measurements of all work performed, and shall submit such estimate together with recommendations to the City Council of the City of Rochester for approval. Payment shall then be made for all work performed under the Contract, less any partial payments already made and any legal deductions or forfeitures for the satisfaction of liens or other claims against the Contract.

s 12.3 Correction of Work After Final Payment

Neither acceptance and occupancy by the Owner, final payment, nor any other provision in the Contract documents, shall relieve the Contractor of its maintenance obligation as hereinafter set forth and as identified in the Specifications.

s 12.4 Maintenance and Repair

The Contractor shall guarantee all work relating to the Specifications for a period of at least two (2) years from the date of written acceptance of the work or project. The Contractor shall make all needed repairs arising out of defective workmanship or materials that, in the judgment of the City, become necessary during such period. Final acceptance and termination of the maintenance obligation shall occur on the date two (2) years after initial acceptance provided that the work is in accordance with the Specifications and any inspection instructions. The maintenance obligation shall otherwise continue until all defects, including defective equipment installed therein, have been corrected.

At any time prior to Final Acceptance (the time during which the maintenance obligation is in effect as provided herein) the City may demand that the Contractor make any noted repairs. If Contractor fails to undertake repairs within ten days after the mailing of a notice of the need to make such repairs, the City may either take action against the performance bond or make the repairs itself and recover the cost from Contractor or the surety under the performance bond.

S - 13 OWNER AND EASEMENTS

The City of Rochester is designated as the Owner. All work shall be located on public right-of-way or on easements to be provided by the Owner. The Contractor shall confine his operations at all times within the limits of the easements. Any repairs or restoration outside the easement limits, required due to the Contractor's carelessness, shall be made with no compensation allowed.

1. **If the Contractor obtains an agreement with a private land owner related to this project the City shall be provided a copy signed by the owner.**

S - 14 **CONFLICTS IN DIMENSIONING**

In case of conflict between dimensions shown on the plans or detail drawing and those in the specifications, the dimensions on the drawings shall govern. If the conflict is other than dimensions, the specifications shall govern.

S - 15 **PRE-CONSTRUCTION CONFERENCE**

A pre-construction conference will be scheduled after Engineer's receipt of the Contractor's schedule. The Contractor shall submit to the Engineer a schedule illustrating in bar chart form the anticipated commencement date and duration of each of the major work tasks prior to the pre-construction conference. These tasks shall be broken down by type of work and location as necessary for purposes of planning and coordinating the work of this contract. The schedule should address the phasing of construction in a manner that will provide good project coordination. The Contractor will be required to update or modify the written construction schedule as necessary to accurately reflect the rate and progress on the project.

The conference will be held with the Contractor, City Representative, Engineer and other parties involved in the project. Materials, material sources, construction methods, and scheduling will be reviewed and any questions or procedures will be clarified.

S - 16 **CONTACT INFORMATION**

Questions regarding this Project shall be directed to:

Doug Nelson, PE
Manager of Engineering
City of Rochester Department of Public Works
P: (507) 328-2423

S - 17 **(1213) DISQUALIFICATION OF BIDDERS**

The provisions of MnDOT 1213 are hereby deleted and replaced with the following:

s 17.1 Either of the following reasons may be considered sufficient cause for disqualification of a bidder and the rejection of his Proposals:

(1) More than one Proposal for the same work from an individual, firm, or corporation under the same or different name. Substitute bid schedules shall be governed by MnDOT 1206.

(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 - 18 **(1302) AWARD OF CONTRACT RESIDENT PREFERENCE IN PUBLIC CONTRACTS**

The provisions of MnDOT 1302 are modified to the extent that, in accordance with Minnesota Statutes, section 16.365 (1982) as amended by Minn. Laws 1984, Chapter 440, Section 2, (Resident Preference in Public Contracts), this Contract will be awarded to the lowest responsible bidder, with resident bidders allowed a preference as against a non-resident bidder from a state which gives or requires a preference to bidders from that state, the preference shall be equal to the preferences given or required by the state of the non-resident bidder.

The City shall have up to **60 days** from the bid opening to award the contract during which time the bid unit prices shall prevail.

S - 19 **(1305) REQUIREMENT OF CONTRACT BOND**

The provisions of MnDOT 1305 are hereby deleted and replaced with the following:

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.

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 - 20 **(2563) TEMPORARY PEDESTRIAN ACCESSIBLE ROUTE (TPAR)**

This work shall consist of providing Temporary Access Control Plan. This plan shall consist of identifying a Temporary Pedestrian Accessible Route (TPAR) and features needed to assist pedestrian, bicyclists and non-motorized vehicles safe movement within and around the construction zone. This work shall be done in accordance with Contract provisions and the following:

s 20.1 The Contractor shall develop and provide for a continuous Temporary Pedestrian Accessible Route (TPAR) for this Project. The TPAR shall clearly address all non-motorized users in the construction zone. The Contractor shall submit this plan to the Engineer for acceptance at the pre-construction meeting.

s 20.2 Pedestrian Access

A. The TPAR must have a minimum width of 48 inches (4 feet) and guide pedestrians through and/or around the Project by using devices such as signage, barricades, and temporary curb ramps or blended transitions. To the maximum extent feasible, the TPAR shall be provided on the same side of the street as the disrupted route. Where the TPAR is exposed to adjacent construction, excavation drop-offs, traffic, or other hazards, it shall be protected with a pedestrian barricade or channelizing device. All TPARs must have a smooth, level, slip-resistant surface and shall meet the applicable requirements of the Public Right-of-Way Accessibility Guidelines (PROWAG).
B. The Contractor shall schedule and coordinate the replacement of the pedestrian access to accommodate the needs of the business and residences. Existing sidewalks shall be left in-place until such time that it is required to remove them to accommodate new construction. Pedestrian access may be provided to businesses and homes through the use of any public access from adjacent parking lots and side streets. Front door access must be provided to buildings without alternate public entrances. Where disrupted by construction, the Contractor must provide a continuous TPAR for all areas disrupted construction throughout all phases of construction.
C. For technical provisions on TPAR, the Contractor is directed to the Guidelines for Accessible Public Rights-of-Way at: http://www.access-board.gov/prowac/draft.htm and Chapter 6D of the MN MUTCD. The pedestrian accessibility checklist is on page 6D-5 and 6D-6 of the MN MUTCD. The Contractor shall complete MN MUTCD Fig. 6D-1, "Pedestrian Accessibility Considerations in Temporary Traffic Control Zones Check List". A copy shall be provided to the Engineer at the pre-construction meeting.
D. The Contractor shall notify the Engineer in writing at least 72 hours prior to the start of any construction operation that will necessitate a change in pedestrian access.

s 20.3 Traffic control devices must allow for an accessible route through the Project. TPAR pedestrian barricades and channelizing devices shall be continuous, stable, and non-flexible and shall consist of a wall, fence, or enclosures. The base of any traffic control devices shall be a continuous raised barrier of no more than 6 inches in height and must allow for drainage. The purpose of this barrier is to provide a continuous wayfinding device for the visually impaired, therefore the barrier shall not have any points

that might catch a person who is using a cane for a guide. The Devices shall provide a continuous surface or upper rail at a minimum 3 feet above the ground or walkway surface. Support members shall not protrude into the path. Whenever possible the TPAR shall only utilize in-place street crossings. TPAR must be regularly inspected and updated depending on Project staging.

s 20.4 The Contractor shall be responsible for maintaining the TPAR within this Project. The Contractor shall furnish the name, addresses, and phone number of at least one individual responsible for the placement and maintenance of TPAR. This individual shall be "on call" 24 hours per day, seven days per week during the times any devices, furnished and installed by the Contractor, are in place. The required information shall be submitted to the Engineer at the pre-construction meeting.

The Contractor shall be expected to answer calls immediately and begin corrective measures needed within one hour. **If the Contractor is negligent in correcting the deficiency within one hour of notification the Contractor shall be subject to a monetary deduction at the <u>rate of $100.00 per hour when only one residence or location is affected and at the rate of $500.00 per hour in all other cases that the Engineer determines the Contractor has not complied.</u>**

s 20.5 The Contractor is advised that the corridor has Transit service. Re-locations of stops can only be made with the approval of the Engineer.

s 20.6 Only one side of the roadway may be disrupted at a time for pedestrian curb ramp, blended transition, or sidewalk construction. Where it is not feasible to provide a same-side TPAR and pedestrians will be detoured, the alternate route must provide a similar level of accessibility to the existing route. This may include the incorporation of accessible pedestrian signals (APS), curb ramps, or other accessibility features.

s 20.7 Measurement and Payment

All traffic control required under this Contract for pedestrian access shall be performed as incidental work for which no direct payment will be made.

S - 21 <u>(1404) MAINTENANCE OF TRAFFIC, (1707) PUBLIC SAFETY, AND (2563) TRAFFIC CONTROL</u>

The provisions of 1404 are supplemented as follows:

s 21.1 <u>Traffic Control</u>

The Contractor shall furnish, install, maintain, and remove all traffic control devices required to provide safe movement of vehicular and/or pedestrian traffic passing through the work zone 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.

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

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. At least one of 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. Rochester Public Works Department (507) 328-2400
2. Rochester Police Department (507) 328-2800
3. Local Fire Department (507) 328-6300
4. City/Township Clerk (507) 328-2900

The Contractor shall, at the pre-construction conference, designate a Work Zone Safety Coordinator who shall be responsible for safety and traffic control management in the Project work zone. The Work Zone Safety Coordinator shall be either an employee of the Contractor such as a superintendent or a foreman, or an employee of a firm which has a subcontract for overall work zone safety and traffic control management for the Project. The responsibilities of the Work Zone Safety Coordinator shall include, but not be limited to:

- Coordinating all work zone traffic control operations of the Project, including those of the Contractor, subcontractors and suppliers.
- Establishing contact with local school district, government, law enforcement, and emergency response agencies affected by construction before work begins.
- Maintaining a record of all known crashes within a work zone. This record should include all available information, such as: time of day, probable cause, location, pictures, sketches, weather conditions, interferences to traffic, etc. These records shall be made available to the Engineer upon request.

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 person performing the inspection 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.

s 21.2 Property Access:

It shall be the contractor's responsibility to ensure that all access points are kept open and maintained. Numerous properties exist along the project corridor. Among these properties are car dealerships, commercial businesses and the Minnesota School of Business. Access to abutting properties shall be maintained at all times, which may include constructing the concrete approaches in two halves. The Contractor is required to maintain road surfaces so that any local traffic abutting the project can safely travel within the project. At all times throughout the project, the Contractor shall keep all directly affected property owners informed as to the appropriate access route being provided and maintained for them. Periodically, the commercial businesses have special functions. The Contractor shall initially meet with these and other affected property owners to discuss any special events scheduled during the project timeframe that would require any extraordinary access measures.

s 21.3 Maintenance and Staging of Traffic Control:

The Contractor is hereby advised that the phasing, construction staging, the work sequencing, and the maintenance of pedestrian and vehicular traffic control and related signage are critical on this project.
The Contractor shall fully expect to employ significant measures to control and maintain pedestrian, vehicular traffic throughout the life of the project. The major phases of construction are as follows:

Construction and Traffic Control Phases

ADVANCE SIGNING SHALL BE INSTALLED 7 DAYS BEFORE CONSTRUCTION IS TO BEGIN as approximately located in the plan and as approved by the Engineer. The Contractor shall notify the Engineer at least five (5) working days in advance of his intent to close lanes.

Prior to the start of the work, the contractor shall submit detailed traffic control plans for approval by the engineer. The Traffic Control Plan shall present the specific traffic control devices and layouts required for each

stage of work. The Traffic Control Plan shall show maintaining two-way traffic on the TH 52 E Frontage Road at all times during construction and provisions for maintaining pedestrian access along the corridor. In addition, the Traffic Control Plan shall provide for at least one lane of traffic on each of the abutting streets. The Traffic Control Plan shall present the plan for staging construction and maintaining traffic for the installation of the storm sewer and other utility work along the TH 52 E Frontage Road. The plan shall also indicate maintenance and routing of pedestrian traffic throughout the project corridor. During the course of construction, if the contractor chooses to detour any side streets on nights or weekends, additional detour plans shall be submitted for review and approval by the engineer at least one week in advance of the work.

The contractor is hereby advised that the phasing, construction staging, the work sequencing, and the maintenance of pedestrian and vehicular traffic control and related signage are critical on this project.

The contractor shall fully expect to employ significant measures to control and maintain pedestrian and vehicular traffic throughout the life of the project. The plan set includes a Construction Staging Plan and Traffic Control Plan sheets presenting **2 major stages**. It may be possible to work multiple stages at the same time, however, for traffic maintenance purposes consecutive stages shall not be grouped into a single stage. The Contractor shall maintain one lane of traffic in each direction at all times throughout the duration of the project, with exception to when the sanitary sewer is being installed in the Pennington Drive NW intersection as described below.

The major stages are as follows:

Stage 1:

Important Dates

The immediate intersection of Pennington Drive NW and the TH 52 E Frontage Road shall be closed for the installation of the sanitary sewer only between the hours of **7:00 PM on Saturday** and **10:00 AM on Sunday** (the following day) at which time the TH 52 E Frontage Road shall be re-opened to 2-way traffic. The driving surface shall consist of millings or bituminous pavement. Bituminous pavement shall be placed in the sewer trench within two (2) days of the intersection being re-opened to traffic. Dust control shall be provided to the satisfaction of the engineer on the millings prior to the pavement being placed. The Contractor shall present the traffic control plan to the Engineer for approval a minimum of 2 weeks prior to the work being performed. The Contractor is responsible for coordinating the work with the Minnesota School of Business staff members.

Stage 1, Phase 1 work shall consist of the widening of the TH 52 E Frontage Road from 22nd Avenue to Pennington Ct NW. During this phase of stage 1 the Contractor shall route traffic on the east side of the Frontage Road while work is completed on the west side of the roadway.

Prior to work commencing on the next phase of Stage 1 the minimum traffic operations shall include: The TH 52 E Frontage Road shall be open to 2-way traffic on a paved surface.

Stage 1, Phase 2 work shall consist of the widening of the TH 52 E Frontage Road from 22nd Avenue to 23rd Avenue NW and miscellaneous curb & gutter replacement on the east side of the Frontage Road. During this phase of stage 1 the Contractor shall route traffic on the west side of the Frontage Road while work is completed on the east side of the roadway.

Prior to work commencing on Stage 2 the minimum traffic operations shall include: The TH 52 E Frontage Road shall be open to 2-way traffic on a paved surface. Following Stage 1, Phase 2 work traffic operations shall include the routing of traffic using flagpersons in conjunction with paving operations.

Stage 2:

Important Dates

The Contractor will be allowed to control traffic at the 41st Street NW and TH 52 E Frontage Road intersection in an All-Way stop condition for a maximum of ten (10) consecutive calendar days. Outside of that timeframe the 41st Street NW signal system shall be fully operational. The Contractor shall present their traffic control plan specific to the 41st Street NW intersection to the Engineer for approval a minimum of two (2) weeks prior to signal work being scheduled.

Stage 2, Phase 1 work shall consist of the widening of the TH 52 E Frontage Road from 41st Street NW to 22nd Avenue NW. During this phase of stage 2 the Contractor shall route traffic on the east side of the Frontage Road while work is completed on the west side of the roadway.

TH 52 E Frontage Road NW

1. Pedestrian facilities shall be closed on the west side of the work area.

Prior to work commencing on phase 2 the minimum traffic operations shall include: The TH 52 E Frontage Road shall be open to 2-way traffic on a maintained crushed aggregate surface. The Contractor shall be responsible for providing adequate dust control on the surface throughout the duration of construction. The method of dust control shall be approved by the engineer prior to the start of construction.

Stage 2, Phase 2 work shall consist of the widening of the TH 52 E Frontage Road from 41st Street NW to 22nd Avenue NW. During this phase of stage 2 the Contractor shall route traffic on the west side of the Frontage Road while work is completed on the east side of the roadway.

TH 52 E Frontage Road NW

1. Pedestrian facilities shall be closed on the east side of the work area.

Prior to work commencing on phase 3 the minimum traffic operations shall include: The TH 52 E Frontage Road shall be open to 2-way traffic on a maintained crushed aggregate surface. The Contractor shall be responsible for providing adequate dust control on the surface throughout the duration of construction. The method of dust control shall be approved by the engineer prior to the start of construction.

Stage 2, Phase 3 work shall consist of median construction on the TH 52 E Frontage Road from 41st Street NW to 22nd Avenue NW. During this phase of stage 2 the Contractor shall route northbound traffic on the east side of the Frontage Road and southbound traffic on the west side of the Frontage Road while work is completed in the middle of the roadway.

Following Stage 2, Phase 3 work, traffic operations shall include: the routing of traffic using flagpersons in conjunction with paving operations.

The Contractor shall also reference Division SS, Traffic Signals, for traffic control requirements associated with the signal work.

At all times throughout this project, the Contractor shall keep all directly affected property owners informed as to the appropriate access route being provided and maintained for them.

A traffic flow pattern on city streets shall be maintained to provide emergency vehicle access to all property. Fire hydrants, on or adjacent to the work, shall be kept accessible to firefighting equipment at all times. All street closings shall be approved by the city prior to closing. The temporary closing of any streets will require the installation of sufficient barricades, fences, and signs, to adequately deter traffic from entering the sites. If the streets are not closed, one lane of traffic shall be maintained at all times, and signs installed indicating "local traffic only".

Haul routes shall generally be along C.S.A.H. streets or trunk highways, and coordinated with the engineer.

The Contractor shall be responsible for the immediate repair or replacement of all traffic control devices that have been stolen or vandalized and those that become damaged, moved, destroyed, or cease to function properly; and for all stabilizing weights that are damaged, destroyed or otherwise fail to stabilize the traffic control devices.

s 21.4 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.

Item No.	**Item**	**Unit**
2563.601	TRAFFIC CONTROL	L S

S - 22 **(1505) COOPERATION BY CONTRACTORS**

The provisions of MnDOT 1505 are supplemented as follows:

The Contractor shall coordinate the project work and cooperate with all facility owners completing work on the project. Below is a list of utility owners that have facilities within the project work area along with possible planned relocation efforts. The information given is based upon the best utility information available at the time of design and may not reflect the actual effects of the utility construction. The Contractor shall base their bid and schedule accordingly.

Centurylink – Centurylink will be relocating an underground line and pedestal between 41st Street NW and 22nd Avenue NW in conjunction with the contract work. The contractor shall coordinate removals and allow Centurylink site access and time to complete their work.

Charter – Charter will be relocating overhead lines between 22nd Avenue NW and 23rd Avenue NW and may be relocating underground lines and pedestals between 23rd Avenue NW and Pennington Ct NW in conjunction with the contract work. The contractor shall coordinate removals and allow Charter site access and time to complete their work.

Enventis Telecom – Enventis may be relocating overhead lines at approximate STA 42+75 in conjunction with the contract work. The contractor shall coordinate removals and allow Enventis site access and time to complete their work.

MN Energy Resources – MN Energy Resources will be relocating a gas regulation station on the NE corner of the 22nd Avenue NW intersection and may need to relocate a gas conduit along the west side of the Frontage Road from 41st Street NW and 22nd Avenue NW in conjunction with the contract work. The contractor shall coordinate removals and allow MN Energy site access and time to complete their work.

RPU (Electric) – RPU will be relocating various power poles and lines as indicated in the plans. The contractor shall coordinate removals and allow RPU site access and time to complete the work. In addition, **the Contractor shall coordinate all overhead construction** on the project (mainly the signal work at the 41st Street NW intersection) with RPU personnel. The Contractor shall give adequate notice to RPU of all overhead work to be performed on the project as existing overhead power lines may be required to be de-energized by RPU personnel. The RPU contact for the project is Mike Engle at (507) 280-1579.

All coordination between contractors shall occur so as to still maintain traffic per the Traffic Control Plan. This may require coordination of the work by other contractors on nights or weekends. The Contractor shall coordinate his/her work and cooperate with the holders of those separate contracts, and or Agreements both present and future, and their forces in a manner consistent with the provisions of MnDOT 1505.

S - 23 **(1506) SUPERVISION BY CONTRACTOR**

The provisions of MnDOT 1506 are supplemented as follows:

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.

The Contractor will be subject to an hourly charge for failure to comply with the requirements of MnDOT 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.

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 - 24 **(1507) UTILITY PROPERTY AND SERVICE**

Construction operations in the proximity of utility properties shall be performed in accordance with the provisions of MnDOT 1507, except as modified below:

s 24.1 The provisions of MnDOT 1507.1 B are hereby deleted and the following substituted therefore:

B Gopher State One Call

The Contractor shall:

(1) Mark the proposed excavation in accordance with the Minnesota State Statute 216D color code before contacting "Gopher State One Call." The Contractor shall mark proposed excavation area with white paint and white flags or in lieu of white flags, white stakes may be used. The Contractor must adhere to all requirements of Gopher State One Call in addition to the following:

The white markings must delineate the **actual excavation area** where the locating of underground facilities is required. All flags and stakes shall display the name, and phone number of the Contractor. All areas of proposed excavation shall be considered “practical” for the use of white markings, pursuant to Minnesota Statutes §216D.05 (2).

(2) Call "Gopher State One Call" at least 48 hours (excluding Saturdays, Sundays, and holidays) before starting excavation operations.

(3) The Contractor shall acquire a Positive Response confirmation from MnDOT for all proposed excavations when the Gopher State One Call has indicated MnDOT utilities may be affected. The Contractor may call MnDOT Electrical Services Section (ESS) Dispatch Locating to confirm the status of

Utility infrastructure owned by MnDOT. MnDOT Electrical Services Section (ESS) Dispatch Locating can be contacted at the following phone numbers; (651) 366 -5750 or (651) 366-5751. The Contractor shall be responsible for all damage to MnDOT owned Utility infrastructure if a Positive Response confirmation has not been acquired from MnDOT. The Contractor is required to comply with the provisions of Minnesota Statutes chapter 216D when performing Excavation as defined in Minnesota Statutes §216D.01 (subdivision 5), and will be responsible for damages to facilities in accordance with Minnesota Statutes §216D.06.

s 24.2 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 24.3 By bidding on this Contract, the bidder agrees that it shall use the Plan to identify the location of MnDOT drainage facilities as satisfying the requirements of Minnesota Statutes Ch. 216D and Minnesota Rules 7560.0250 with respect to MnDOT's storm water drainage facilities.

s 24.4 The following utility owners have existing facilities that may be affected by the work under this Contract, all of which they intend where necessary to relocate or adjust in advance of or concurrently with the Contractor's operations.

Full Name	**Company**	**Description**	**Business Phone**
Andrew Dohrmann	MN Energy Resources	Gas - Yellow	(507) 529-5129
Ron Muller	Charter Communications	Cable-Orange	(507) 285-6164
Allen Kies	Enventis Telecom	Communications - Orange	(507) 386-3558
Pat Lynch	Arvig Comm. System	Communications - Orange	(320) 256-0271
Kile Holm	MnDOT	Traffic Signals	(507) 286-7639
Steve Hauge	Centurylink	Telephone - Orange	(507) 285-3629
Donn Richardson	Rochester Public Utilities	Water Dept - Blue	(507) 280-1509
Mike Engle	Rochester Public Utilities	Electric - Red	(507) 280-1579
Steve Cook	Rochester Public Utilities	Electric - Transmission	(507) 280-1590
Ken Ratike	Rochester Public Works	Traffic Signals	(507) 328-2472
Eric Loftus	Rochester Public Works	Sewer - Green	(507) 328-2400

s 24.5 The Contractor shall coordinate his/her work and cooperate with the foregoing utility owners and their forces in a manner consistent with the provisions of MnDOT 1507 and the applicable provisions of MnDOT 1505.

s 24.6 The City of Rochester utilities that are affected such as storm sewer, sanitary sewer, and water supply have been included in the Plan for adjustment or relocation. The Contractor shall notify Doug Nelson, Manager of Engineering at telephone (507) 328-2423, in advance of the date they intend to start work and they shall furnish that office with such information as may be necessary to permit the responsible authorities to make suitable arrangements relative thereto.

s 24.7 The Contractor shall verify all underground utility locations and elevations prior to construction. (Gopher State One Call 1-800-252-1166)

S - 25 **(1710) TRAFFIC CONTROL DEVICES**

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:

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.

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 - 26 (1717) AIR, LAND AND WATER POLLUTION

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

s 26.1 The Contractor shall provide and maintain dust control operations throughout the duration of the project in a manner acceptable to the Engineer. This shall include all operations including, but not limited to excavation of inplace materials, milling, sweeping, sawcutting, placing aggregate base, restoration and maintenance of aggregate base routes. The Contractor shall provide a dust control and mitigation plan to the Engineer at the time of the preconstruction conference. The Engineer shall approve the plan prior to the commencement of construction operations. All costs associated with dust control maintenance and mitigation shall be considered incidental to other items bid.

s 26.2 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 26.3 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/storm sewer 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 - 27 **(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 MnDOT 1717, 1803.5 and the following:

s 27.1 Minnesota Pollution Control Agency General Permit, Authorization to Discharge Storm Water.

A. The Contractor shall furnish, install and maintain temporary and permanent erosion and sediment control devices in accordance with the provisions of 2105.5, 2573, 2575, as shown in the Plans, in accordance with the provisions of the Special Provisions Attachment "Minnesota Pollution Control Agency General Permit, Authorization to Discharge Storm Water", and the following:

The **City of Rochester** has applied for and received coverage under the above mentioned permit by signing both the Owner's and Contractor's certification blanks on the permit application. The City shall retain a photocopy of the original permit application. Upon award of the Contract, the City and the Contractor shall execute the Storm Water Permit Transfer/Modification Application form (attached to these Special Provisions) and submit it along with a photocopy of the original application to the Minnesota Pollution Control Agency. The Minnesota Pollution Control Agency, upon receipt of the Storm Water Permit Transfer Modification Application, will amend it to the original permit application thereby making both the City and the Contractor co-permittees for the requirements of the General Permit, "Authorization to Discharge Storm Water."

B. There is no fee for the transfer of the permit. Work may not begin until all transfer permit forms are signed and dated and the contractor identifies by name a person knowledgeable and experienced in the application and implementation of the Storm Water Pollution Prevention Plan, and has developed a chain of responsibility for all operators (subcontractors) on the site, in accordance to Part III.A.1 of the General Permit.

C. The Contractor shall be solely responsible for complying with the requirements of General Permit where Contractor is referenced in Part II.B.2: Permittee(s) for Parts II.B, II.C and IV.

The Contractor shall be responsible for providing all inspections, documentation, record keeping, maintenance, remedial actions, repairs required by the permit. All inspections, maintenance, and records required in the General Permit Part IV.E, Inspections and Maintenance, 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 Part IV.E, Inspections and Maintenance of the permit.

The Contractor shall have all logs, documentation, inspection reports on site for Engineer's review and shall post the permit 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, 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, Inspection and Entry.

D. 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) hour 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.

The Contractor shall review and abide by the instructions contained in the permit package. The Contractor shall hold the City 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 - 28 **(1803) PROSECUTION OF WORK**

The provisions of MnDOT 1803 are supplemented and/or modified with the following:

s 28.1 SPECIAL PROJECT ADA REQUIREMENTS

All pedestrian facilities and shared trails on this Project must be constructed according to Public Rights-of-Way Accessibility Guidelines (PROWAG) which can be found at: http://www.access-board.gov/prowac/draft.htm. The appropriate pedestrian ramp details for each quadrant are included in the Plan. The Engineer may provide additional details to those provided in the Plan that meet the PROWAG guidelines as the need arises and field conditions dictate.

(A) The Contractor must designate a responsible person familiar with PROWAG to assess proposed sidewalk layouts at each site before work begins. This person must be on site at all times that any work concerning pedestrian facilities is being performed.

(B) Pedestrian Access Routes must be constructed meet to the following criteria:

(1) Pedestrian Access Routes (PAR) must be constructed to meet the following:
- Minimum 4 feet width.
- A maximum cross slope of 2.0%.
- Vertical discontinuities must be less than 0.25 inches.
- Must provide positive drainage without allowing any ponding.

(2) Landings are part of the PAR and must be constructed to meet the following:
- 4 feet by 4 feet minimum width.
- Maximum slope of 2.0% in all directions.
- Required at all locations where the PAR changes directions.
- Must be connected to the PAR.

(3) Ramps are part of the PAR and must be constructed to meet either of the following criteria:
- Longitudinal slopes less than 5% in the direction of travel requires no landing at the top of the ramp (unless the PAR changes direction).
- Longitudinal slopes between 5 - 8.3% in the direction of travel require a landing at the top of the ramp.

(C) If the Contractor constructs any pedestrian or shared-use trail facilities that are not per Plan, do not meet the above requirements, or do not follow the agreed upon resolution, the Contractor shall be responsible for correcting the deficient facilities with no compensation paid for the corrective work. To ensure that the pedestrian facilities are constructed in compliance with PROWAG, the Contractor shall follow the following three steps:

(1) The Contractor shall use the appropriate ramp details in the Plan and identify the removal limits for the sidewalk and curb and gutter. If Contractor determines the removal limits are not adequate to meet PROWAG, the Contractor shall stop work immediately and

consult the Engineer to determine the best solution. Once the Engineer and the Contractor reach agreement on how to proceed, the Contractor may finish the removals.

(2) Prior to pouring each curb and gutter segment, the Contractor must verify the zero height curb and curb transitions will be located as shown in the Plans and will provide an adequate detectable edge. The Contractor shall also verify the proposed curb flow lines will provide positive drainage as well as maintain existing gutter inflows/outflows. The curb and gutter shall be constructed as detailed in the Plan with a defined flowline and no vertical discontinuities. The Contractor shall consult with the Engineer to determine a resolution if any of these conditions cannot be met. Once the Engineer and the Contractor reach agreement on how to proceed, the Contractor may proceed with pouring the curb and gutter..

(3) After the curb has been correctly poured, the Contractor has set the sidewalk forms, and prior to placing the concrete curb ramps/sidewalks, the Contractor shall verify the requirements above will be achieved. If any of these requirements cannot be met the Contractor shall meet with the Engineer to determine the best solution. Once the Engineer and the Contractor reach agreement on how to proceed, the Contractor may proceed with the curb ramp/sidewalk pour.

(D) It shall be the responsibility of the Contractor, or Contractor's Surveyor if applicable, to layout all proposed work at each intersection in accordance with the Plan and requirements listed in this Special Provision. The Contractor may confer with the Engineer for guidance in laying out the proposed work, but it will be the Contractor's responsibility to ensure the proposed work meets all the requirements of this Special Provision. This layout includes, but is not limited to placement of grade breaks, curb transitions, gutter flow lines, truncated dome placement, crosswalk marking placement, flares, landing limits, and ramp limits. It is important that the Contractor layout this work properly to achieve the construction of a compliant pedestrian facility. This layout work shall be incidental with no extra compensation paid.

(E) The Contractor shall utilize measures and methods when working near existing buildings that will avoid damaging the building's face or structure. The contractor will be responsible for any damage to the building's face or structure, both below and above ground. Any damage resulting from Contractor operations will be repaired at the Contractor's expense to the satisfaction of the Engineer.

(F) The Contractor shall round all joints and edges of the walk with a ¼ inch radius edging tool, contraction joints shall extend to at least 30 percent of walk thickness and shall be approximately 1/8 inch wide as per MnDOT 2521. The Contractor shall also have the option of providing saw cuts to construct the sidewalk joints. This work shall be considered incidental and no extra compensation paid.

Use on all jobs that have pedestrian signal system work.

(G) All pedestrian signal systems should be installed as shown in the Plan and must be constructed to meet the following criteria. The Contractor shall verify that the proposed push button locations will meet all of the following criteria before proceeding with the installation of the pedestrian push button system:

- Pedestrian push buttons shall be oriented with the button facing towards the intersection and the button face placed parallel to the outside edge of the crosswalk.

- Pedestrian push buttons shall be a minimum of 4 feet and a maximum of 10 feet from the back of curb/edge of roadway, but may be placed 1.5 feet to 4 feet from the back of curb/edge of roadway if mounted on a signal pole as indicated in the Plan or as approved by the Engineer.
- Pedestrian push buttons shall be located at the outside crosswalk edge and shall be no more than 5 feet offset from the projected outside edge of the crosswalk/outside edge of detectable warnings.
- Pedestrian push buttons shall be a minimum of 10 feet apart, except in islands and medians, where the minimum separation is 5 feet.
- Each pedestrian push button shall have a landing immediately adjacent to the push button face with minimum dimensions of 4 feet by 4 feet and a maximum slope of 2.0% in all directions. Center the push button on the landing if possible to do so without violating any of the requirements listed in this Special Provision. The landing must be connected to the Pedestrian Access Route.
- A 6-foot wide clear distance between obstructions shall be maintained wherever it is possible to do so for snow removal purposes.
- The push buttons shall be mounted at a height of 42 inches as indicated in the Plan.
- If it is possible to mount a push button on a signal pole and meet all the criteria listed in this Special Provision, then the push button shall be mounted on signal pole and the unused push button station components shall be considered surplus materials and delivered to MnDOT Electrical Services.
- Crosswalks shall be striped in a straight alignment between the outside edges of the detectable warnings with no kinks unless the crosswalks are shown as kinked in the Plan.
- The Contractor shall maintain all working points marked by the surveyor and use the working points to layout push button locations in accordance with the Plans and Special Provisions. The Engineer will verify the proposed push button locations are acceptable prior to construction.

If any of these conditions cannot be met, the Contractor shall consult with the Engineer to determine a resolution. Once the Engineer and the Contractor reach an agreement on how to proceed, the Contractor may proceed. If the Contractor constructs any pedestrian push button systems or pedestrian facilities which do not meet the criteria or the agreed upon resolution, the Contractor will be responsible for correcting the deficiencies with no compensation paid for the corrective work.

To help ensure signal systems are properly constructed the Contractor must adhere to the following practices:

- All push button station bases shall be poured either concurrently with or after the adjacent sidewalk pour.
- Signal pole foundations which are being constructed in or adjacent to sidewalk shall be constructed in accordance with the applicable MnDOT Standard Plate 8120 or 8126. If a push button is proposed to be mounted on a signal pole, the Contractor shall determine the finished grade of the top of proposed sidewalk prior to pouring the signal pole foundation. The signal pole foundation shall not be more than 8 inches above the finish grade of the sidewalk and must still meet the vertical clearance requirements of the applicable MnDOT Standard Plates 8120 or 8126. If this is not possible, the Contractor shall consult with the Engineer to determine the appropriate solution.

S - 29 **(1806) DETERMINATION OF CONTRACT TIME**

The contract time will be determined in accordance with the provisions of 1806 and the following:

s 29.1 Construction operations shall be started within eight (8) Calendar Days after the date of Notice of Contract Approval, whichever is later. Construction operations shall not commence prior to Contract Approval.

s 29.2 All work required by these contract documents shall be initiated after **July 22, 2013** and completed no later than **October 11, 2013**.

s 29.3 The Contractor shall also reference section (1404) Maintenance of Traffic, (1707) Public Safety, and (2563) Traffic Control Traffic Signals, for critical project timeframes and dates found elsewhere in the proposal.

S - 30 **INCIDENTAL WORK**

Items of work for which no pay items are included in the bid proposal shall be considered as incidental expense and no separate payment will be made therefore. Incidental items include, but are not limited to the following:

Abandon and plugging existing lines and structures, other than paid for in the plans
Disposal of excess excavation
Temporary Raised Pavement Markers (TRPM) as required by project phasing
Erosion Control BMP's
Dust control
Concrete Washout Operations
Street Sweeping
Pipe bedding/foundation/encasement material
Maintaining access to private property
Trench Excavation for Storm Sewers and Watermains
Protective Coating for Catch basins and Catch basin/Manholes
Trench Excavation for Sanitary Sewers
Reinforcing bars (Connecting to existing concrete and at bus shelter slab)
Bituminous Tack Coat
Finish grading of boulevard and disturbed areas
Fine grading of subgrade and subgrade preparation
Preparation of aggregate base for paving
Shaping of earth berms for erosion control and drainage swales
Water & Dewatering

S - 31 **(1904) EXTRA AND FORCE ACCOUNT WORK**

The provisions of MnDOT 1904 are supplemented and/or modified with the following:

s 31.1 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 31.2 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 - 32 **(1910) FUEL ESCALATION CLAUSE**

The provisions of MnDOT 1910 are hereby deleted and replaced with the attached Fuel Escalation Clause.

S - 33 **(2021) MOBILIZATION**

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

s 33.1 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.

s 33.2 BASIS OF PAYMENT

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

Mobilization Partial Payments		
	Pay Lesser of the Two	
% of Original Contract Amount Completed[1]	% of Mobilization	% of Original Contract Amount
5	50	3
15	75	5
25	100	5
95	100	N/A

[1] The Percent of Original Contract Amount Completed = the amount earned by the Contractor, excluding money earned for mobilization and material on hand, divided by the total value of the original contract (all bid items).

The total sum of all payments shall not exceed the original Contract amount bid for the mobilization item, regardless of the fact that the Contractor may have, for any reason, shut down work on the Project or moved equipment away from the Project and then back again.

Nothing herein shall be construed to limit or preclude partial payments otherwise provided by the Contract.

Item No.	Item	Unit
2021.501	MOBILIZATION	LS

S - 34 **(2101) CLEARING AND GRUBBING**

Clearing and grubbing operations shall be performed in accordance with the provisions of MnDOT 2101 and the following:

s 34.1 Burning or burying timber, stumps, roots or other debris will not be permitted.

s 34.2 The first paragraph of MnDOT 2101.3D Disposal Limitations, is revised to read as follows:

> The Contractor shall dispose of trees, brush, stumps, roots, and other debris or byproducts by chipping, marketing, ~~or burning~~.

s 34.3 MnDOT 2101.3D(5) under Disposal Limitations, is revised to read as follows:

> (5) Shall not bury trees, brush, stumps, roots, and other debris or by-products within the State Right of Way or City Property.

s 34.4 MnDOT 2101.3D6 Burying, is hereby deleted in its entirety.

s 34.5 The first paragraph of MnDOT 2101.5 Basis of Payment, is revised to read as follows:

No direct payment will be made for clearing and grubbing operations under this contract.

S - 35 **(2104) REMOVING PAVEMENT AND MISCELLANEOUS STRUCTURES**

Section 2104 is hereby supplemented to include the following:

s 35.1 The Contractor shall provide and maintain dust control operations throughout the duration of the project in a manner acceptable to the Engineer. This shall include all operations including, but not limited to excavation of inplace materials, milling, sweeping, sawcutting, placing aggregate base, restoration and maintenance of aggregate base routes. The Contractor shall provide a dust control and mitigation plan to the Engineer at the time of the preconstruction conference. The Engineer shall approve the plan prior to the commencement of construction operations. All costs associated with dust control maintenance and mitigation shall be considered incidental to other items bid.

The Owner shall have the option of removing and salvaging all items such as mailboxes, fences, gates, light standards, poles, etc. If the Owner does not remove such items prior to construction, they shall be removed by the Contractor and shall be considered incidental to the Contract unless specific bid items are included.

All debris and excess materials removed from the project shall be disposed of by the Contractor off the project site. No burying of debris will be permitted.

Sewers within the trenching limits shall be removed and sewers outside of the trench limits shall be plugged all as incidental expense.

Abandoning of existing storm sewers shall be filled with granular material and capped watertight. Filling and capping of the abandoned sewer pipe shall be considered incidental work for which no direct payment will be made.

The electrical handhole castings and covers once removed shall become the property of the City of Rochester. The Contractor shall be responsible for transporting and neatly stockpiling the items at the Public Works Shop located on the SE corner of N Broadway and Civic Center Drive NW at an area designated by Ken Ratike of Rochester Public Works at (507) 254-9910.

The signs once salvaged shall become the property of the City of Rochester. The contractor shall be responsible for transporting and neatly stockpiling the items at an off-site area designated by the Engineer.

The concrete and bituminous driveway pavements, bituminous parking lot pavement, curb and gutter, and concrete sidewalks to be removed shall be sawcut and removed at the locations designated on the Plan. The cost of sawcutting shall be considered incidental and no direct compensation will be made therefor.

s 35.2 **Item 2104.501 "Remove Curb and Gutter"** Shall include the removal of existing curb and gutter as noted on the plans. Measurement and payment shall be made at the contract unit price per linear foot, which shall be compensation in full for all labor, equipment, and materials necessary to remove and dispose of the concrete curb and gutter including full depth saw cut to provide a clean edge.

s 35.3 **Item 2104.501 "Remove Sewer …"** If no pay item is included then it is incidental to the project otherwise, shall include the removal of existing pipe, apron, or structure, by type, as noted on the plans. Measurement and payment shall be made at the contract unit price per linear foot or each, which shall be compensation in full for all labor, equipment, and materials necessary to remove and dispose of the work and shall include capping or plugging remaining abandoned pipe if any.

s 35.4 **Item 2104.505 "Remove Bituminous Driveway Pavement"** Shall include the removal of existing bituminous driveway pavements as noted on the plans. Measurement and payment shall be made based on surface area and shall be compensation for the total depth of the bituminous driveway pavements at the contract unit price per square yard, which shall be compensation in full for all labor, equipment, and materials necessary to remove and dispose of the bituminous driveway pavement.

s 35.5 **Item 2104.505 "Remove Concrete Driveway Pavement and Sidewalk"** Shall include the removal of existing concrete pavements as noted on the plans. Measurement and payment shall be made based on surface area and shall be compensation for the total depth of the concrete pavements at the contract unit price per square yard, which shall be compensation in full for all labor, equipment, and materials necessary to remove and dispose of the concrete pavements.

s 35.6 **Item 2104.505 "Remove Bituminous Pavement"** shall include the removal of existing bituminous pavement as noted on the plans and as directed by the Engineer in the field for bituminous areas to be patched prior to paving operations. Measurement and payment shall be made based on surface area and shall be compensation for the total depth of the bituminous pavement at the contract unit price per square yard, which shall be compensation in full for all labor, equipment, and materials necessary to remove and dispose of the bituminous pavement.

s 35.7 **Item 2104.509 "Remove Manhole or Catch Basin"** Shall include the removal of the existing storm or sanitary manholes and basins as noted on the plans. Measurement and payment shall be made at the contract unit price per each, which shall be compensation in full for all labor, equipment, and materials necessary to maintain service flow, plug, remove and dispose the entire structure.

s 35.8 **Item 2104.509 "Remove Concrete Apron"** Shall include the removal and disposal of the existing culvert end sections (multi-section if tied together). Measurement and payment shall be made at the contract unit price per each, which shall be compensation in full for all labor, equipment, and materials necessary to complete the work.

s 35.9 **Item 2104.513 "Sawing Bituminous Pavement (Full Depth)"** If no pay item is included then it is incidental to the project. Otherwise it shall include saw cutting of the bituminous pavement along the removal line within the roadway, excluding bituminous patch areas. Measurement and payment shall be made at the contract unit price per linear foot, which shall be compensation in full for all labor, equipment, and materials necessary to saw cut to provide a clean edge.

s 35.10 **Item 2104.523 "Salvage Concrete Apron"** Shall include the salvaging of the existing culvert end sections (multi-section if tied together). Measurement and payment shall be made at the contract unit price per each, which shall be compensation in full for all labor, equipment, and materials necessary to complete the work. Any damage to the culvert units shall be repaired or replaced at the expense of the Contractor.

s 35.11 **Item 2104.523 "Salvage Sign"** Shall include the salvaging and transporting of the all the existing signs. Measurement and payment shall be made at the contract unit price per each sign which shall be compensation in full for all labor, equipment, and materials necessary to complete the work. Any damage to the signs or posts shall be repaired or replaced at the expense of the Contractor.

s 35.12 **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 MnDOT 1403.

Item No.	Item	Unit
2104.501	REMOVE CURB AND GUTTER	L F
2104.501	REMOVE SEWER PIPE (SANITARY)	L F
2104.501	REMOVE SEWER PIPE (STORM)	L F
2104.503	REMOVE CONCRETE SIDEWALK	S F
2104.505	REMOVE CONCRETE DRIVEWAY PAVEMENT	S Y
2104.505	REMOVE BITUMINOUS DRIVEWAY PAVEMENT	S Y
2104.505	REMOVE BITUMINOUS PAVEMENT	S Y
2104.509	REMOVE CONCRETE APRON	EACH
2104.509	REMOVE MANHOLE OR CATCH BASIN	EACH
2104.513	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	L F
2104.523	SALVAGE CONCRETE APRON	EACH
2104.523	SALVAGE SIGN	EACH

S - 36 **(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 36.1 The Contractor shall provide and maintain dust control operations throughout the duration of the project in a manner acceptable to the Engineer. This shall include all operations including, but not limited to excavation of inplace materials, milling, sweeping, sawcutting, placing aggregate base, restoration and maintenance of aggregate base routes. The Contractor shall provide a dust control and mitigation plan to the Engineer at the time of the preconstruction conference. The Engineer shall approve the plan prior to the commencement of construction operations. All costs associated with dust control maintenance and mitigation shall be considered incidental to other items bid.

s 36.2 Common Excavation shall be considered to include all roadway excavation and removal of miscellaneous materials and structures not specifically listed as pay items in the proposal. The plan quantity, as shown in the Form of Proposal, shall be the final pay quantity for common excavation, and select granular borrow, unless extra work is ordered.

s 36.3 The volume of common excavation was computed as all the material between the bottom of the existing pavement section and the subgrade. The quantities listed on the cross-section sheets include the excavation of the existing pavement, existing sidewalk, existing driveways and existing curb and gutter. The plan quantity for payment does not include the excavation of these items, which are to be paid for separately as noted. Materials from excavation that are not suitable for use on the job site shall be disposed of off the project by the contractor as incidental expense.

s 36.4 The Contractor shall be responsible for disposing of all excess excavation materials, including landfill disposal fees, and locate a suitable site for disposal. This shall be incidental to Common Excavation.

s 36.5 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 36.6 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 36.7 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 um **(#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 36.8 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 36.9 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 36.10 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 36.11 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 36.12 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 36.13 Compaction of all embankment construction, including culvert backfills, shall be obtained by the "**Quality Compaction**" method described in MnDOT 2105.3F.

The upper 6" below subgrade excavations shall be compacted in accordance with Mn/DOT Standard Specification 2112. The Quality Compaction Method shall be used. Any soft or unstable areas should be removed and replaced with approved fill materials and recompacted. Additional excavation will be paid as common excavation.

s 36.14 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 36.15 Bidders are advised that Mn/DOT 2105.5 regarding Muck Excavation is modified to the extent that No separate classification shall exist for muck excavation. Muck excavation if encountered shall be classified as Common Excavation.

s 36.16 Measurement and Payment

Item No.	Item	Unit
2105.501	COMMON EXCAVATION (P)	C Y

S - 37 **(2105) (3877) TOPSOIL BORROW**

Topsoil Borrow shall be in accordance with the provisions of 2105 and 3138 except as follows:

Acceptance requirements will be based on the approval of the Engineer, and not by Table 3877-1 or 3877-2.

Item No.	Item	Unit
2105.525	TOPSOIL BORROW (LV)	C Y

S - 38 **(2123) EQUIPMENT RENTAL**

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

s 38.1 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 38.2 The following is added to MnDOT 2123.5 BASIS OF PAYMENT:

2123.610 Disk Harrow…….....…..hour

S - 39 **(2211) AGGREGATE BASE**

Aggregate base courses shall be constructed in accordance with the provisions of MnDOT 2211 except as modified below:

s 39.1 The Contractor shall provide and maintain dust control operations throughout the duration of the project in a manner acceptable to the Engineer. This shall include all operations including, but not limited to excavation of inplace materials, milling, sweeping, sawcutting, placing aggregate base, restoration and

maintenance of aggregate base routes. The Contractor shall provide a dust control and mitigation plan to the Engineer at the time of the preconstruction conference. The Engineer shall approve the plan prior to the commencement of construction operations. All costs associated with dust control maintenance and mitigation shall be considered incidental to other items bid.

s 39.2 **Item 2211.503 "Aggregate Base Class 5"** Shall include the placement of Class 5 or 7C aggregates for the roadway construction. Measurement and payment shall be made at the contract unit price per cubic yard placed, which shall be compensation in full for all labor, equipment, and materials necessary to complete the work.

s 39.3 Compaction shall be achieved by the **"Quality Compaction Method"** described in MnDOT 2211.3C.

s 39.4 The second sentence in MnDOT 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 MnDOT Grading and Base Manual.

s 39.5 The last paragraph in MnDOT 2211. 3C2 Quality Compaction Method, is revised to read as follows:

The Engineer may elect to perform density tests as shown in the MnDOT Grading and Base Manual, as needed to assist inspection. The actual density obtained by testing the aggregate base must meet or exceed the requirements shown in 2211.3C1 Specified Density or 2211.3C3 Penetration Index Method in order to be acceptable.

s 39.6 The first sentence in MnDOT 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 MnDOT Grading and Base Manual.

s 39.7 MnDOT 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 39.8 MnDOT 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 39.9 The third paragraph after MnDOT 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 39.10 Table 2211-B in MnDOT 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%
----------	0.5	14%
2	0.6	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 39.11 The following is added to Table 2211-C in MnDOT 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 39.12 The following is added to Table 2211-D in MnDOT 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 39.13 Basis of Payment

Payment for accepted quantities of aggregate base of aggregate base class 5 at the Contract prices per unit of measure will be compensation in full for all costs of furnishing the materials and constructing the base as specified.

No direct compensation will be made for water used in conjunction with dust control measures or for mixing, placing and compaction operations.

Item No.	**Item**	**Unit**
2211.503	AGGREGATE BASE (CV) CLASS 5	C Y

S - 40 **(2232) MILL BITUMINOUS SURFACE**

The provisions of MnDOT 2232 are modified and/or supplemented with the following:

s 40.1 The Contractor shall provide and maintain dust control operations throughout the duration of the project in a manner acceptable to the Engineer. This shall include all operations including, but not limited to excavation of inplace materials, milling, sweeping, sawcutting, placing aggregate base, restoration and maintenance of aggregate base routes. The Contractor shall provide a dust control and mitigation plan to the Engineer at the time of the preconstruction conference. The Engineer shall approve the plan prior to the commencement of construction operations. All costs associated with dust control maintenance and mitigation shall be considered incidental to other items bid.

s 40.2 The following is added to MnDOT 2232.B:

Operations

The Contractor shall implement dust control measures during milling and cleaning operations which are acceptable to the Engineer. At the preconstruction conference the Contractor shall present to the Engineer their plan for managing dust during construction. Once approved, the Contractor shall strictly follow the dust mitigation plan throughout the duration of the project.

The contractor shall be responsible for maintaining an acceptable riding surface quality of any milled surface on this project whenever a milled surface is opened to traffic. Any work necessary to maintain an acceptable riding condition shall be considered incidental to the milling operations.

s 40.3 Basis of Payment

Pavement milling will be measured by the area of each type of surface removed, regardless of milling depth. Measurements will be of those areas milled as specified, based on actual finished dimensions of the work.

Item No.	Item	Unit
2232.501	MILL BITUMINOUS SURFACE	S Y

S - 41 **(2301) DRILL AND GROUT REINFORCEMENT BARS (EPOXY COATED)**

Construction shall be in accordance with the provisions of MnDOT 2301, 3301 and these Special Provisions:

Furnish and install No. 13 reinforcing tie bars, 18-inches in length, where connecting to existing concrete curb & gutter and concrete sidewalk in accordance with the MnDOT 'State Aid Concrete Pavement Rehabilitation Best Practices Manual', Sidewalk or Median Repair Type SA-SW and Curb and Gutter Repair Type SA-CG. Place reinforcement with an approved non-shrink grout. Bars shall be installed 9 inches into existing concrete.

Reinforcement bars shall be per MnDOT Standard Specification 3301, Reinforcement Bars, and be epoxy coated.

All costs incurred by the Contractor for furnishing and installing the reinforcement bars as specified shall be incidental to other work.

S - 42 **(2357) BITUMINOUS MATERIAL FOR TACK**

The provisions of MnDOT 2357 are hereby deleted and replaced with the following:

s 42.1 **Description**

This work consists of applying bituminous material (emulsion or cutback asphalt) on a bituminous or concrete pavement prior to paving a new lift of Plant Mixed Asphalt.

s 42.2 **Materials**

A Bituminous Material 3151

The bituminous material for tack coat will be limited to one of the following kinds of emulsified asphalt. Use of medium cure cutback asphalt (MC-250) is allowed during the early and late construction season when it is anticipated the air temperature may drop below 32 degrees Fahrenheit.

Allowable grades are as follows:

Emulsified Asphalt

AASHTO 208 Dilution of the emulsion to 7 parts emulsion to 3 parts water is only allowed by the supplier. **No field dilution is allowed.** The storage tank for diluted emulsion must have a recirculation system or agitator that will prevent settlement or separation of the material.

Table 2357-1-- Residual Asphalt Content		
	Minimum Residual Asphalt Content	
Emulsion	Undiluted	Diluted (7:3)
CSS-1 or CSS-1h	57%	40%

Cutback Asphalt
Medium Cure Liquid Asphalt MC-250

Only Certified Sources are allowed for use. MnDOT's Certified Source List is located at the following link: http://www.dot.state.mn.us/products/index.html.

Construction Requirements

A Restrictions

Conduct tack coat operations in a manner that offers the least inconvenience to traffic. Maintain movement in at least one direction at all times without pickup or tracking of the bituminous material.

Do not apply the tack coat when the road surface or weather conditions are unsuitable as determined by the Engineer. Limit the daily application of tack coat to approximately the area on which construction of the subsequent bituminous course can reasonably be expected to be completed that day.

B Equipment

Apply the bituminous material with a distributor meeting the requirements of 2360.3.B.2.d.

C Road Surface Preparations

Apply the bituminous tack coat material to a dry and clean roadway surface. All necessary repairs or reconditioning must have been completed as provided for in the Contract and approved by the Engineer.

Remove all foreign matter on the road surface before applying tack coat and dispose of as approved by the Engineer.

Before placing an abutting bituminous course, provide a uniform coating of liquid asphalt or emulsified asphalt to the contact surfaces of all fixed structures and at the edge of the in-place mixture in all courses at transverse joints and in the final wearing course at longitudinal joints.

D Application of Bituminous Tack Coat Material

Unless otherwise indicated in the plans or provisions, the bituminous tack coat material shall be applied within the application rates shown below in Table 2357-2 as based on pavement type or condition and type of bituminous material. The Engineer shall approve the time and rate of application. Only a MnDOT certified asphalt emulsion supplier is allowed to dilute the emulsion. When diluted, the supplier shall provide asphalt emulsion diluted 1 part emulsion to 1 part water. Dilution of asphalt emulsion in the field is not allowed. The Engineer may waive the tack coat requirement when multiple lifts are paved on the same day.

Table 2357-2
Tack Coat Application Rates

	Application Rates -- gallons/square yard **[liters/square meter]**		
Surface Type	Undiluted Emulsion	Diluted Emulsion (7:3) [1]	MC Cutback[2]
New Asphalt	0.05 to 0.07**[0.23 to 0.32]**	0.08 to 0.10 **[0.36 to 0.45]**	0.05 to 0.07 **[0.23 to 0.32]**
Old Asphalt3 and PCC	0.08 to 0.10 **[0.41 to 0.50]**	0.13 – 0.15 **[0.59 to 0.68]**	0.09 to 0.11 **[0.41 to 0.50]**
Milled Asphalt and Milled PCC	0.07 to 0.11 **[0.41 to 0.50]**	0.10 – 0.13 **[0.45 to 0.59]**	0.09 to 0.11 **[0.41 to 0.50]**

1- As provided by the asphalt emulsion supplier
2- When approved by the Engineer
3- Older than 1 year

s 42.3 **Bituminous Temperature**

The application temperature of the bituminous material will be:
CSS-1, CSS-1H ..... 70 to 160º F (**21 to 71ºC**)
MC-250 ..... 165 to 220º F (**74 to 104ºC**)

Unless otherwise directed, sand shall be spread on the newly tacked surface at pedestrian crossings.

s 42.4 **Basis of Payment**

All furnishing and applying bituminous material for tack required under this Contract shall be performed as incidental work for which no direct payment will be made.

S - 43 **(2360) PLANT MIXED ASPHALT PAVEMENT**

(2013 version)

MnDOT 2360 is hereby deleted from the MnDOT Standard Specifications and replaced with the attached **2360 (Plant Mixed Asphalt Pavement) Specification**:

s 43.1 Mix Designation Numbers for the bituminous mixtures on this Project are as follows:

Roadways and Driveways:

TYPE SP 9.5 WEARING COURSE MIX (3,C)	SP WE A 3 40 C
TYPE SP 12.5 WEARING COURSE MIX (3,C)	SP WE B 3 40 C
TYPE SP 12.5 NON WEAR COURSE MIX (3,B)	SP NW B 3 30 B

Bituminous Mixture for Patching:

TYPE SP 12.5 WEARING COURSE MIX (3,C)	SP WE B 3 40 C

s 43.2 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.

s 43.3 **2360.3 D Compaction:** All compaction shall be by the **Ordinary Compaction Method** as described in 2360.3.D.2.

s 43.4 **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.

Apply reduced payment only when mixture includes steel slag as one of the aggregate proportions. If the production Marshall lab density at the recommended or established asphalt content is in excess of 2565 kg/m3 **[160 pounds per cubic foot]**, payment for mixture will be calculated at the following percent of the Contracted unit price.

% Payment = {100 - [{100 x (production density at design gyrations - 2565)} / 2565]}

% Payment = {100 - [{100 x (production density at design gyrations - 160)} / 160]} ENGLISH

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.

Payment for plant mixed asphalt surface will be made on the basis of the following schedule:

Item No.	Item	Unit
2360.501	TYPE SP 9.5 WEARING COURSE MIX (3,C)	TON
2360.501	TYPE SP 12.5 WEARING COURSE MIX (3,C)	TON
2360.502	TYPE SP 12.5 NON WEAR COURSE MIX (3,B)	TON
2360.505	TYPE SP 12.5 BIT MIXTURE FOR PATCHING	TON

S - 44 **(2461) STRUCTURAL CONCRETE**

(2013 Revisions)

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.
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	(e × d)	Abs

	aggregates, *lb/cu. yd [kg/cu. m]*		
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

Table 2461-13 General Concrete*	
Outside of Slump Range	**Adjusted Contract Unit Price**
	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.
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

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**
	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 price for Structural Concrete includes the cost of production, placement, finishing, curing, and protection of concrete.

S - 45 **(S100) TRENCH EXCAVATION**

Trench Excavation and embankment construction shall be performed in accordance with the provisions of T100 except as modified below:

s 45.1 **Bedding and Encasement material (B&E)** shall be according to T100 and the following:

1. in water table areas (B&E) shall be according to City spec T100.206.
2. in non-water table areas (B&E) shall be according to City spec T100.207.
3. All work shall be performed as incidental to the sewer construction, for which no direct payment will be made.

s 45.2 **Trench Dewatering**

Dewatering may be required for parts of this project and shall be considered incidental to the trench excavation item. The Contractor shall be responsible for obtaining a Water Appropriation Permit from the Department of Natural Resources (DNR). The Contractor will also be responsible for obtaining all other necessary permits and approvals, as well as all fees and documentation associated with the requirements of said permits.

The Contractor shall not discharge groundwater directly to existing drainage ways or culverts without permission from the Owner, Road Authority, and the DNR. The Contractor shall construct suitable holding basins and rock check system for sediment and erosion control as incidental to the dewatering operations.

s 45.3 **Granular Material for Backfill and Aggregate for Pipe Foundation**

A quantity of Granular Material for Backfill and Aggregate for Pipe Foundation (Item No. 2451.609 Granular Foundation and/or Bedding) has been provided to be placed only as directed by the Engineer to stabilize trenches in the event that unforeseen geology or other stability issues are encountered. Payment for this item shall include disposal of all displaced material.

s 45.4 **Trench Safety, Protection and Shoring**

Trench safety, protection and shoring compliant with OSHA requirements are required, and shall be a Contractor Responsibility. The Engineer will review the Contractor's trenching and shoring plan prior to trench excavation work.

The Contractor is advised that the use of trench box (or boxes) will be necessary on parts of this project based on removal limits and traffic patterns as indicated in the plans. Use of trench box (or boxes) is considered incidental to the pipe installation. Contractor will be responsible for removing the trench box in such a way so as to prevent cave-ins of the trench walls before pipe bedding and backfill in the pipe zone has been acceptably placed and compacted. Contractor also must take measures to prevent the inplace pipe from moving or deflecting when the trench box is removed.

s 45.5 **Basis of Payment**

Trench excavation, backfilling and compaction of backfill to the required elevation shall be considered incidental to the particular pipe furnished and installed as part of this project for which no direct compensation will be made.

S - 46 **(2501-6) STORM SEWER**

This work consists of constructing storm sewers in accordance with the applicable MnDOT Standard Specifications and in accordance with The City of Rochester Standards for Street and Utility Construction:

s 46.1 **Sewer pipe and aprons** of each design designation will be measured by length along the line of pipe or each. Terminal points of measurement will be the pipe end at free outlets; the point of connection with inplace pipe; the center of manholes or catch basins; the point of centerline intersections at branch fittings; or the point of juncture with other appurtenances or units as defined

s 46.2 **Adjust Frame and Ring Casting** for manholes to be adjusted from existing to proposed elevations that can be accommodated by the addition or removal of adjusting rings, with a maximum of 12" of adjusting rings allowable, shall be considered under the pay item "Adjust Frame & Ring Casting" and paid for accordingly.

s 46.3 **Construct Drainage Structure Design Spec 1 and 4** will be measured by number of each constructed complete-in-place, including the base, casting assembly, and cover as required, for the type structure stated in the proposal. Payment for constructing structures at the appropriate Contract prices will be compensation in full for all costs of the work. Castings shall be in accordance with City of Rochester Standard Detail Plate 1-11, Casting Schedule, unless otherwise noted in the plans.

s 46.4 **Connect into Existing Drainage Structure** will be made by the number of connections constructed as specified. Payment will be at the Contract bid price per each, which shall be compensation in full for all costs incidental thereto, including but not limited to, all materials and labor necessary to connect the proposed drainage structure to the existing storm sewer pipe. Any damage caused to the existing storm sewer pipe shall be repaired at no expense to the Department and to the satisfaction of the Engineer.

s 46.5 **Connect into Existing Sewer** will be made by the number of connections constructed as specified. Payment will be at the Contract bid price per each, which shall be compensation in full for all costs

incidental thereto, including but not limited to, all materials and labor necessary to connect the proposed sewer. Any damage caused to the existing sewer pipe shall be repaired at no expense to the Department and to the satisfaction of the Engineer.

s 46.6 Basis of Payment

Trenching, Bedding, Encasement and Backfill material for each type of pipe shall be according to the manufacturers' recommendations for pipe installations in a roadway section or T100, whichever is more stringent. All costs of furnishing and placing the pipe installation materials shall be considered incidental to the installation of the pipe.

Item No.	Item	Unit
2501.515	__" RC PIPE APRON	L F
2501.573	INSTALL CONCRETE APRON	EACH
2503.511	__" PVC PIPE SEWER	L F
2503.541	__" RC PIPE SEWER DES 3006 CLASS ___	L F
2503.602	CONNECT TO EXISTING STORM SEWER	EACH
2503.602	CONNECT TO EXISTING DRAINAGE STRUCTURE	EACH
2506.502	CONST DRAINAGE STRUCTURE DESIGN SPEC __	EACH
2506.603	ADJUST FRAME RING AND CASTING	EACH

S - 47 **(2503-6) SANITARY SEWER**

This work shall consist of furnishing and installing sanitary pipe and fittings in accordance with the Plans, and in accordance with The City of Rochester Standards for Street Construction.

s 47.1 **Maintenance of Service**

Disruption of Sanitary flows during the construction of this project shall be kept to a minimum and considered incidental to the project.

The City of Rochester and all affected property owners and residents shall be notified a minimum of 48 hours prior to disruption of service.

If the Contractor sequences the project so bypassing pumping is required the following provisions shall be followed. The Contractor shall submit a plan detailing the necessary bypasses needed for each stage of construction. Bypass pumping and piping, temporary wiring, and all other items are the responsibility of the Contractor. Contractor shall be responsible for setting up and maintaining bypass pumping operations. Contractor shall coordinate bypassing plan with Owner.

s 47.2 **Sewer pipe** of each design designation will be measured by length along the line of pipe. Terminal points of measurement will be the point of connection with inplace pipe; the center of manholes; the point of centerline intersections at branch fittings; or the point of juncture with other appurtenances or units as defined

s 47.3 **Sanitary Sewer Inspection** shall include the televising of all sanitary sewer furnished and installed on this project. The Contractor shall televise all sanitary sewer installed under this contract no sooner than 30 days following installation. The Contractor shall provide the Owner with a videotape and a report listing all the wye connections to within plus or minus 2 feet. Prior to televising the sanitary sewer, the Contractor shall clean the line with a sewer line cleaning truck to the satisfaction of the Engineer.

s 47.4 **Adjust Frame and Ring Casting** for manholes to be adjusted from existing to proposed elevations that can be accommodated by the addition or removal of adjusting rings, with a maximum of 12" of adjusting rings allowable, shall be considered under the pay item "Adjust Frame & Ring Casting" and paid for accordingly.

s 47.5 **Basis of Payment**

Trenching, Bedding, Encasement and Backfill material for each type of pipe shall be according to the manufacturers' recommendations for pipe installations in a roadway section or T100, whichever is more stringent. All costs of furnishing and placing the pipe installation materials, with exception to the granular foundation and/or bedding material used for stabilizing the pipe foundation shall be considered incidental to the installation of the pipe.

Item No.	Item	Unit
2451.609	GRANULAR FOUNDATION AND/OR BEDDING	TON
2503.511	__IN PVC PIPE SEWER	L F
2503.601	MAINTENANCE OF SANITARY SEWER SERVICE	L S
2503.602	CONNECT TO EXISTING SANITARY SEWER	EACH
2503.603	SANITARY SEWER INSPECTION	L F
2506.602	ADJUST FRAME RING AND CASTING	EACH
2506.602	FURNISH & INSTALL MANHOLE WATERPROOFING-INT	EACH

S - 48 **(2504) WATERMAIN**

This work shall consist of providing all labor, equipment, and materials to construct the watermain. All work shall be done in accordance with The City of Rochester Standards for Street Construction.

s 48.1 **Maintenance of Service**

Disruption of watermain flows during the construction of this project shall be kept to a minimum and considered incidental to the project.

All watermain disruptions shall be coordinated with City of Rochester Public Utilities.

Services shall not be disrupted for more than 4 hours. All service connection work will be accomplished and coordinated with the residences and businesses served. This may require temporary service connections in these areas.

The City of Rochester Public Utilities and all affected property owners and residents shall be notified a minimum of 48 hours prior to disruption of service.

s 48.2 **Adjust Gate Valve & Box** shall be measured by the each and include the adjusting of the gate valve boxes from the existing elevations to the proposed elevations.

s 48.3 **Adjust Curb Box** shall be measured by the each and include the adjusting of the curb boxes from the existing elevations to the proposed elevations.

s 48.4 Basis of Payment

Adjusting the gate valve boxes and curb boxes shall be done in accordance with the City of Rochester standards.

Item No.	Item	Unit
2504.602	ADJUST GATE VALVE & BOX	EACH
2504.602	ADJUST CURB BOX	EACH

S - 49 **(2511) RIPRAP**

Riprap shall be in accordance with the provisions of Mn/DOT 2511, 3601 and 3733 and the following:

s 49.1 Materials:

Random Riprap: shall be Class III, in accordance with Mn/DOT Section 3601.

Geotextile Fabric: shall be Type III, in accordance with Mn/DOT Spec. 3733

s 49.2 Granular filter or geotextile filter material will be considered incidental for which no direct compensation will be made.

s 49.3 Measurement and Payment

Item No.	Item	Unit
2511.501	RANDOM RIP RAP CLASS ___	C Y

S - 50 **(2521) CONCRETE WALK**

Concrete walk shall be performed in accordance with the provisions of MnDOT Section 2521 Rochester Detail Plate 2-13&14, and the following:

s 50.1 **Aggregate**s for Concrete Walk and pedestrian ramps

The Contractor shall place a minimum of **4 inches** of compacted aggregate base Class 5 or 7C (in compliance with MnDOT 3137, and/or 3138), under all concrete walks constructed as an incidental expense to the walk.

s 50.2 **Item 2521.501 "5" Concrete Walk"** is provided for all sidewalk along the project corridor, excluding driveways and colored sidewalk/median areas.

s 50.3 **Item 2521.501 "6" Concrete Walk"** is provided for the concrete walk at all pedestrian curb ramps, as indicated in the plans.

s 50.4 **Item 2521.501 "6" Concrete Walk -Special "** is provided for the colored concrete walk inside the medians between 41st Street NW and 22nd Avenue NW. The walk shall be colored (Federal Color No. 20220) with a window pane pattern finish.

All colored concrete shall receive two applications of curing and sealing compound. Application of the curing and sealing compound shall be performed in strict accordance with the manufacturer's recommendations for treating colored concrete. The first application of the compound shall be applied the same day of the concrete placement and before sawcutting any joints. The second application shall be made after the 28-day cure of the concrete. Prior to the second application, all areas shall be cleaned and washed in strict accordance with the manufacturer's recommendations. The contractor shall review the manufacturer's recommendations for the product prior to bidding to fully understand the preparation of the surface for both applications of the compound. A non-slip synthetic aggregate shall be mixed with the curing and sealing compound to provide a slight non-slip texture. All non-slip synthetic aggregates and sealants shall be applied evenly, with a roller. Joint sealant for the colored concrete areas shall be a caulk joint sealer matching the color of the concrete, as approved by the engineer.

Upon completion of the placement of the first 5 C.Y. of 6" Concrete Walk-Special the Contractor shall obtain approval for concrete color and finish from the Engineer before proceeding with further placement operations. If deemed unacceptable by the Engineer the Contractor shall be responsible for the replacement of the 6" Concrete Walk-Special at their own expense.

s 50.5 **Item 2521.501 "7" Concrete Walk"** is provided for the concrete walk that is constructed at the driveways, as indicated in the plans.

s 50.6 MnDOT 2521.3C3 is hereby modified to include the following provision:

After completing final finishing operations, cure all exposed concrete surfaces. Use one of the following curing methods:

(1) Place the membrane curing compound conforming to 3754 or 3755 within 30 minutes of concrete placement or once the bleed water has dissipated, unless the Engineer directs otherwise in accordance with 2521.3.E.1.a. Place the membrane curing compound on the edges within 30 minutes after permanent removal of the forms or curing blankets, unless the Contract requires otherwise.

(2) Place plastic curing blankets or completely saturated burlap curing blankets as soon as practical without marring the surface in accordance with 2521.3.E.1.b.

Failure to comply with these provisions will result in the Engineer applying a monetary deduction in accordance with 1503. When there is not a separate Contract unit price for Structural Concrete, the Department will apply a monetary deduction of $50.00 per cu. yd [$65.00 per cu. m] or 50 percent of the Contractor-provided invoice amount for the concrete in question, whichever is less.

Whenever weather conditions are such as to cause unusual or adverse placing and finishing conditions, expedite the application of a curing method or temporarily suspend the mixing and placing operations, as the conditions require.

If necessary to remove the coverings to saw joints or perform other required work, and if the Engineer approves, remove the covering for the minimum time required to complete that work.

C3a Curing Methods

C3a(1) Membrane Curing Method

Before application, agitate the curing compound as received in the shipping container to obtain a homogenous mixture. Protect membrane curing compounds from freezing before application. Handle and apply the membrane curing compound in accordance with the manufacturer's recommendations.

Apply the curing compound with an approved airless spraying machine in accordance with the following

(1) At a rate of 1 gal per 150 sq. ft (1 L per 4 m²) of surface curing area.

(2) Apply homogeneously to provide a uniform solid white opaque coverage on all exposed concrete surfaces (equal to a white sheet of typing paper). Some MnDOT approved curing compounds may have a base color (i.e. yellow) that cannot comply with the above requirement. In this case, provide a uniform solid opaque consistency meeting the intent of the above requirement.

(3) If the curing compound is damaged during the curing period, immediately repair the damaged area by re-spraying.

The Engineer will approve the airless spraying machine for use if it is equipped with the following:

(1) A re-circulating bypass system that provides for continuous agitation of the reservoir material,

(2) Separate filters for the hose and nozzle, and

(3) Multiple or adjustable nozzle system that provides for variable spray patterns.

If the Engineer determines that the initial or corrective spraying may result in unsatisfactory curing, the Engineer may require the Contractor to use the blanket curing method, at no additional cost to the Department.

C3a(2) Curing Blanket Method

After completion of the finishing operations and without marring the concrete, cover the concrete with curing blankets. Install in a manner that envelops the exposed concrete and prevents loss of water vapor. After the concrete has cured, apply membrane curing compound to the concrete surfaces that will remain exposed in the completed work.

C3b Protection Against Rain

Protect the concrete from damage due to rain. Have available, near the site of the work, materials for protection of the edges and surface of concrete. Should any damage result, the Engineer will suspend operations until the Contractor takes corrective action and may subject the rain-damaged concrete to 1503 and 1512.

C3c Protection Against Cold Weather

If the national weather service forecast for the construction area predicts air temperatures of 36 °F [1 °C] or less within the next 24 h and the Contractor wishes to place concrete, submit a cold weather protection plan.

Protect the concrete from damage including freezing due to cold weather. Should any damage result, the Engineer will suspend operations until corrective action is taken and may subject the damaged concrete to 1503 and 1512.

C3c(1) Cold Weather Protection Plan

Submit proposed time schedule and plans for cold weather protection of concrete in writing to the Engineer for acceptance that provides provisions for adequately protecting the concrete during placement and curing. Do not place concrete until the Engineer accepts the cold weather protection plans.

s 50.7 MnDOT 2521.3E is hereby deleted and replaced with following:

E Backfilling

Protect newly placed concrete from damage by adjacent vibratory or backfilling operations for a minimum of 24 hours. Perform vibratory operations and backfilling 72 hours after placing the concrete or after the concrete reaches a compressive strength of at least 3,000 psi [**20.7 Mpa**]. The Engineer will cast, cure, and test the concrete control specimens in accordance with 2461.3G5. If damage results from any of these operations the Engineer will suspend all operations until corrective action is taken and a new method is approved. The Engineer may subject damaged concrete to 1503 and 1512.

The Contractor may hand operate concrete consolidation equipment and walk behind vibratory plate compactors 24 hours after placing the concrete, and other equipment as approved by the Engineer in conjunction with the Concrete Engineer.

After curing, backfill or perform embankment construction to the elevations shown on the plans, without damaging the concrete. Use suitable grading materials from the excavation for backfill material in accordance with 2105, unless otherwise required by the Contract. Place and compact the backfill material in accordance with 2105.

Dispose of surplus excavated materials in accordance with 2105.

s 50.8 Measurement for concrete walk will be made by the top surface area in square feet as specified. The measurement will be taken from the outer most edge of the concrete walk. Payment will be made under Item 2521.501 (__" CONCRETE WALK) at the Contract bid price per square foot, which shall be payment in full for all costs involved.

ITEM	DESCRIPTION	UNIT
2521.501	5" CONCRETE WALK	S F
2521.501	6" CONCRETE WALK	S F
2521.501	6" CONCRETE WALK - SPECIAL	S F
2521.501	7" CONCRETE WALK	S F

S - 51 **(2531) CONCRETE CURBING**

The provisions of MnDOT 2531 are supplemented and/or modified with the following:

The spacing of contraction joints for curb and gutter shall be controlled by the proposed spacing of the transverse joints in the bituminous pavement. A contraction joint shall be provided at each transverse joint and intermediate joints shall be placed to provide intervals not greater than 10-ft (2.7m) nor less than 5-ft (1.5m).

Transverse expansion joints for curb and gutter shall be provided at 300-ft (90m) intervals as well as at structures and changes in alignment.

Metal reinforcement at catch basins shall be placed in accordance with Rochester Detail Plate 2-06. Furnishing and placing metal reinforcement shall be considered an incidental expense and no separate payment will be made therefore.

Where curb and gutter is to be replaced adjacent to the existing catch basins, the Contractor shall make adjustments to the existing catch basins to ensure proper drainage into the structures. The Contractor shall also fully mortar the adjusting rings inside the existing catch basins to the satisfaction of the Engineer. Adjusting the structures and placing mortar around the adjusting rings shall be considered an incidental expense and no separate payment will be made therefore.

s 51.1 The last paragraph of MnDOT 2531.3C shall be deleted and replaced with the following:

Longitudinal construction joints between a concrete median or gutter section and a concrete pavement shall not be sawed or sealed.

s 51.2 MnDOT 2531.3G is hereby modified to include the following provision:

After completing final finishing operations, cure all exposed concrete surfaces. Use one of the following curing methods:

(1) Place the membrane curing compound conforming to 3754 or 3755 within 30 minutes of concrete placement or once the bleed water has dissipated, unless the Engineer directs otherwise in accordance with 2521.3.E.1.a. Place the membrane curing compound on the edges within 30 minutes after permanent removal of the forms or curing blankets, unless the Contract requires otherwise..

(2) Place plastic curing blankets or completely saturated burlap curing blankets as soon as practical without marring the surface in accordance with 2521.3.E.1.b.

Failure to comply with these provisions will result in the Engineer applying a monetary deduction in accordance with 1503. When there is not a separate Contract unit price for Structural Concrete, the Department will apply a monetary deduction of $50.00 per cu. yd [$65.00 per cu. m] or 50 percent of the Contractor-provided invoice amount for the concrete in question, whichever is less.s.

Whenever weather conditions are such as to cause unusual or adverse placing and finishing conditions, expedite the application of a curing method or temporarily suspend the mixing and placing operations, as the conditions require.

If necessary to remove the coverings to saw joints or perform other required work, and if the Engineer approves, remove the covering for the minimum time required to complete that work.

G1 Curing Methods

G1a Membrane Curing Method

Before application, agitate the curing compound as received in the shipping container to obtain a homogenous mixture. Protect membrane curing compounds from freezing before application. Handle and apply the membrane curing compound in accordance with the manufacturer's recommendations.

Apply the curing compound with an approved airless spraying machine in accordance with the following:

(1) At a rate of 1 gal per 150 sq. ft (1 L per 4 m²) of surface curing area.

(2) Apply homogeneously to provide a uniform solid white opaque coverage on all exposed concrete surfaces (equal to a white sheet of typing paper). Some MnDOT approved curing compounds may have a base color (i.e. yellow) that cannot comply with the above requirement. In this case, provide a uniform solid opaque consistency meeting the intent of the above requirement.

(3) If the curing compound is damaged during the curing period, immediately repair the damaged area by re-spraying.

The Engineer will approve the airless spraying machine for use if it is equipped with the following:

(1) A re-circulating bypass system that provides for continuous agitation of the reservoir material,

(2) Separate filters for the hose and nozzle, and

(3) Multiple or adjustable nozzle system that provides for variable spray patterns.

If the Engineer determines that the initial or corrective spraying may result in unsatisfactory curing, the Engineer may require the Contractor to use the blanket curing method, at no additional cost to the Department.

G1b Curing Blanket Method

After completion of the finishing operations and without marring the concrete, cover the concrete with curing blankets. Install in a manner that envelops the exposed concrete and prevents loss of water vapor. After the concrete has cured, apply membrane curing compound to the concrete surfaces that will remain exposed in the completed work.

G2 Protection Against Rain

Protect the concrete from damage due to rain. Have available, near the site of the work, materials for protection of the edges and surface of concrete. Should any damage result, the Engineer will suspend operations until the Contractor takes corrective action and may subject the rain-damaged concrete to 1503 and 1512.

G3 Protection Against Cold Weather

If the national weather service forecast for the construction area predicts air temperatures of 36 °F [1 °C] or less within the next 24 h and the Contractor wishes to place concrete, submit a cold weather protection plan.

Protect the concrete from damage including freezing due to cold weather. Should any damage result, the Engineer will suspend operations until corrective action is taken and may subject the damaged concrete to 1503 and 1512.

G3a Cold Weather Protection Plan

Submit proposed time schedule and plans for cold weather protection of concrete in writing to the Engineer for acceptance that provides provisions for adequately protecting the concrete during placement and curing. Do not place concrete until the Engineer accepts the cold weather protection plans.

s 51.3 MnDOT 2531.3J is hereby deleted and replaced with the following:

J Backfilling

Protect newly placed concrete from damage by adjacent vibratory or backfilling operations for a minimum of 24 hours. Perform vibratory operations and backfilling 72 h after placing the concrete or after the concrete reaches a compressive strength of at least 3,000 psi [**20.7 Mpa**]. The Engineer will cast, cure, and test the concrete control specimens in accordance with 2461.3G5. If damage results from any of these operations the Engineer will suspend all operations until corrective action is taken and a new method is approved. The Engineer may subject damaged concrete to 1503 and 1512.

The Contractor may hand operate concrete consolidation equipment and walk behind vibratory plate compactors 24 hours after placing the concrete, and other equipment as approved by the Engineer in conjunction with the Concrete Engineer.

After curing, backfill or perform embankment construction to the elevations shown on the Plans , without damaging the concrete. Use suitable grading materials from the excavation for backfill material in

accordance with 2105, unless otherwise required by the Contract. Place and compact the backfill material in accordance with 2105.

Dispose of surplus excavated materials in accordance with 2105.

s 51.4 **Item 2531.502 "Concrete Curb Design V6"** Shall include all labor, equipment and materials necessary to construct the 6" curb along the pedestrian curb ramps, at the locations indicated in the plans.

ITEM	DESCRIPTION	UNIT
2531.501	CONCRETE CURB & GUTTER DESIGN B612	L F
2531.501	CONCRETE CURB & GUTTER DESIGN B624	L F
2531.501	CONCRETE CURB & GUTTER DESIGN B624 (MOD)	L F
2531.502	CONCRETE CURB DESIGN V6	L F

S - 52 **(2531) CONCRETE DRIVEWAY PAVEMENT**

Concrete walk shall be performed in accordance with the provisions of Mn/DOT Section 2531 except as modified below:

s 52.1 The Contractor shall place a minimum of **4 inches** crushed rock base under all driveways and associated sidewalk section through the driveway. Furnishing and placing the crushed rock base will be considered incidental to the pavement construction and no separate payment will be made therefore.

s 52.2 Saw cutting shall be considered incidental to concrete pavement.

Item No.	Item	Unit
2531.507	7" CONCRETE DRIVEWAY PAVEMENT	S Y

S - 53 **(2531) PEDESTRIAN CURB RAMP – TRUNCATED DOME SYSTEMS**

This work consists of furnishing and installing Truncated Dome Systems (detectable warning surfaces) at pedestrian curb ramps in compliance with the Public Rights-of-Way Accessibility Guidelines (PROWAG). This work shall be performed in accordance with the applicable MnDOT Standard Specifications, these Special Provisions, the details in the Plan, and the following:

s 53.1 Construction Requirements

The Contractor shall select a truncated dome product from the approved products list at http://www.dot.state.mn.us/products/miscmaterials/truncateddomes.html. The truncated domes shall be placed in concrete and shall be pressed firmly into the concrete to the point that concrete fills the vent holes on the truncated dome plates. No cutting of truncated domes will be allowed unless approved by the Engineer. Any swelling of the concrete that occurs around the truncated domes must be screeded off and the surrounding concrete shall be finished flush with the truncated dome plate edge. To ensure that the truncated domes are well seated in concrete, the Contractor should provide a 3 inch minimum border around the edges of the truncated domes.

s 53.2 The Contractor will be allowed to interchange 9 foot 5 inch and 10 foot radial truncated domes when either is called for in the Plan. If the Contractor does make a substitution, the Contractor will be required to modify the curb line radius to match the truncated domes and meet the detectable edge requirements listed in Section S-2531 (CONCRETE CURB AND GUTTER (ADA)) of the MnDOT Special Provisions

s 53.3 Method of Measurement

The truncated dome area will be measured by the square foot.

s 53.4 Basis of Payment

Payment will be made under Item 2531.618 (Truncated Domes) at the Contract bid price per square foot, which shall be compensation in full for furnishing and installation of truncated domes.

Item No.	Item	Unit
2531.618	TRUNCATED DOMES	S F

S - 54 **(2540) RELOCATE BUS SHELTER**

This item includes the relocation of the existing bus shelter located at approximate STA 13+15 – 30' RT. The intent of this work is to salvage and reinstall the existing shelter as specified and as detailed in the plans. This item includes all labor, equipment and materials necessary to remove and relocate the existing bus shelter from its current location to the proposed location shown on the plans. All work associated with bracing and relocating the existing shelter shall be included under this bid item. All work and materials to provide a concrete footing and slab, including bracketing hardware and reinforcement as shown in the plans shall be included in the item bid for Structural Concrete (3Y33A). Any damage to the existing shelter caused by the contractor's relocation operations shall be repaired at the contractor's expense.

All costs associated with relocating the bus shelter shall be included in the unit price bid per LS.

Item No.	Item	Unit
2540.601	RELOCATE BUS SHELTER	L S

S - 55 **(2557) FENCING**

This work shall consist of installing a chain link fence under this Contract in accordance with the following:

s55.1 Materials:

The fence shall be Type IV, Vinyl Coated Fabric, black in color. Fence posts shall be black in color.

s55.2 Method of Measurement

Measurement will be made by the length in **linear feet** of fence installed complete in place as specified.

s55.3 Basis of Payment

Payment will be made at the Contract bid price **linear foot**, which shall be compensation in full for all costs incidental thereto, including but not limited to installing fence components as specified.

Item No.	Item	Unit
2557.603	CHAIN LINK SAFETY FENCE	L F

S - 56 **(2564)TRAFFIC SIGNS AND DEVICES**

Traffic signs shall be constructed in accordance with the provisions of Mn/DOT 2564, except as modified below:

s 56.1 Materials:

A Sign Face and Sign Legend Materials

Sign Sheeting for Rigid Permanent Signs, Delineators and Markers shall be approved by the Engineer and be consistent with current MNDOT standards.

The retroreflective sheeting types and qualified products used for rigid permanent signs, markers and delineators can be found at: http://www.dot.state.mn.us/trafficeng/products/MnDOTapprovedproductlist.xls.

B Sign Posts

The 3# U-channel sign posts typically used are to be replaced with Telespar sign posts, or equal and are to be approved by the Engineer. Sign posts are incidental to the cost of the sign panel and to the install sign panel pay items.

s 56.2 Construction Requirements

The Contractor shall install Department furnished warning stickers on new Type C and Type D sign panels in accordance with Mn/DOT 2564.3H.

A New Type C signs

All new signs and salvaged signs shall be installed with new sign posts and use new mounting hardware. Sign locations in the plan are approximate and may be adjusted by the Engineer.

B New Type D signs

The 4 new ground mounted type D signs are to be located 3 feet behind the guardrail shown in the plan on new sign posts.

s 56.3 Method of Measurement and Basis of Payment:

Payment for sign panels type __ at the contract price per SQUARE FOOT shall be compensation in full for all work, materials, and costs involved in performing the work as specified above and in the Plan, including furnishing and installing extruded panel sections.

Payment for F&I Sign Post at the contract price per each shall be compensation in full for all work, materials, and costs involved in furnishing and installing the sign posts at the locations shown on the plan or as directed by the Engineer in the field. Payment shall only be made for the sign posts to be installed at the proposed bus stop locations where the signs will be installed by others. Furnishing and installing the sign posts in all other locations shall be considered incidental to the cost of the sign panels type c & d.

ITEM	DESCRIPTION	UNIT
2564.531	SIGN PANELS TYPE C	S F
2564.531	SIGN PANELS TYPE D	S F
2564.602	F&I SIGN POST	EACH

S - 57 **(2571) PLANT INSTALLATION**

MnDOT 2571 is hereby deleted from the MnDOT Standard Specifications and replaced with the attached Specification "2571 -- PLANT INSTALLATION AND ESTABLISHMENT" Revised 01/23/2013.

s 57.1 **Item 2571.541 "Transplant Tree (Spade Size 60")"** provides for all labor, equipment and materials necessary to transplant on-site trees, as indicated in the plans. The trees shall be transplanted to an on-site location as designated and under the direction of the City of Rochester Park and Recreation department.

ITEM	DESCRIPTION	UNIT
2571.541	TRANSPLANT TREE (SPADE SIZE 60")	TREE

S - 58 **(2573) EROSION CONTROL SUPERVISOR**

The provisions of MnDOT 2573 are supplemented and/or modified with the following:

s 58.1 The second paragraph of MnDOT 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 **implement the Contractor's quality control program and other provisions in accordance with 1717.2 and** be available to be on the Project within 24 hours at all times from initial disturbance to final stabilization as well as perform the following duties:

s 58.2 MnDOT 2573.3 A2, Construction of Temporary Storm Water Basins, is revised to read as follows:

Temporary storm water basins shall be constructed concurrently with the start of soil disturbing activities whenever practicable. The basins must be made fully functional and have storm water runoff from the localized watershed directed to the basins. The exposed sideslopes of the basins must be mulched and/or seeded within the time periods as set forth in 1717, or as directed by the Engineer.

s 58.3 The second paragraph of MnDOT 2573.3 A5, Vehicle Tracking on to 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 58.4 The first sentence of MnDOT 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 58.5 The first paragraph of MnDOT 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**) nominal 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 58.6 Section 2573.4S is deleted and replaced by the following:

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. 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.

Item No.	Item	Unit
2573.550	EROSION CONTROL SUPERVISOR	L S

S - 59 **(2573) TEMPORARY EROSION CONTROL AND TURF ESTABLISHMENT**

Temporary Erosion Control and Turf Establishment shall be performed in accordance with the provisions of MnDOT Section 2573 except as modified below:

s 59.1 **Perimeter Control:** Shall be installed prior to the commencement of construction activities to control sediment from leaving the project limits, and entering a critical resource. This work shall include furnishing, installing, and removing silt fence, or biorolls (installation of biorolls shall include staking or weighting with sandbags to prevent movement) in accordance with the details shown in the Plans and the applicable Mn/DOT Standard Specifications.

s 59.2 **Inlet Protection:** Shall be furnished and installed on all inlets discharging to surface water. Inlets in rough graded areas need protection to keep any sediment from being transported to a Water of the State, or filling up the pipes with sediment. Inlet protection is shown in the plans by type; see specification 3891. Devices approved by the MN/Department's Erosion Control Engineering Unit and on file on the web under the Materials Engineering Section's Approved Products List can be furnished as meeting this specification requirement.

s 59.3 **Temporary Rock Construction Entrance:** Shall be installed prior to construction, to control sediment from leaving the project limits. This work shall include furnishing, installing, maintaining, and removing the entrance in accordance with the details shown in the Plans and the applicable Mn/DOT Standard Specifications.

s 59.4 **Inlet Protection**: shall be furnished and installed on all inlets discharging to surface water. Inlets in rough graded areas need protection to keep any sediment from being transported to a Water of the State, or filling up the pipes with sediment. Inlet protection is shown in the plans by type; see specification 3891. Devices approved by the MN/Department's Erosion Control Engineering Unit and on file on the web under the Materials Engineering Section's Approved Products List can be furnished as meeting this specification requirement.

Bidders are advised that payment for furnishing and installing temporary erosion control set forth in the foregoing area is for the initial installation and removal only. Any replacement components as may be necessary to maintain the temporary erosion control devices in a functional condition, to the satisfaction of the Engineer, during the tenure of this Contract shall be furnished, installed, maintained, and removed at the Contractor's expense.

Item No.	Item	Unit
2573.502	SILT FENCE, TYPE HEAVY DUTY	L F
2573.520	SEDIMENT REMOVAL BACKHOE	HOUR
2573.530	STORM DRAIN INLET PROTECTION	EACH
2573.540	FILTER LOG TYPE STRAW BIOROLL	L F
2573.602	TEMPORARY ROCK CONSTRUCTION ENTRANCE	EACH

S - 60 **(2575) PERMANENT EROSION CONTROL AND TURF ESTABLISHMENT**

The provisions of MnDOT 2575 are supplemented and/or modified with the following:

s 60.1 **Disturbed areas**, as shown in the plans, shall be sodded or seeded and mulched as soon as practical after completion of the grading operations, but within the period specified for germination of seed.

s 60.2 **Topsoil:** Topsoil should be at a minimum of 4 inches on seeded and sodded areas. This material should have been retained on the project included in the common excavation item.

s 60.3 **Sod**:

Sodding around storm aprons, shall be according to MnDOT Detail Plate 9102D and shown on the Plans; According to the requirements of MnDOT 3878.2, B "Erosion Control Sod".

Sodding around other areas shall be as shown on Plans; According to the requirements of MnDOT 3878.2, D "**Mineral Sod**".

s 60.4 **Watering:**

The Contractor shall make, at no cost to the Owner, whatever arrangements may be necessary to ensure an adequate supply of water to meet the needs of this Contract. The Contractor shall also furnish all necessary hose, equipment, attachments, and accessories for the adequate irrigation of lawns and planted areas as may be required to complete the work as specified and water used for this purpose shall be incidental to the cost of the turf establishment.

s 60.5 **Basis of Payment**

Payment for permanent erosion control and turf establishment at the contract prices per unit of measure shall be compensation in full for all costs incurred in materials, installation, surface preparation, and any repair work required in accordance to contract documents or as approved by the Engineer.

Item No.	Item	Unit
2575.501	SEEDING	ACRE
2575.502	SEED MIXTURE 260	LB
2575.505	SODDING TYPE MINERAL	S Y
2575.523	EROSION CONTROL BLANKETS CATEGORY 3	S Y
2575.523	EROSION CONTROL BLANKETS CATEGORY 5	S Y
2575.532	FERTILIZER TYPE 3	LB

S - 61 **(2582) PERMANENT PAVEMENT MARKINGS**

The provisions of Mn/DOT 2582 are hereby modified and/or supplemented with the following:

s 61.1 The language below applies to the permanent pavement markings for this Project that are to be recessed pavement markings, utilizing Epoxy Paint (GR IN). These markings are to be recessed in accordance with MnDOT Technical Memorandum No. 08-10-T-02.

s 61.2 The pavement marking material utilized for this Project must be listed within the **Epoxy Paint – Pavement Marking Materials** category on the MnDOT Approved/Qualified Products Lists.

s 61.3 The provisions of Mn/DOT 2582.2 are hereby deleted and replaced with the following:

A Epoxy Resin Pavement Markings (Free of Toxic Heavy Metals) 3590

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 Wet Reflective Pavement Marking Materials QPL can be found at http://www.dot.state.mn.us/products/pavementmarkings/pavementmarkingmaterials.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 61.4 **GROOVING BITUMINOUS *and/or* CONCRETE PAVEMENT SURFACES FOR EPOXY PAVEMENT MARKINGS**

The epoxy pavement markings are to be grooved into the pavement surfaces. **GRINDER-TYPE CUTTING HEADS CANNOT BE USED**. The goal of the grooving process is to protect the pavement marking from snowplow damage and ultimately extend the service life of the pavement markings. Grooving operations are incidental to permanent pavement marking operations.

s 61.5 The following is hereby added to MnDOT 2582.3B, Application:

The Contractor has the option to dry or wet groove the pavement while the roadway is open or closed to traffic. The grove must be cleaned completely prior to pavement marking application, using an air compressor with at least 185 CFM air flow and 120 PSI air pressure. The compressor must be equipped with a moisture and oil trap, and cannot have more than 50 feet of 3/4 inch ID hose between the compressor and the air nozzle. The air nozzle must have an inside diameter of 1/2 inch or greater.

(A) Grooving Equipment

The grooving shall be performed by a self-propelled machine equipped with gang stacked diamond cutting blades mounted on a floating head with controls capable of providing uniform depth and alignment.

The cutting heads shall consist of stacked 3 mm to 9 mm [**1/8 inch to 3/8 inch**] wide diamond tipped cutting blades. The spacers between each blade must be such that the raise in the bottom of the finished groove between the blades is less than 25% of the groove depth. The resulting bottom of the groove shall have a fine corduroy finish. If a coarse tooth pattern is present, the Contractor shall increase the number of blades and/or decrease the thickness of the spacers on the cutting head.

The equipment shall be capable of grooving the total width of the groove in one pass or be capable of grooving uniform depths with multiple passes. The maximum number of passes is detailed below. If multiple passes are used, the ridge between passes shall be mechanically removed prior to groove cleaning and pavement marking application.

The equipment shall be capable of grooving double lines simultaneously or parallel lines to a uniform depth with two passes.

The equipment shall be self-vacuuming and leave the cut groove ready for pavement marking installation. Dry cut grooving without a vacuum will only be allowed if markings run perpendicular to the roadway, such as Stop Bars. The pavement marking manufacturer shall approve the equipment and method used.

(B) Grooves

The grooving shall be preformed within the following tolerances. Failure to meet these tolerances will result in the suspension of work until the Contractor can demonstrate that these tolerances can be met to the satisfaction of the Engineer. **The pavement marking system shall be applied so that it is centered within the groove.**

GROOVE WIDTH AND MAXIMUM NUMBER OF PASSES		
MARKING WIDTH	GROOVE WIDTH	MAX NUMBER OF PASSES
100 mm [**4 inches**]	130 mm ± 3 mm **[5" ± 1/8"]**	1
150 mm [**6 inches**]	180 mm ± 3 mm **[7" ± 1/8"]**	1
200 mm [**8 inches**]	230 mm ± 3 mm **[9" ± 1/8"]**	1

300 mm [**12 inches**]	330 mm ± 3 mm **[13" ± 1/8"]**	2
600 mm [**24 inches**]	635 mm ± 3 mm **[25" ± 1/8"]**	3

The groove depth shall be 45 mil ± 10 mil.

Since pavements are irregular, the depth of groove across the width may vary. To compensate for this, the depth of the groove shall be measured from the bottom of the groove to a straight edge extended over the groove from the pavement surface opposite the pavement joint.

FULL DEPTH GROOVE LENGTHS	
Full Depth Groove Length (Broken Line)	3 m ± 75 mm **[10 feet ± 3 inches]**
Tapers At End of Each Line	150 mm ± 230 mm **[6 inches to 9 inches]**
Space Between Double lines	100 mm ± 6 mm **[4 inches ± 1/4 inch]**

The groove shall be placed 50 mm ± 25 mm [**2 inches ± 1 inch**] from the edge of joints or seams along edge or centerline, unless otherwise indicated in the Plan.

Grooving alignment deviations from the control guide or existing lines specified by the Engineer shall not exceed 50 mm [**2 inches**].

All pavement markings to be grooved in shall be placed in accordance with pavement marking or element manufacturer's instructions.

If the Epoxy 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 Epoxy pay item. The Contractor may cut the groove and remove the existing marking in a simultaneous operation.

s 61.6 MnDOT 2582.3G is hereby deleted and replaced with the following:

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 61.7 The provisions of MnDOT 2582.5 are hereby deleted and replaced with the following:

s 61.8 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	DESCRIPTION	UNIT
2582.501	PAVT MSSG (RIGHT-THRU ARROW) EPOXY (GROUND IN)	EACH
2582.501	PAVT MSSG (BIKE SYMBOL) EPOXY (GROUND IN)	EACH
2582.501	PAVT MSSG (LT ARROW) EPOXY (GROUND IN)	EACH
2582.501	PAVT MSSG (RT ARROW) EPOXY (GROUND IN)	EACH
2582.502	4" SOLID LINE WHITE-EPOXY (GROUND IN)	L F
2582.502	6" SOLID LINE WHITE-EPOXY (GROUND IN)	L F
2582.502	12" SOLID LINE WHITE-EPOXY (GROUND IN)	L F
2582.502	4" SOLID LINE YELLOW-EPOXY (GROUND IN)	L F
2582.502	12" SOLID LINE YELLOW-EPOXY (GROUND IN)	L F
2582.502	4" BROKEN LINE WHITE-EPOXY (GROUND IN)	L F
2582.502	4" DBLE SOLID LINE YELLOW-EPOXY (GROUND IN)	L F

S - 62 **(3137) COARSE AGGREGATE FOR PORTLAND CEMENT CONCRETE**

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	1.75
(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 - 63 **(3138) AGGREGATES FOR SURFACE AND BASE COURSES**

The provisions of MnDOT 3138 are hereby modified as follows:

s 63.1 If crushed carbonate quarry rock (limestone or dolostone) is used, the minus 75 µm [**#200**] sized portion of the rock insoluble residue shall not exceed 10% by weight for Base Course and Shoulder Aggregate only. The insoluble residue test procedure is on file in the MnDOT Materials Laboratory.

s 63.2 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.

s 63.3 No carbonate quarry rock from the Platteville Geological Formation is allowed.

s 63.4 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.

s 63.5 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 63.6 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 - 64 **(3139) (D6) GRADED AGGREGATE FOR BITUMINOUS MIXTURES**

MnDOT 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 ..... MnDOT 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 MnDOT 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 determining the shingle aggregate Gsb in accordance with MnDOT 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 MnDOT 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 MnDOT's Environmental Assessment Engineer in the mixture. Only use waste incinerator ash

sources approved by the Engineer with concurrence with MnDOT'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 MnDOT Lab Manual Method 1851 and 1852.

B.11.D Bulk Specific Gravity

Determine the bulk specific gravity in accordance with MnDOT Laboratory Procedure 1205 or 1815.

C Quality

C.1 Los Angeles Rattler Test ..... MnDOT Laboratory Procedure 1210

Ensure a coarse aggregate loss no greater than 40 percent.

C.2 Soundness (Magnesium Sulfate) ..... MnDOT 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 ..... MnDOT 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 ..... MnDOT Laboratory Procedure 1221

If crushed carbonate quarry rock (limestone or dolostone) is used the minus 75 µm [**#200**] sized portion of the rock insoluble residue shall not exceed 10% by weight. The insoluble residue test procedure is on file in the MnDOT Materials Laboratory.

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	30/-	55 / -	85 / 80	95 / 90
(one face / two face), %- Non-Wear	30/-	55 / -	60/ -	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	MnDOT 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	MnDOT Laboratory Manual 1206	≥ 40
Bulk Specific Gravity	MnDOT Laboratory Manual 1205	

3139.5 SAMPLING AND TESTING

Perform sampling, sieve analysis, lumps, crushing, and shale testing meeting the requirements of the MnDOT Laboratory Manual.

S - 65 **(3590) EPOXY RESIN PAVEMENT MARKINGS (FREE OF TOXIC HEAVY METALS)**

The provisions of Mn/DOT 3590.3 are hereby deleted and replaced with the following:

3590.3 Specific Requirements

A Epoxy Resin Material

The material shall be composed of epoxy resins and pigments only. No solvents are to be given off to the environment upon application to a pavement surface.

The composition shall be within the tolerance permitted for the product tested and approved by Mn/DOT. Type II material shall be completely free of TMPTA (Tri-Methyol Propane Tri Acrylate) and other multi-functional monomers.

All materials shall be free of lead, cadmium, mercury, hexavalent chromium and other toxic heavy metals as defined by the United States Environmental Protection Agency.

Color:

The color of the white epoxy shall be a pure flat white, free of tints. The color of the yellow epoxy shall closely match Color Number 33538 of Federal Standard 595 and shall conform to the following CIE Chromaticity limits using illuminant "C":

x | 0.470 | 0.485 | 0.520 | 0.480

y | 0.440 | 0.460 | 0.450 | 0.420

Daylight Directional Reflectance (Y), white, minimum 83

Daylight Directional Reflectance (Y), yellow, minimum 50

Testing will be according to:

Daylight Directional Reflectance..... ASTM D 2805

Color ..... ASTM D 2805

Adhesion Capabilities:

When the adhesion of the material to portland cement concrete (the concrete shall have a minimum of 2 070 kPa **[300 psi.]** tensile strength) is tested according to American Concrete Institute Committee 403 testing procedure, the failure of the system must take place in the concrete. The concrete shall be 32°C [**0°F**] when the material is applied, after which the material shall be allowed to cure for 72 hours at 23 ± 2°C [**73 ± 36° F**].

Abrasion Resistance:

When the abrasion resistance of the material is tested according to ASTM C 501 with a CS-17 wheel under a load of 1000 grams for 1000 cycles, the wear index shall be no greater than 82. (The wear index is the weight in milligrams that is abraded from the sample under the test conditions).

Hardness:

The Type D durometer hardness of the material shall be not less than 75 nor more than 90 when tested according to ASTM D2240 after the material has cured for 72 hours at 23 ± 2°C [**73 ± 36° F**].

Tensile Strength:

The tensile strength of the material, when tested according to ASTM D 638, shall not be less than 41 370 kPa [**6,000 psi**.] after 72 hours cure at 23 ± 2°C [**73 ± 36° F**].

Compressive Strength:

The compressive strength of the material, when tested according to ASTM D 695, shall not be less than 82,700 kPa **[12,000 psi.]** after 72 hours cure at 23±2°C [**73 ± 36° F**].

Thickness:

The epoxy pavement marking wet film thicknesses shall be a minimum of 380 µm [**15 mil**] on all pavement surfaces. For the Spec 2360 SUPERPAVE wearing courses the epoxy pavement marking wet film thicknesses shall be increase from a minimum of 380 µm [**15 mil**] to a minimum thickness of 508 µm [**20 mil**] wet film.

B Glass Beads

Glass beads shall meet the requirements of AASHTO M247, Type I, and:

a. Coatings -- the beads shall be treated according to the manufacturers recommendations and meet the requirements of Section 4.4.2 of M247, and

b. Roundness-- the beads shall have a roundness of at least 80%.

For 380 µm [**15 mil**] applications, glass beads shall be applied at a rate of at least 3.0 kg/L [**25 pounds per gallon].** A greater bead application rate may be necessary for meeting the performance criteria (minimum levels of retroreflectivity). This will require Contractors to consult with all the material manufacturers.

Time to No-Track:

Type I material shall be in "no-tracking" condition in 15 minutes or less and within 45 minutes for Type II material. The "no-tracking" condition shall be determined on an application of specified thickness to the pavement

and covered with glass beads at the rate of at least 3.0 kg/L [**25 pounds per gallon**]. The lines for this test shall be applied with striping equipment operated so as to have the material at manufacturer's recommended application temperature. This maximum "no-tracking" time shall not be exceeded when the pavement temperature varies from 10 to 49° C [**50 to 120° F**] and under all humidity conditions, providing the pavement is dry. The no-tracking time shall be determined by passing over the line with a passenger car or pickup truck at a speed of 40 to 55 km/hr [**25 to 35 mph**] in a simulated passing maneuver. A line showing no visual deposition of the material to the pavement surface when viewed from a distance of 15 m [**50 feet**] shall be considered as showing "no-tracking" and conforming to this requirement for time to "no-track."

S - 66 **(3592) DROP-ON GLASS BEADS**

The provisions of Mn/DOT 3592.3 are hereby deleted and replaced with the following:

3592.3 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 - 67 **(3891) STORM DRAIN INLET PROTECTION**

The provisions of MnDOT 3891 are supplemented and/or modified with the following:

s 67.1 MnDOT 3891.3A Rock Log, is revised to read as follows:

Rock logs shall meet the requirements of 3897.2 Filter Log Type Rock Log.

s 67.2 MnDOT 3891.3B Compost Log, is revised to read as follows:

Compost logs shall meet the requirements of 3897.2 Filter Log Type Compost Log

S - 68 **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 68.1 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 68.2 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)."

END OF DIVISION S

S.A.P. No. 159-130-004
DATE: May 17, 2013

Miscellaneous Concrete Construction City of Rochester

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SPECIAL PROVISIONS

DIVISION SB

MISCELLANEOUS CONCRETE CONSTRUCTION

SPECIAL REQUIREMENTS

- (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.

- (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.

- <u>(2401) CONCRETE BRIDGE CONSTRUCTION</u>

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-4.1 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-4.2 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.

- <u>(2402) STEEL BRIDGE CONSTRUCTION</u>

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.

- <u>(2433) REINFORCEMENT BAR ANCHORAGE (POST-INSTALLED)</u>

A. Description of Work

This work consists of furnishing and installing a drilled-in reinforcement bar anchorage system of the type, shape and size specified, and at the locations shown in the plans.

All work shall be performed in accordance with the applicable provisions of MnDOT 2433, 2472, and 3301; shall meet the requirements of the Plans; as directed by the Engineer; and the following:

Anchorages shall be installed with a chemical adhesive and tested to the anchorage proof load as per this provision.

The Contractor shall submit, for approval by the Engineer, the following chemical adhesive supplier's product literature or calculations to establish embedment depth. This information will demonstrate compliance with the specification:

- Name of supplier
- Full product name (as given in supplier's literature)
- Embedment depth as determined from supplier's literature

B. Construction Requirements

The Contractor shall supply an anchorage system that meets the requirements of these special provisions and the plan, and be installed as per the manufacturer's recommendations.

The holes for anchoring the reinforcement bars will be drilled into 4000 psi. concrete at the locations and embedment depths shown in the plans.

C. Testing

Laboratory tests that include static load tests for ultimate (nominal) pullout strengths shall be performed on anchorage systems that are subject to tensile loads. The tests, in accordance with ASTM E 488 (Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements), shall be performed and certified by an independent testing laboratory. The Contractor shall furnish the Engineer with the test reports and the specification sheets that are prescribed by ASTM E 488.

D. Method of Measurement

Measurement will be by the single unit of each for furnishing and installing acceptable reinforcement bar anchorages complete in place. Anchorages installed that are not shown in the Plans or ordered by the Engineer will not be measured for payment.

E. Basis of Payment

The weight of the "Anchorages Type Reinforcement Bars", has been included with and shall be paid for as part of Item No. 2401.541 “Reinforcement Bars (Epoxy Coated)”. All costs for furnishing, placing and testing the reinforcement bar anchorages as specified shall be included in the price bid for item “Reinforcement Bars (Epoxy Coated)”.

- (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]

Table 2461-5 Slump Designation	
Slump Designation	**Slump Range without Water Reducer, *in [mm]***
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

Table 2461-8 Allowable Variations on Percent Passing Sieves	
Sieve Size	**Allowed Percentage**
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.
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.
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

Table 2461-18 Allowable Testing Tolerances	
Test	**Allowable Tolerance**
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 price for Structural Concrete includes the cost of production, placement, finishing, curing, and protection of concrete.

- <u>(2471) STRUCTURAL METALS</u>

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.

- <u>(2472) METAL REINFORCEMENT</u>

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

- <u>(3385) ANCHOR RODS</u>

The provisions of 3385 shall apply except as modified below:

Add the following to 3385.2:

Anchorages supplied under this specification must be pre approved by the MnDOT Laboratory and the certification from the MnDOT Laboratory must not be more than one year old. The Contractor must furnish the Engineer a copy of the MnDOT approval letter for the source, size and grade of anchorages specified in the plans and also a certification stating that anchor bolts of the size and grade specified were manufactured and tested in accordance with ASTM F 1554 (e.g. heat analysis and heat number, tensile tests, zinc coating weight and thickness, etc.).

- <u>(3391) FASTENERS</u>

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-12.1 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.

DIVISION SS – SIGNAL REQUIREMENTS

SS- 1 (1802) QUALIFICATION OF WORKERS

The provisions of MnDOT Specification 1802 are hereby supplemented with the following:

Signal and Lighting Certification will be required for all Contractors, Supervisors or Foremen involved in the field installation of the Traffic Signal and/or Lighting portion of this Project. Signal and Lighting Certification, Level II, is available through the MnDOT Office of Traffic, Safety, and Technology (OTST). Questions regarding certification or past certification may be directed to the MnDOT Office of Traffic, Safety, and Technology (OTST) at Telephone No. (651) 234-7055.

Certified Contractor personnel shall be on the Project work site at all times to perform or directly supervise the installation of a Traffic Signal System or a Lighting system.

SS- 2 (2565) REVISE SIGNAL SYSTEM

This work shall consist of furnishing and installing materials and electrical equipment as specified herein, all to revise pedestrian features, install flashing yellow arrow signals, paint the existing signal system for the intersection, move an existing signal pole and extend wiring, and install loop detectors (prior to installation of new pavement – do not use saw-cut method) in new left turn lane on one existing traffic control signal system at the intersection of **41st Street NW and East Frontage Road in the City of Rochester, Olmsted County** in accordance with the applicable provision of MnDOT 2565; with the current edition of the National Electrical Code; with the Plans; and as follows:

ss 2.1. General

A. The Contractor shall install the following materials and electrical equipment:
   1. Eight (8) APS units and Pedestrian Push Button Stations (mounting hardware included).
      (Owner furnished, Contractor installed)
   2. Eight (8) 4-section vehicle heads, including housings, visors, backplates, Astro bracketing, and LED modules.
      (Owner furnished, Contractor installed)
   3. One (1) 3-section vehicle head, including housings, visors, backplates and LED modules.
      (Owner furnished, Contractor installed)
   4. Navigator Accessible Pedestrian Signal (APS) indications, one for each pushbutton location, and mounting hardware.
      (Owner furnished, Contractor installed)
   5. Nine (9) Loop Detectors and associated wiring as indicated on the plans.
      (Contractor shall furnish and install the loop detectors)
   6. One (1) 30 foot and One (1) 35 foot mast arms as indicated on the plans.
      (1 Salvaged and 1 Owner furnished, Contractor installed)

B. The Contractor shall install the all components of the revised signal and shall make all field lead connections in each traffic signal cabinet as directed by the Engineer to make each traffic control signal system operational.

C. The Contractor shall be responsible for all sod and concrete restoration on the South side of the intersection. This shall be an incidental item.

D. The Contractor shall be responsible for salvaging the following signal components and return to the City Public Works North Shop located off of West River Parkway. The Contractor shall coordinate delivery and storage of the salvaged material with Ken Ratike of Rochester Public Works at (507) 254-9910. The salvaged items include: mast arms, signal heads, bracketing, hand hole castings and covers. All material, once removed, shall become the property of the City of Rochester. The Contractor shall be responsible for transporting and neatly stockpiling the items at an area designated by Ken Ratike of Rochester Public Works.

E. Placed Orders For Materials

WITHIN 15 DAYS AFTER THE CONTRACT APPROVAL NOTICE MAILING DATE, THE CONTRACTOR SHALL FURNISH EVIDENCE TO THE ENGINEER, IN WRITING, THAT ORDERS HAVE BEEN PLACED FOR ALL SIGNAL SYSTEM COMPONENTS REQUIRED ON THE PROJECT.

F. Shop Drawings

THE CONTRACTOR SHALL PROVIDE SHOP DETAIL DRAWINGS FOR MATERIALS AND ELECTRICAL EQUIPMENT <u>AS SPECIFIED IN THE CONTRACT DOCUMENTS</u>.

G. Gopher State One Call

H. The contractor will be allowed to operate the intersection as an ALL-WAY STOP for a period of time, up to 10 days, as needed for the main contractor to accomplish the signal work. All signing shall be installed & maintained according to the MUTCD at the contractor's expense. A three-day notice is required before turning off the signal and installing the ALL-WAY STOP.

The Contractor must adhere to all requirements of Gopher State One Call including the following:

The Contractor is responsible for marking the proposed excavation area by utilizing white markings. The white markings must delineate the **<u>actual</u> excavation area** where the locating of underground facilities is required.

I. All components of each signal system, including the poles, mast arms, cabinets, luminaires & arms, signal head hardware, signal heads, background shields, visors, push buttons, pedestrian push button poles, advance warning flashers, etc., shall be painted in accordance with MnDOT 2565.3T4.

ss 2.2. Materials

A. Handholes

Contractor shall furnish and install new handholes. The castings from the existing handhole castings and covers shall be salvaged and given to the City. New Handholes shall be MnDOT approved Handholes and Handhole Covers listed on the MnDOT Approved/Qualified Products Lists WEB site for Signals:

http://www.dot.state.mn.us/products/index.html

B. Conduit

The Contractor shall furnish and install either non-metallic rigid conduit (N.M.C.), or Continuous Length Conduit (HDPE) at the locations indicated in the Plans. The size of the conduit shall be as indicated in the Plan. All conduit shall be in accordance with the following:

1. Rigid Non-Metallic Conduit (NMC) and Continuous Length Conduit (HDPE):

Shall be in accordance with MnDOT 3803, except as follows:

Shall be NRTL listed as being compliant with UL 651B.

a. All references to ASTM F 2160 shall be deleted.
b. Shall be Schedule 80 conduit and fittings for all installations.
c. Conduit fittings shall be appropriate for use with HDPE continuous length conduit.
d. Shall be capable of being installed by stitching, plowing, trenching, or directional boring methods.
e. Shall be either "GREY" or “RED” in color.
f. Shall be marked on the outside of conduit indicating the following:
    - Manufacturer’s name
    - Size of conduit
    - Type of conduit (HDPE, etc.)
    - NRTL Certification Mark
    - Any other markings required by the N.E.C.
g. Before the cables and conductors are installed, non-metallic conduit bell ends **(appropriately sized for the HDPE type conduit)** shall be installed to prevent damage to the cables and conductors.
h. All conduit from concrete foundations to the nearest handhole shall be either rigid steel conduit (R.S.C.) or rigid non-metallic conduit (N.M.C**.). HDPE continuous length conduit is not allowed for use between concrete foundations and the nearest handhole.**

C. Mast Arms (Steel Requirements)

1. All steel used in construction of mast arm pole standards, mast arm extensions and luminaire davits shall be in accordance with the provisions of MnDOT 3310, and as follows:
    a. The plate steel used shall be ASTM A709 Gr. 50 (A572 Gr. 50)
    b. The sheet steel used shall be ASTM A1011 Gr. 50
    c. The structural coil used shall be ASTM A1018 Gr. 50

2. All steel used on mast arm pole standards, mast arms (including access covers), and luminaire davits shall be galvanized in accordance with the provisions of MnDOT 3394.

D. Straight and Angle Mount Plumbizers

The Contractor shall furnish and install straight or angle mount plumbizers at locations as indicated in the plan.

The straight and angle mount plumbizers shall be MnDOT approved straight or angle mount plumbizers as listed on the MnDOT Approved/Qualified Products List WEB site for Signals:

http://www.dot.state.mn.us/products/index.html

E. Angle and Straight Mount Caps

The Contractor shall furnish and install angle and straight mount caps at locations as indicated in the plan.

The angle and straight mount caps shall be MnDOT approved angle and straight mount caps as listed on the MnDOT Approved/Qualified Products List WEB site for Signals:

http://www.dot.state.mn.us/products/index.html

F. Threaded Hub and Flange Pole Adaptor

The Contractor shall furnish and install threaded hub and flange pole adaptors at locations as indicated in the plan.

The threaded hub and flange pole adaptors shall be MnDOT approved threaded hub and flange pole adaptors as listed on the MnDOT Approved/Qualified Products List WEB site for Signals:

http://www.dot.state.mn.us/products/index.html

G. Terminal Blocks

Terminal blocks shall be in accordance with the provisions of MnDOT 2565.3J5.

All terminal blocks shall be coated with a pole base terminal block coating. MnDOT approved Pole Base Terminal Block Coatings are listed on the MnDOT Approved/Qualified Products Lists WEB site for Signals:

http://www.dot.state.mn.us/products/index.html

The coating of the terminal block shall include spraying the terminal connections and the exposed wire ends where crimped to the spade connector.

H. Electrical Cables and Conductors for Traffic Signal Systems

All electrical cables and conductors for traffic signal systems shall be in accordance with the applicable provisions of MnDOT 3815, and as specified herein.

1. Cable Markings:

All electrical cables, except Loop Detector Lead-in Cable - IMSA 50-2 and the 3/C #20 Emergency Vehicle Preemption (EVP) Detector Cable used in signal system construction shall have the jacket surface ink printed with the following information:

a. Manufacturer Name
b. Year of Manufacture (Date Code)
c. Type of Wire or Cable (i.e. TC, XHHW-2, THWN)
d. Size and Number of Conductors
e. Voltage Rating
f. Conductor Insulation Rating
g. Nationally Recognized Testing Laboratory (NRTL) Certification Mark indicating the cable is listed. [i.e. UL, ITSNA (ETL), CSA]
h. Labeled as sunlight resistant (Sun Res), direct burial (Dir Bur), Oil Resistant 1 (Oil Res 1)

Signal Control Cable shall have additional markings as follows.

a. Traffic Signal Cable

b. Foot Markers
c. -35º C Cold Bend

Loop Detector Lead-in Cable - IMSA 50-2 shall meet the marking requirements set forth in the International Municipal Signal Association (IMSA) specification.

Emergency Vehicle Preemption (EVP) Detector Cable (3C # 20) shall be surface marked in accordance with the National Electrical Code (NEC) and shall have additional markings as follows:

a. Labeled as sunlight resistant, direct burial
b. Year of Manufacture (Date Code)
c. Conductor Insulation Rating
d. Foot Markers

All cable markings shall be repeated at intervals not exceeding 24 inches on the jacket surface.

2. Signal Control Cable:
   a. All signal control cable shall be listed by a National Recognized Testing Laboratory (NRTL) as defined by the U.S. Department of Labor. The testing laboratory must be listed by OSHA in its scope of recognition for the applicable tests being conducted as required by this specification. A list of recognized testing labs for products sold in the United States may be found on the U.S. Department of Labor's web site:

      http://www.osha.gov/

   b. The cables shall be tested by an NRTL and shall meet all of the following listed specifications and general requirements:

      UL 44
      UL 1277
      UL 1685

   c. All signal control cable shall conform to the following :

      ICEA T-29-520
      ICEA T-30-520
      ICEA S-73-532 (NEMA WC 57)

   d. Shall be suitable for use at 90°C in wet or dry locations

   Note: This cable will be submersed in water for long periods of time

   e. Shall be suitable for direct burial
   f. Shall be sunlight resistant
   g. Shall be rated for 600 Volts
   h. Shall be rated as a Tray Cable
   i. Shall have a cable designation of XHHW-2
   j. Shall be #14 AWG
   k. Each conductor shall be a Class B (7 strand) soft drawn, bare or tinned copper per ASTM B3, ASTM B8 and ASTM B33
   l. Shall be constructed with circuit identification in accordance with method 1 of ICEA S-73-532 (NEMA WC-57) Table E-1 except as modified below.

   3 Conductor:

      1. Black
      2. White
      3. Green

4 Conductor:

1. Black
2. White
3. Red
4. Black/Red stripe

6 Conductor:

1. Black
2. White
3. Red
4. Black/Red stripe
5. Orange
6. Blue

12 Conductor:

1. Red
2. Orange
3. Blue
4. White
5. Black/Red stripe
6. Orange/Black Stripe
7. Blue/Black Stripe
8. White/Black Stripe
9. Black
10. Black/White Stripe
11. Red/Black Stripe
12. White/Red Stripe

m. Shall have a minimum average insulation thickness of 30mils
n. Shall be constructed using a tape binder
o. Shall have a cable jacket that has a substantially circular cross-section. The outer cable jacket shall not be convoluted and shall not have a ropy appearance.
p. Shall have non-hygroscopic fillers used in the interstices of the cables where necessary to give the completed cable assembly a circular cross-section.
q. Fillers made of Jute or Paper are not acceptable.
r. Shall have a rip cord between the outer jacket and the tape binder
s. Bare copper or tinned wires are acceptable
t. Outer jacket of the 4 conductor cable shall have maximum diameter of 0.480 inches.
u. Outer jacket of the 6 conductor cable shall have maximum diameter of 0.560 inches.
v. Shall carry an oil resistance level 1
w. Shall meet a -35° C (-31° F) cold bend test
x. For cables employing a PVC jacket a low migration grade of PVC is required
y. The cable jacket shall pass the 7 day (168 hr) oven age test @ 121° C (249.8° F) per UL 1581
z. This cable carries multiple ratings. Where the requirements of different ratings are in conflict the more stringent specification shall be the parameter the cable is required to meet.
aa. The manufacturer shall provide to Minnesota Department of Transportation (MnDOT) the test qualification report from the NRTL stating that the submitted cable meets all the requirements of this specification.

bb. Once a cable has been accepted by MNDOT as meeting the requirements of this specification no substitution of materials will be allowed unless the manufacturer has received written permission from MnDOT allowing the substitution.

All field wiring terminations shall be as indicated on the field wiring diagram included in the Plan set.

3. The following cables are not required to be listed by a Nationally Recognized Testing Laboratory (NRTL):
   2/c #14 (Loop Detector Lead-in Cable)
   3/C #20 (EVP cable)

4. Loop Detector Lead In Cable
   Shall be in accordance with 3815.2C4(b)

I. Vehicle Signal Faces (Poly-Carbonate)

All new vehicle signal faces shall be in accordance with the applicable provisions of MnDOT 3834, except as follows:

All vehicle signal faces, visors, and background shields shall be fabricated with ultraviolet and heat stabilized black poly-carbonate materials, conforming to I.T.E. requirements.

MnDOT approved Poly-Carbonate Signal Heads are listed on the MnDOT Approved/Qualified Products Lists WEB site for Signals:

http://www.dot.state.mn.us/products/index.html

The Contractor shall furnish and install a metal support plate (supplied by the signal head Manufacturer) on the inside of the signal indication at the attachment point of the straight or angle mount plumbizer (one plate each for inside the upper and lower signal housing at the attachment point).

Vehicle signal faces shall utilize either straight or angled mounts. The mounts shall be in accordance with these special provisions and as detailed in the Plan.

The Contractor shall furnish and install signal head mounting spacers when mounting a four or five section signal face. See attached diagram located elsewhere in these Special Provisions.

MnDOT approved mounting spacers are listed on the MnDOT Approved/Qualified Products Lists WEB site for Signals:

http://www.dot.state.mn.us/products/index.html

The Contractor shall also furnish and install the required through-bolts for connecting the individual sections. See attached diagram located elsewhere in these Special Provisions.

In all cases, two sections of the vehicle signal head shall be mounted below the straight or angled mount with the remaining sections mounted above the straight or angled mount. The indications above or below the straight or angled mount shall be fastened together by means of a noncorrosive 3-bolt mounting assembly. The 3-bolt mounting assembly shall utilize locknuts to prevent the assembly from loosening.

The installation of the vehicle signal faces shall be to the satisfaction of the Engineer.

All "Red", "Yellow", and "Green" signal indications shall utilize light-emitting diode (LED) units.

MnDOT approved LED Signal Indications are listed on the MnDOT Approved/Qualified Products Lists WEB site for Signals:

http://www.dot.state.mn.us/products/index.html

For each LED signal indication, the Contractor shall submit to the Engineer, for approval, four copies of all warranty information indicating the required 5-year warranty period (**from date of installation**), product invoice, and documentation indicating name of manufacturer, model number, and serial number . The four copies shall be distributed by the Engineer as follows:

1. City of Rochester

The Contractor shall, to the satisfaction of the Engineer, affix to the back of each "LED" signal indication a permanent label, or permanently marked (utilizing a "oil based paint marker") with the actual date of installation. The oil based paint marker shall be a contrasting color to ensure that the date can be easily read.

J. Accessible Pedestrian Signals (APS) – (Audible Pedestrian Push Button Units and Associated Traffic Signal Cabinet Equipment)

The Contractor shall install "Accessible Pedestrian Signals (APS)". MnDOT approved "Accessible Pedestrian Signals (APS)" are listed on the MnDOT Approved/Qualified Products Lists WEB site for Signals:

http://www.dot.state.mn.us/products/index.html

All Accessible Pedestrian Signals (APS) components with the exception of the push button units shall be installed by the Contractor in the signal cabinets.

The contractor shall insure the order form below is presented to the Accessible Pedestrian Signal (APS) manufacturer so the appropriate Braille message will be added to the pedestrian information sign and the correct voice messages will be programmed in the pedestrian push button stations.

Signs required for APS pushbuttons are incidental and shall be furnished and installed by the Contractor.

Accessible Pedestrian Signal (APS)
ORDER FORM
(Fill out one form per intersection)
Intersection: 4h Street SW and 1st Ave SW

Total Qty of Pedestrian Push Buttons 8

Control Board: One needed for each intersection **Qty** 1
CCU: (Central Control Unit) One needed for each intersection **Qty** 1
CONFIG: (Configurator) One needed for each intersection **Qty** 1

Push Button and Sign Braille Information

Button	Arrow Direction R/L	Button	Street Name (Street Being Crossed)
PB2-1	**Left**	PB2-1	**41st Street NW**
PB2-2	**Right**	PB2-2	**41st Street NW**
PB4-1	**Left**	PB4-1	**East Frontage Road**
PB4-2	**Right**	PB4-2	**East Frontage Road**
PB6-1	**Left**	PB6-1	**41st Street NW**
PB6-2	**Right**	PB6-2	**41st Street NW**
PB8-1	**Left**	PB8-1	**East Frontage Road**
PB8-2	**Right**	PB8-2	**East Frontage Road**

Custom Voice Message Details

Voice on Location and Walk Message(s) Please give phonetic pronunciation on difficult street names so that the message will be recorded correctly.
*Note that unless Street, Drive, Avenue etc…are absolutely necessary for intersection identification, it is recommended to not include them in the verbal message.

PB2-1

Wait Message:

Wait to Cross | **41st** (Street Being Crossed) | **at** | **East Frontage Road** (Intersecting Street)

Walk Message:

41st (Street Being Crossed) | **Walk sign is on to cross** | **41st** (Street Being Crossed)

PB2-2

Wait Message:

Wait to Cross | **41st** | **at** | **East Frontage Road**

	(Street Being Crossed)		(Intersecting Street)
Walk Message:			
	41st	**Walk sign is on to cross**	**41st**
	(Street Being Crossed)		(Street Being Crossed)

PB4-1

Wait Message:			
Wait to Cross	**East Frontage Road**	**at**	**41st**
	(Street Being Crossed)		(Intersecting Street)
Walk Message:			
	East Frontage Road	**Walk sign is on to cross**	**East Frontage Road**
	(Street Being Crossed)		(Street Being Crossed)

PB4-2

Wait Message:			
Wait to Cross	**East Frontage Road**	**at**	**41st**
	(Street Being Crossed)		(Intersecting Street)
Walk Message:			
	East Frontage Road	**Walk sign is on to cross**	**East Frontage Road**
	(Street Being Crossed)		(Street Being Crossed)

PB6-1

Wait Message:			
Wait to Cross	**41st**	**at**	**East Frontage Road**
	(Street Being Crossed)		(Intersecting Street)
Walk Message:			
	41st	**Walk sign is on to cross**	**41st**
	(Street Being Crossed)		(Street Being Crossed)

PB6-2

Wait Message:			
Wait to Cross	**41st**	**at**	**East Frontage Road**
	(Street Being Crossed)		(Intersecting Street)
Walk Message:			
	41st	**Walk sign is on to cross**	**41st**
	(Street Being Crossed)		(Street Being Crossed)

PB8-1

Wait Message:			
Wait to Cross	**East Frontage Road**	**at**	**41st**
	(Street Being Crossed)		(Intersecting Street)
Walk Message:			
	East Frontage Road	**Walk sign is on to cross**	**East Frontage Road**
	(Street Being Crossed)		(Street Being Crossed)

PB8-2

Wait Message:			
Wait to Cross	**East Frontage Road**	**at**	**41st**
	(Street Being Crossed)		(Intersecting Street)
Walk Message:			
	East Frontage Road	**Walk sign is on to cross**	**East Frontage Road**
	(Street Being Crossed)		(Street Being Crossed)

K. Paint

Materials to be used shall be delivered to the work sites in original unopened containers, bearing manufacturer's name and content specifications. Brand names specified hereinafter are used for the purpose of establishing quality and types of paint to be used in the work. Other types must be shown to be "equal". The decision of the city painter shall be final.

Primer paint shall be as manufactured by **Sherwin Williams Macropoxy 646 Fast Cure Epoxy**, attached herein, and applied according to manufacturer's written directions.

Finish coat paint shall be as manufactured by **Sherwin Williams Acrolon 218 HS Acrylic Polyuethane**, attached herein, applied in accordance with the manufacturer's written directions, and shall be one (1) coats of the paint as follows:

Color of "grey".

The existing yellow vehicle signal heads and existing and new pedestrian indications shall be painted with an aerosol can in **gloss black.**

MnDOT approved paints are listed on the Office of Materials WEB site under Approved Products List:

http://www.mrr.dot.state.mn.us/materials/materials.asp

http://www.dot.state.mn.us/products/paint/trafficsps.html

ss 2.3. Construction Requirements

A. Accessible Pedestrian Push Button Units

Accessible pedestrian push button units shall be installed at the locations as indicated on the plans. Each push button unit contains three (3) custom components; sign with Braille, push button arrow direction and a custom voice message. When installing the push button units, careful attention must be paid so the correct button is placed in the proper location. The button must be mounted facing the pedestrian landing.

The contractor shall also follow the manufactures installation requirements.

The Contractor shall apply to the APS wire termination blocks, after wire installation, an electrical insulating coating. MnDOT approved Electrical Insulating Coatings are listed on the MnDOT Approved/Qualified Products Lists WEB site for Signals:

http://www.dot.state.mn.us/products/index.html

The Contractor shall apply a bead of 100% clear silicone sealant around the top of the push button station housing where the push button comes in contact with the pole shaft.

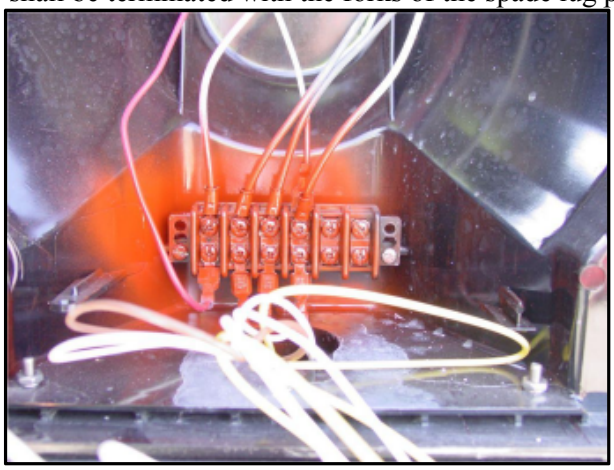
The Contractor shall furnish and install all mounting equipment and provide all field connections as necessary.

B. Wiring

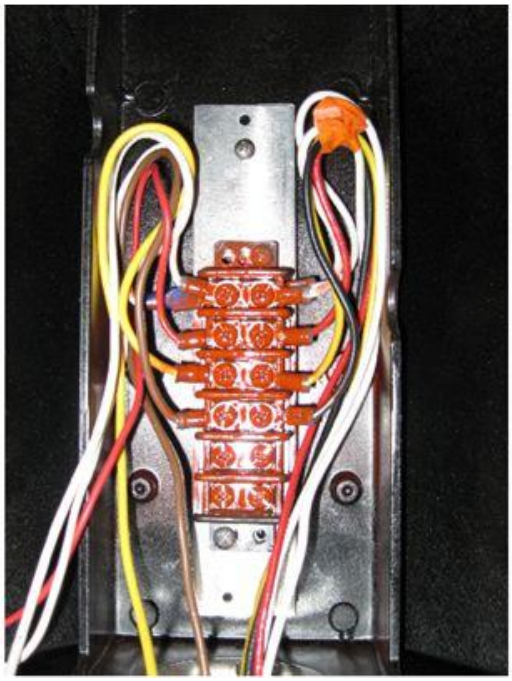
All wiring shall be in accordance with the Plan and MnDOT 2565.3J, except as follows:

a. Vehicle and Pedestrian Signal Faces

For horizontally mounted terminal blocks termination of the signal control cable running from the pole base into signal face shall be terminated with the forks of the spade lug pointing down.



For vertically mounted terminal blocks termination of the signal control cable running from the pole base into signal face shall be terminated with the spade lug mounted horizontally and a loop of wire extending up from the terminal block at least 3 inches above the block and then a loop back down to exit the head for termination in the pole base.



After the conductors have been properly terminated the entire terminal block and the spade lugs shall be sprayed with pole base terminal block coating.

MnDOT approved Pole Base Terminal Block Coatings are listed on the MnDOT Approved/Qualified

Products Lists WEB site for Signals:

http://www.dot.state.mn.us/products/index.html

The coating of the terminal block shall include spraying the terminal connections and the exposed wire ends where crimped to the spade connector.

b. Labeling

Labels to identify cables and conductors, except the individual conductors terminated at the cabinet fuse panels, shall consist of white vinyl adhesive tape wrapped around the cable. The labeling shall be hand written on the vinyl adhesive tape or produced with a label maker. If label marking is handwritten, the labeling shall be accomplished by utilizing a black permanent marker, in such a manner, that the markings are legible to the satisfaction of the Engineer. Labels produced with a label maker shall be suitable for use in wet locations, and this label must wrap around the cable one complete revolution with some overlap.

Labels to identify the individual conductors terminated at the cabinet fuse panels, shall utilize either machine printed labels, embossed plastic labels, vinyl adhesive pre-printed labels, or sleeve type labels placed around each conductor.

C. Bonding and Grounding

All bonding and grounding shall be in accordance with the provisions of MnDOT 2565.3H, except as follows:

1. All ground rod electrodes shall be UL Listed.
2. All ground rod electrodes shall be a single piece non threaded 5/8 inch diameter by 15 foot long copper clad ground rod.
3. The ground rod electrode in a pedestal foundation shall be placed slightly off center in the pedestal foundation as specified in the plans.
4. The ground rod electrode for signal poles (PA85, PA90, PA100) shall be placed in the nearest hand hole adjacent to the signal pole foundation as shown on the field wiring diagram of the plan. Grounding of the signal poles shall be accomplished by bonding together the #6 AWG, stranded, insulated green grounding conductor that runs from the traffic signal cabinet to the ground rod electrode and thru to the pole base. The ground rod electrode shall be placed in the hand hole with the top of the ground rod being installed approximately 3 inches below the bottom of the handhole cover as specified in the plans.
5. Bonding of the #6 AWG stranded, insulated green grounding conductor to the signal pole base 5/16" grounding stud shall be accomplished by use of a UL listed Re-usable screw type active clamping ground lug with a tang that connects to the 5/16" signal pole base grounding stud.
6. Bonding of all ground rod electrodes to the #6 AWG stranded, insulated green conductor coming from the traffic signal cabinet and running to the signal pole base shall be accomplished by exothermic welding.
7. The exothermic welding is achieved by:
    a) Stripping off enough insulating material from the #6 AWG stranded green insulated grounding wire to ensure the insulation does not burn or melt during the welding process.
    b) Using a manufacturer's specific sized mold for exothermic welding of a #6 AWG stranded copper wire being welded to a non threaded 5/8 inch copper clad ground rod electrode. This mold must be a T type configuration with a 3 wire tap or 2 wire tap as specified in the plans.
    c) All exothermic welds shall be made in strict adherence to the weld manufactures instructions for material preparation, welding and testing of the exothermic weld.

8. Bonding of the #6 AWG stranded, insulated green grounding conductor to the signal pole base 5/16" grounding stud shall be accomplished by use of a UL listed Re-usable screw type active clamping ground lug with a tang that connects to the 5/16" signal pole base grounding stud.

9. The last paragraph on Page 650 shall read as follows:

   Metal poles, pedestals, cabinets, and other structures requiring a ground rod electrode shall be bonded to the ground rod electrode by a No. 6 stranded copper grounding electrode conductor. One end of the bonding jumper shall be attached to the lower part of the pole, pedestal, cabinet, or structure shaft or base and the other end attached to the ground rod electrode by an exothermic weld.

10. The first full paragraph on Page 651 shall read as follows:

    For bonding and grounding in all conduit systems, a No. 6 stranded insulated green equipment grounding conductor shall be installed with all electrical circuits. Where non-metallic conduit is to be installed for future use, the equipment grounding conductor may be omitted.

D. Oxide Inhibitor

The Contractor shall apply an oxide inhibiting agent to all No. 6 grounding connections after assembly and final connection.

E. Accessible Pedestrian Pushbuttons

Accessible pedestrian push buttons shall be installed at the locations as indicated on the plans. Each push button contains three (3) custom components; sign with Braille, push button arrow direction, custom voice messages. When installing these buttons careful attention to must be paid to the arrow direction and custom voice message so the correct button is placed in the proper location. The button must be mounted facing the pedestrian landing.

The Contractor shall apply to the APS wire termination blocks, after wire installation, an electrical insulating coating. MnDOT approved Electrical Insulating Coatings are listed on the MnDOT Approved Products List for Signals:

http://www.dot.state.mn.us/products/index.html

The Contractor shall apply a bead of 100% clear silicone sealant around the top half of the push button station housing where the push button comes in contact with the pole shaft button stations.

F. Handhole Installation

The Contractor shall install handholes in accordance with the provisions of MnDOT 2565.3E and as follows:

All handholes shall be backfilled after the frame casting and cover have been installed onto the handhole.

G. N.M.C. Installation

All excavations shall be backfilled and the backfilling shall be like in kind to the adjacent materials and compacted to approximately the same density as the adjacent soils. Sod, curb and gutters, sidewalks, etc.,

removed by construction operations shall be restored to approximately its original condition by the Contractor at his own expense to the satisfaction of the Engineer.

H. Painting

1. **Surface Preparation**

The Contractor shall prepare all surfaces prior to painting in accordance with the applicable provisions of MnDOT 2478; as directed by the Engineer; and as follows:

The Engineer may require limited scraping of flaking or peeling paint where necessary. **Sandblasting or power sanding is not permitted**.

If it is necessary to remove small amounts of loose and blistered paint, the Contractor shall collect the paint scrapings in accordance with the Occupational Safety & Health Administration (OSHA) and the Minnesota Pollution Control Agency (MPCA) hazardous waste rules. If the total amount of paint scrapings is less than 3% of a 5 gallon pail (approximately 2-1/3cups), the pail will be considered empty and the Contractor may dispose of the paint scrapings as solid waste. If the total amount of paint scrapings is in excess of 3% of a 5 gallon pail (approximately 2-1/3 cups), then the Contractor shall dispose of the paint scrapings in accordance with the Occupational Safety & Health Administration (OSHA) and the Minnesota Pollution Control Agency (MPCA) hazardous waste rules, and provide documentation to the engineer showing the disposal location and quantity.

Old glossy paint shall be roughened to ensure adhesion of the primer paint.

The surface shall be free of moisture, scaled paint, and foreign materials (such as concrete deposits, paper, tape, etc.). Rust will be removed before paint is applied.

After removal of any loose paint (if required), all items to be prime painted or finish painted shall be thoroughly cleaned (using detergent and a pressure washer method) of loose rust, grease, and salts to the satisfaction of the Engineer.

All cleaning operations shall be coordinated with the Engineer to insure proper inspection.

All metal surfaces shall be completely dry before application of the primer and/or paint.

The Contractor shall have the Engineer approve all surface preparation prior to the application of primer and paint.

2. **Prime Painting and Finish Painting Coats:**

Before commencing work the area to be painted shall be in proper condition to receive painting materials. The surfaces must be clean, dry, smooth and at proper temperatures as recommended by the paint manufacturer. No painting or finishing shall be done on any surface which is wet or damp. Surfaces shall be cleaned of adhering foreign matter, dirt, dust, finger smudges and pencil marks before applying the first coat. Subsequent coats shall not be applied until the surfaces are dry and hard.

The mast arm poles and transformer bases shall be prime painted before the application of the finish coats with a surface-tolerant primer compatible with the finish coat.

3. **Instruction Signs or Stickers:**

Any pedestrian instruction signs or stickers shall be removed prior to painting. New stickers will be furnished by the Contractor (installation of new stickers is the responsibility of the contractor).

4. **Workmanship**

All material shall be applied in accordance with the manufacturer's instructions for use of the product. No materials of different character or different manufacturer shall be intermixed. No material shall be thinned, except as recommended by the manufacturer.

5. **Inspection**

The project Inspector will be the city signal technician, Kevin Dunagan, 328-2474, or his representative. Inspection by City staff will be made to determine if the materials and work procedures meet these specifications. The Inspector is also available to answer questions on locations to be painted, type of paint, preparation etc.

The Contractor shall contact the Inspector one week prior to starting the work. The Contractor shall notify the Inspector at the following three stages at each work area to arrange for inspections prior to application of the next coat:

1) after surface preparation, cleaning, scraping and roughening of glossy paint,
2) after application of the primer coat, and
3) after application of the first top coat on primed areas.

Failure to request inspections and failure to comply with inspection notes will result in non-payment for the work not inspected.

6. **Cleanup**

All debris, refuse, and waste material shall be removed from the work sites every night, and shall be properly disposed of at the Contractor's expense and liability.

ss 2.4. Measurements and Payments

A. Revise Signal System

Furnishing and installing materials and electrical equipment and painting for the signal, pedestrian, revisions to the existing signal system at the intersection of **41st Street NW and East Frontage Road**, in Rochester, Olmsted County as contained in these Special Provisions and in the Plans will be measured as an integral unit and paid for as specified in MnDOT 2565.4 and MnDOT 2565.5 respectively for Item Number below:

ITEM	DESCRIPTION	UNIT
2565.616	REVISE SIGNAL SYSTEM	SYS

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

FOR

CITY PROJECT NO._____ J NO.__**(J9563)**

STATE PROJECT NO. _____**159-130-004**___

MINNESOTA PROJECT NO. _____

LOCATION: **TH 52 East Frontage Road – 41st Street NW to Pennington Court NW**

TYPE OF WORK **Road Reconstruction - Storm Sewer, Concrete Curb & Gutter, Concrete Sidewalk, Traffic Signal**

To comply with the General Stormwater Permit for Construction Activity (MN R100001)

STORM WATER POLLUTION PREVENTION PLAN CONTACTS

CONTACT INFORMATION		
Owner of the Site		
Business of Firm Name **City of Rochester**		
Last Name First Name Title **Nelson, Doug**	E-mail **dnelson@rochestermn.gov**	Telephone (*include area code*) **507-328-2423**
Mailing Address **201 4th Street SE, Rm 108**	City **Rochester**	State Zip Code **MN, 55904**
Alternate Contact Last Name First Name **Kelm, Russ**	E-mail **rkelm@rochestermn.gov**	Telephone (*include area code*) **507-328-2417**
Contractor (Person who will oversee implementation of the SWPPP)		
Business of Firm Name Enter Contractor Info.		
Last Name First Name Title x	E-mail x	Telephone (*include area code*) x
Mailing Address x x	City x	State Zip Code x
Alternate Contact Last Name First Name x	E-mail x	Telephone (*include area code*) x

FIGURE 1 – PROJECT LOCATION& IMPAIRED WATERS MAP

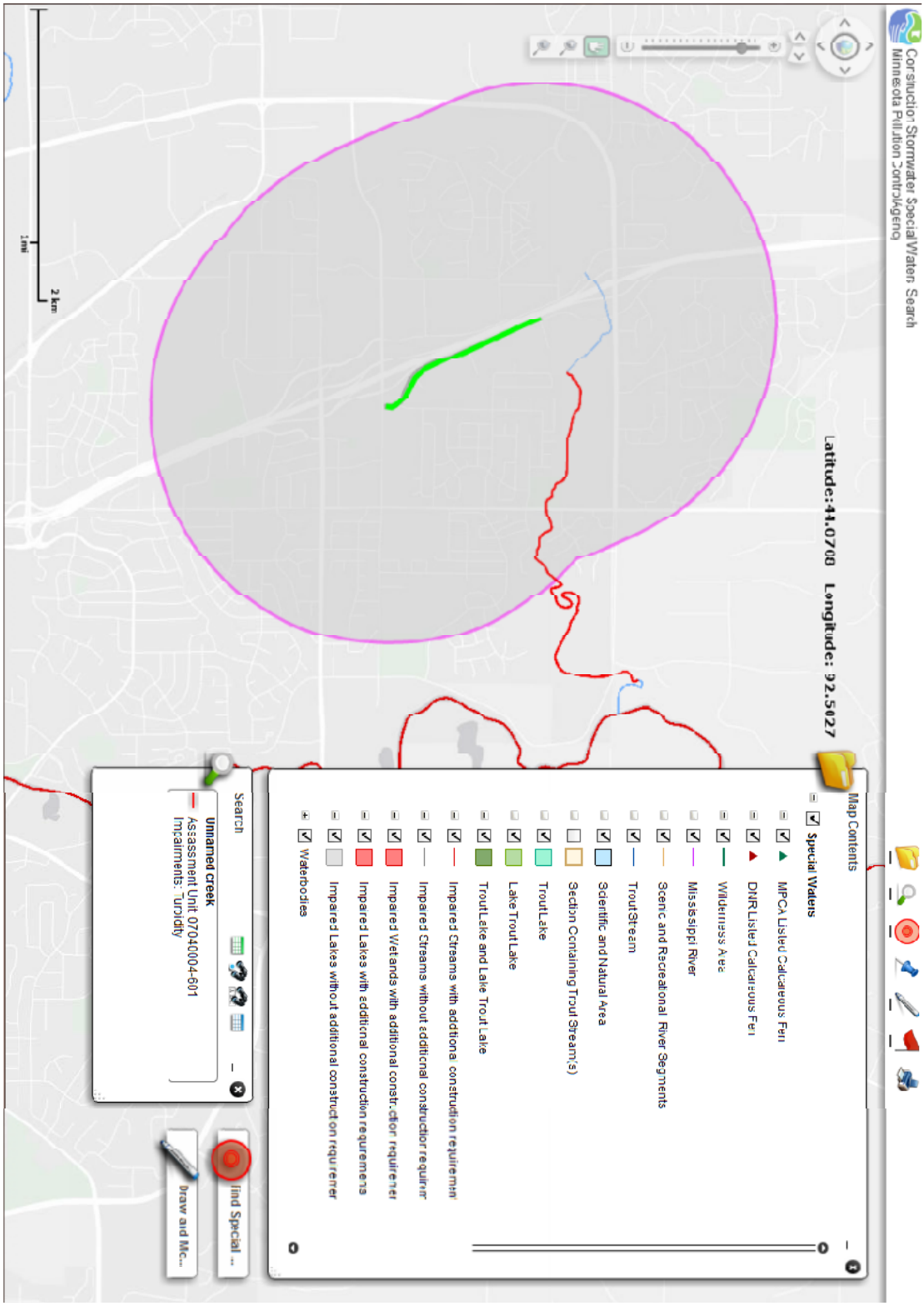


FIGURE 2.1 –NATURAL RESOURCES CONSERVATION SERVICE SOILS MAP

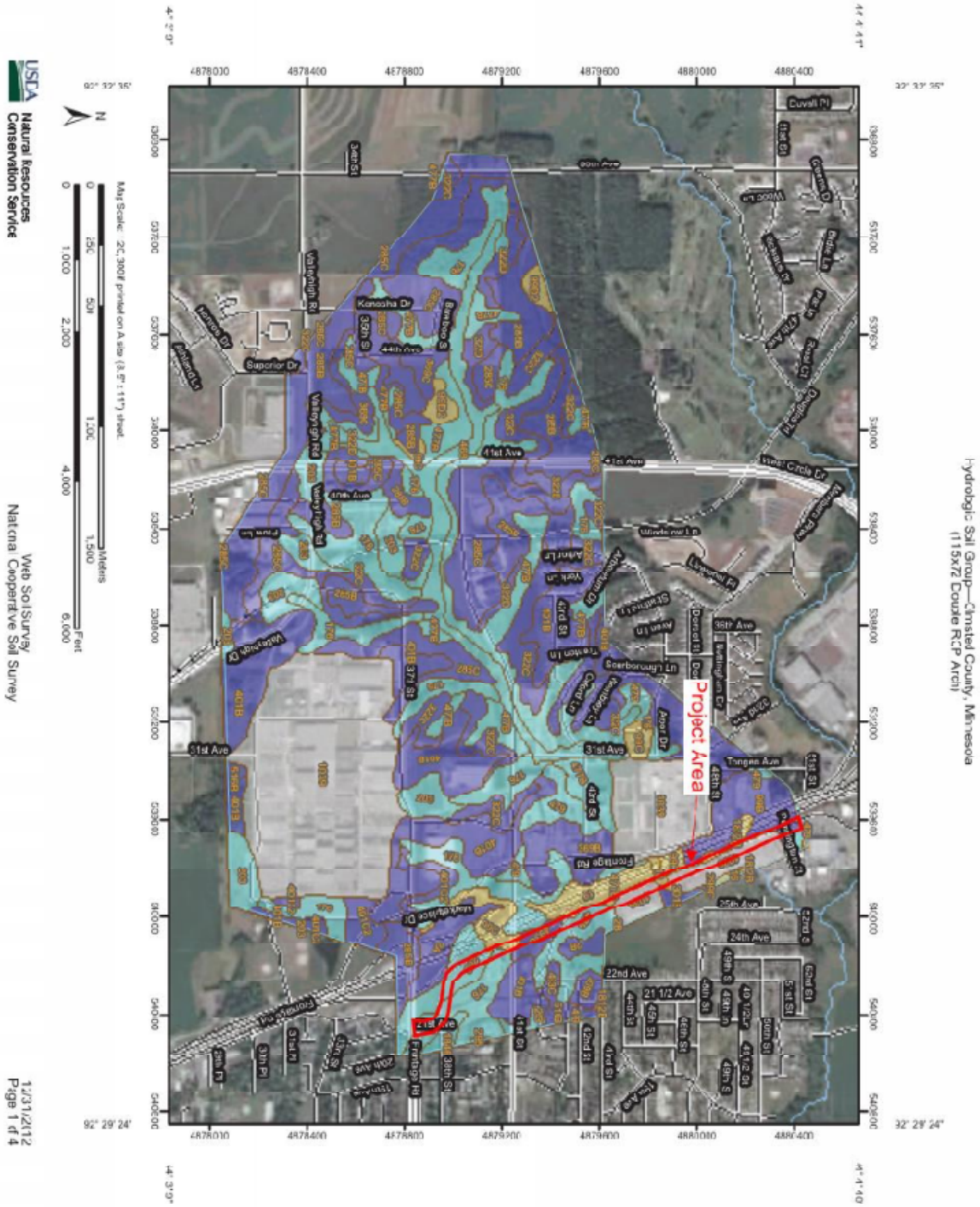
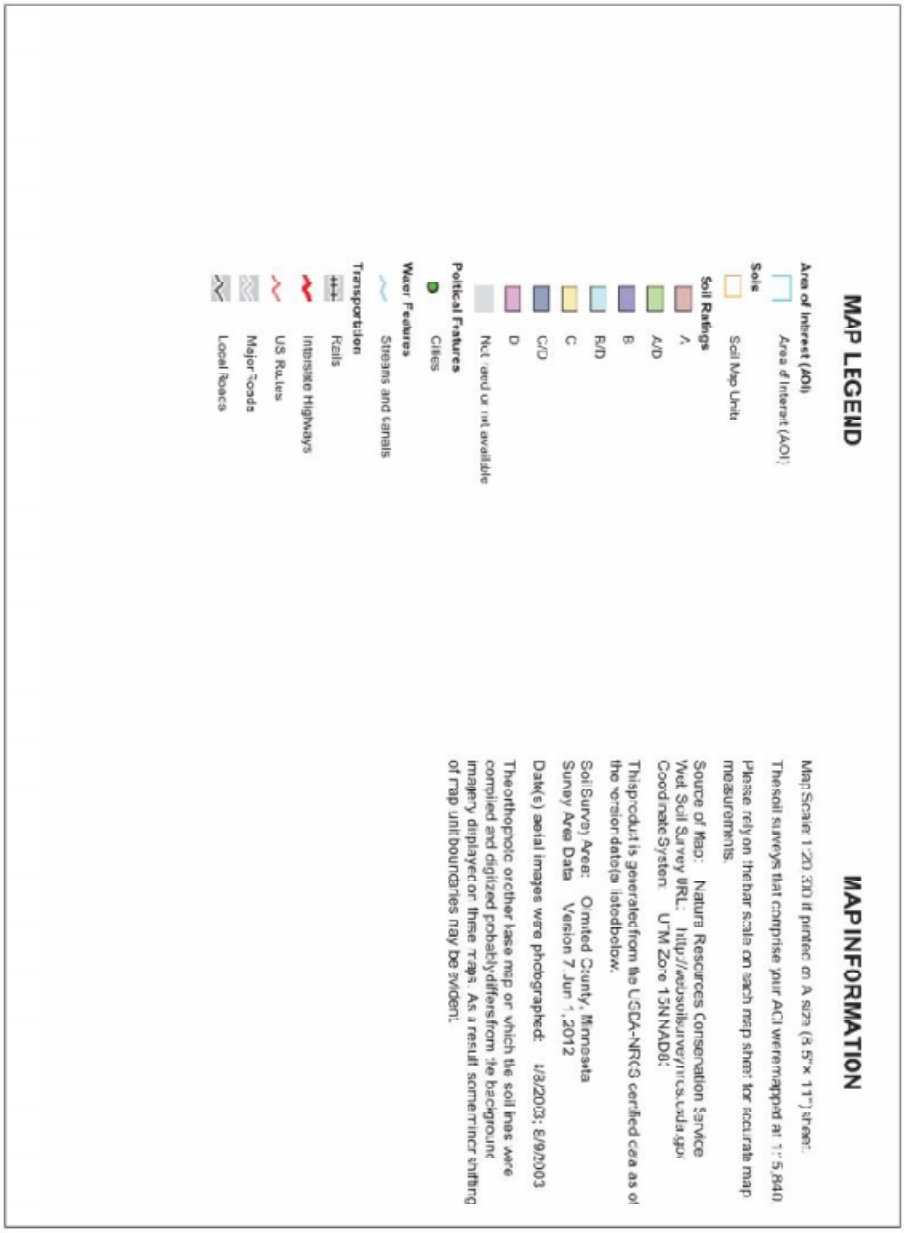


FIGURE 2.2 - NATURAL RESOURCES CONSERVATION SERVICE SOILS MAP LEGEND



Hydrologic Soil Group—Olmsted County, Minnesota
(115/72 Double RCP Arch)

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Soil Ratings
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Political Features
- Cities

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:20,330 if printed on A size (8.5" x 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:15,840.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 15N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Olmsted County, Minnesota
Survey Area Data: Version 7, Jun 1, 2012

Date(s) aerial images were photographed: 4/8/2003; 8/9/2003

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Natural Resources Conservation Service

Web Soil Survey
National Cooperative Soil Survey

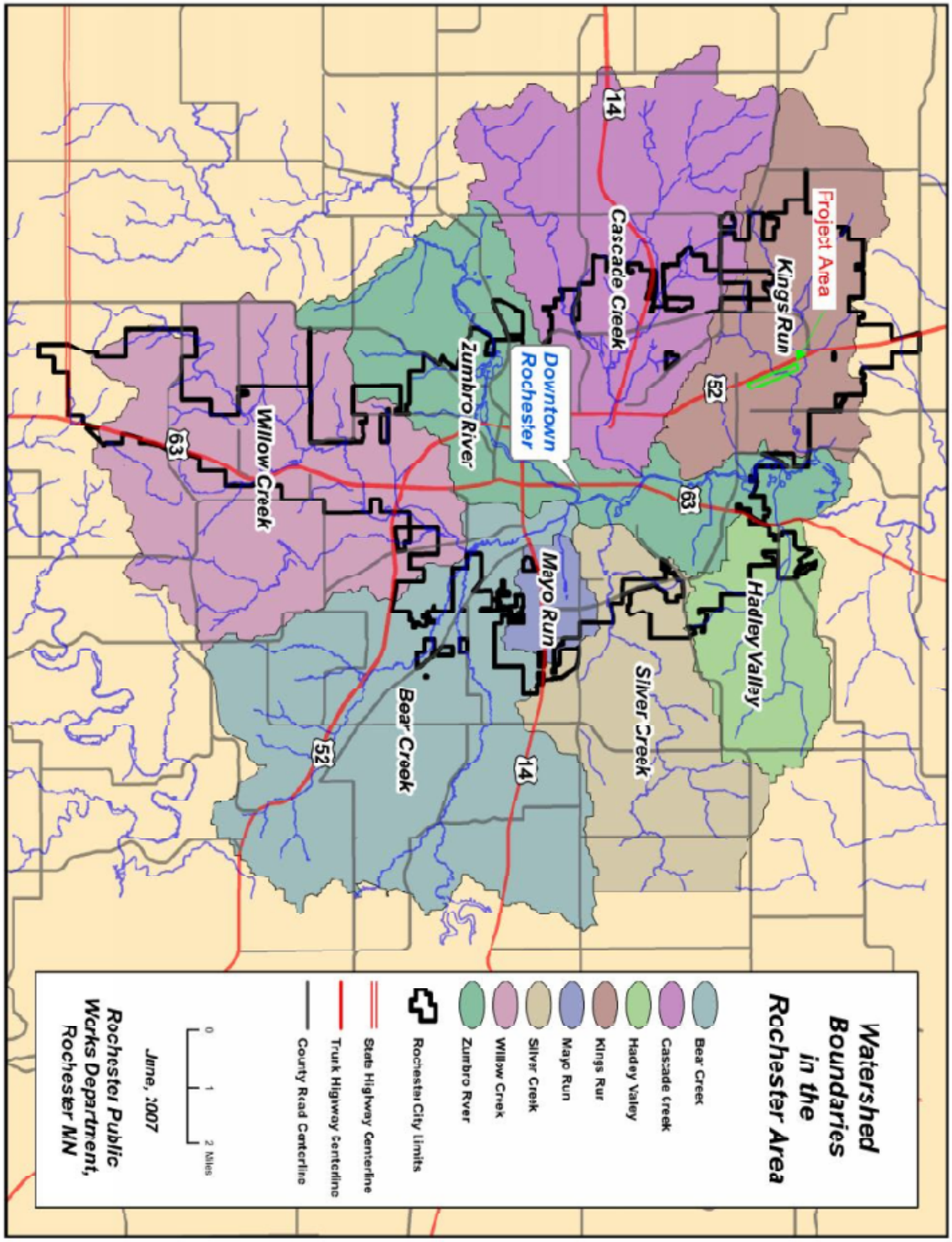
12/31/2012
Page 2 of 4

FIGURE 2.3 - NATURAL RESOURCES CONSERVATION SERVICE SOIL DESCRIPTIONS

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Olmsted County, Minnesota (MN109)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
2A	Ostrander silt loam, 0 to 2 percent slopes	B	12.9	1.0%
2B	Ostrander loam, 2 to 6 percent slopes	B	3.8	0.3%
16	Arenzville silt loam	C	2.0	0.2%
19	Chaseburg silt loam	C	11.0	0.9%
99B	Racine silt loam, 1 to 6 percent slopes	B	22.6	1.8%
99C	Racine silt loam, 6 to 12 percent slopes	C	16.3	1.3%
99D2	Racine loam, 12 to 18 percent slopes, eroded	C	7.3	0.6%
176	Garwin silty clay loam	B/D	129.4	10.5%
203	Joy silt loam, 1 to 4 percent slopes	B/D	61.2	5.0%
209B	Kegonsa silt loam, 2 to 6 percent slopes	B	4.0	0.3%
285B	Port Byron silt loam, 1 to 5 percent slopes	B	150.5	12.3%
285C	Port Byron silt loam, 5 to 9 percent slopes	B	113.2	9.2%
295	Readlyn loam	B/D	0.3	0.0%
299C	Rockton loam, 6 to 12 percent slopes	C	0.7	0.1%
301B	Lindstrom silt loam, 2 to 6 percent slopes	B	1.9	0.2%
322C	Timula silt loam, 6 to 12 percent slopes	B	85.9	7.0%
322D	Timula silt loam, 12 to 18 percent slopes	B	21.9	1.8%
369B	Waubeek silt loam, 1 to 6 percent slopes	B	42.5	3.5%
369C	Waubeek silt loam, 6 to 12 percent slopes	B	11.2	0.9%
401B	Mt. Carroll silt loam, 2 to 6 percent slopes	B	124.3	10.1%
401C2	Mt. Carroll silt loam, 6 to 12 percent slopes, eroded	B	15.3	1.2%
468	Otter silt loam, channeled	B/D	44.2	3.6%
477B	Littleton silt loam, 1 to 4 percent slopes	B/D	98.4	8.0%
479	Floyd silt loam, 1 to 4 percent slopes	B/D	32.3	2.6%
493C	Oronoco loam, 6 to 12 percent slopes	B	7.1	0.6%
516B	Dowagiac silt loam, 2 to 6 percent slopes	B	5.3	0.4%
1039	Urban land		195.6	15.9%
1812B	Terril loam, sandy substratum, 1 to 6 percent slopes	C	3.0	0.2%
1846	Kato silty clay loam, depressional	B/D	3.0	0.2%
Totals for Area of Interest			**1,227.1**	**100.0%**

FIGURE 3- ROCHESTER WATERSHED BOUNDARIES MAP



CONSTRUCTION PROJECT INFORMATION (III.A)

Describe the construction activity (what will be built, general timeline, etc.)

The project site is along the existing East Frontage Road between 41st St NW and Pennington Ct NW.

Utility construction includes the installation of storm sewer. Road reconstruction includes bituminous urban street sections with pedestrian facilities.

This project will include lane reconfiguration and pavement widening of the existing road.

See also the plan and profile sheets for project features.

Describe soil types found at the project.

The majority of soils on site are classified by the National Resources Conservation Service as silty loams. Most of these soils are in hydrologic soil group B.

See Figure 2.1, 2.2 & 2.3 –Hydrologic Soil Groups Map

Describe watershed/drainage areas found at the project.

The project exists within the Kings Run watershed.

The Kings Run watershed consists largely of level, rural agricultural landscape.

This project does involve work located in the Unnamed Creek which consists of a centerline culvert extension.

Project Size (number of acres to be disturbed)

Construction limits contain approximately 6.80 acres of City and State right of way.

Cumulative Impervious Surface

Existing area of impervious surface _____4.25_____ (to the nearest quarter acre)

Post construction area of impervious surface _____5.00_____ (to the nearest quarter acre)

Receiving Waters

Name of Water Body	**Type** (ditch, pond, wetland, lake, stream, river)	**Special Water?** (See Stormwater Permit Appendix A)	**Impaired Water?**** (See Stormwater Permit Appendix A)
Unnamed Creek	Stream	☐ Yes X No	X Yes ☐ No
		☐ Yes ☐ No	☐ Yes ☐ No
		☐ Yes ☐ No	☐ Yes ☐ No

*Water Body ID might not be available for all water bodies. Use the Special and Impaired Waters Search Tool at: www.pca.state.mn.us/water/stormwater/stormwater-c.html
** Impaired water for the following pollutant(s) or stressor(s): phosphorus, turbidity, dissolved oxygen, or biotic impairment

GENERAL SITE INFORMATION (III.A)

Describe the location and type of all temporary and permanent erosion prevention and sediment control BMPs. Include the timing for installation and procedures used to establish additional temporary BMPs as necessary. (III.A.4.a)

In addition to Division S section (2575) Permanent Erosion Control and Turf Establishment:

In areas within 200 feet of surface waters, MnDOT rapid stabilization method 3 will be used. Areas within 10 feet of the pavement will be seeded and immediately mulched and anchored.

Refer to the Estimated Quantities plan sheet for the anticipated quantities for the life of the project for all erosion prevention and sediment control BMPs (III. A. 4.b)
Refer to the plans for the following features (III.A.3.b – f): • Existing and final grades, including dividing lines and direction of flow for all pre and post-construction stormwater runoff drainage areas located within the project limits. • Locations of impervious surfaces and soil types. • Locations of areas not to be disturbed. • Location of areas of phased construction. • All surface waters and existing wetlands within 1-mile from the project boundaries that will receive stormwater runoff from the site (identifiable on maps such as USGS 7.5 minute quadrangle maps, see Figure 1 – Project Location & Impaired Waters Map). Where surface waters receiving runoff associated with construction activity will not fit on the plan sheet, they must be identified with an arrow, indicating both direction and distance to the surface water. • Methods to be used for final stabilization of all exposed soil areas.
Were stormwater mitigation measures required as the result of an environmental, archaeological, or other required local, state, or federal review of the project? If yes, describe how these measures were addressed in the SWPPP. (III.A.6.) No.
Is the project located in a karst area such that additional measures would be necessary to protect drinking water supply management areas as described in Minn. R. chapters 7050 and 7060? If yes, describe the additional measures to be used. (III.A.7.) No.
Does the site discharge to a calcareous fen listed in Minn. R. 7050.0180, subp. 6.b.? If yes, a letter of approval from the Minnesota Department of Natural Resources must be obtained prior to application for this permit. (Part I B.6 and Part III.A.8) No.
Does the site discharge to a water that is listed as impaired for the following pollutant(s) or stressor(s): phosphorus, turbidity, dissolved oxygen or biotic impairment? Use the Special and Impaired Waters Search Tool at: www.pca.state.mn.us/water/stormwater/stormwater-c.html. If no, skip to next box. Yes. Turbidity. Does the Impaired water have an approved TMDL with an Approved Waste Load Allocation for construction activity? If yes: a. List the receiving water, the areas of the site discharging to it, and the pollutant(s) identified in the TMDL b. List the BMPs and any other specific construction stormwater related implementation activities identified in the TMDL. If the site has a discharge point within one mile of the impaired water and the water flows to the impaired water but no specific BMPs for construction are identified in the TMDL, the additional BMPs in Appendix A (C.1 and C.2) must be added to the SWPPP and implemented. (III.A.7). The additional BMPs only apply to those portions of the project that drain to one of the identified discharge points. No.

TRAINING (III.A)

Training is required for all permitted projects after February 1, 2010. It must be provided by entities with expertise in erosion prevention, sediment control or permanent stormwater management. Training must be focused on the individual's job duties as they relate to the permit requirements (Part III.A.2). Who must be trained?

Individual(s) preparing the SWPPP for the project

Individual(s) overseeing the implementation of, revising and amending the SWPPP and individuals performing inspections required by the permit

Individuals performing or supervising the installation, maintenance or repair of BMPs

Names of the personnel trained; dates of training; name of instructor(s) and entity

providing training; content of training course or workshop (including number of hours of training)

Part III A 2 (c) Training documentation: Names and certification of the personnel associated with the project through the University of Minnesota, Minnesota Erosion Control Association,

ED 3001 Design of Construction Stormwater Pollution Prevention Plans. This two-day course is for personnel involved with the design of construction stormwater pollution prevention plans.

Name	Company	Expire Date
Zillgitt, Mike	WSN	May 31, 2013

EM 2001 Construction Site Management. This two-day course is designed for those who supervise, run, or direct construction site operations, grading work, culvert replacement work, and bridge construction work.

Name	Company	Expire Date
Dwyer, Dave	City of Rochester	May 31, 2014
Klein, Tim	City of Rochester	May 31, 2014
Szuberski, Steve	City of Rochester	May 31, 2014
Kraszewski, Mike	City of Rochester	Mar 21, 2014

Certified Professional in Erosion and Sediment Control. A CPESC is a recognized specialist in soil erosion and sediment control. CPESCs have educational training, demonstrated expertise, experience in controlling erosion and sedimentation, and meet certification standards, exam given through EnviroCert International, Inc

Name	Company	Cert Date
Kraszewski, Mike	City of Rochester	Mar 21, 2014

SELECTION OF A PERMANENT STORMWATER MANAGEMENT SYSTEM (III.C)

Will the project create a new cumulative impervious surface greater than or equal to one acre? ☐ Yes X No

If yes, a water quality volume of ½ inch of runoff from this area must be treated before leaving the site or entering surface waters (1 inch if discharging to special waters).

Describe which method will be used to treat runoff from the new impervious surfaces created by the project (III.C):

- Wet sedimentation basin
- Infiltration/Filtration
- Regional ponds
- Combination of practices

Include all calculations and design information for the method selected. See Part III.C of the permit for specific requirements associated with each method.

Water quality volume calculations:

NA.

If it is not feasible to meet the treatment requirement for the water quality volume, describe why. This can include proximity to bedrock or road projects where the lack of right of way precludes the installation of any permanent stormwater management practices. Describe what other treatment, such as grasses swales, smaller ponds, or grit chambers, will be implemented to treat runoff prior to discharge to surface waters. (III.C)

NA

If proposing an alternative method to treat runoff from the new impervious surfaces, describe how this alternative will achieve approximately 80% removal of total suspended solids on an annual average basis (III.C.5). NOTE: If proposing an alternative method, you must submit your SWPPP to MPCA at least 90 days prior to the starting date of the construction activity.

NA

RECORDS RETENTION (III.D)

Describe your record retention procedures (must be kept at the site) (III.D). Records must include:

- Copy of SWPPP and any changes
- Training documentation (III.A.2.)
- Inspection and maintenance records
- Permanent operation and maintenance agreements
- Calculations for the design of temporary and permanent stormwater management systems.

An inspection log will be kept on-site and will include the results of all inspections. The schedule for the inspections is a minimum of once every 7 days and within 24 hours of a rainfall exceeding 0.5” in 24 hours.

EROSION PREVENTION PRACTICES (IV.B)

Describe construction phasing, vegetative buffer strips, horizontal slope grading, and other construction practices to minimize erosion. Delineate areas not to be disturbed (e.g., with flags, stakes, signs, silt fence, etc.) before work begins.

See Construction Erosion Control/Turf Establishment Plans. All disturbed soils will be seeded, mulched, anchored, and fertilized within 7 days as per NPDES Permit Appendix A Section C.1.

General Sequencing:

1. Install silt fence, inlet protection, or Biorolls at locations around the perimeter as shown on the plans.

2. Keep abutting property owners informed in advanced when areas are going to be disturbed.
3. Clear and grub, utility removals.
4. Install temporary sediment basin/sediment trap outlet if trench dewatering discharge is necessary and according to the discharge permit.
5. Trench excavate and backfill for installation of utilities. The Contractor shall conduct extreme care for the excavation of soils on this project to maintain soil separation of the naturally occurring soil Horizon or Layers. This is to allow for the soils in the different horizons to be restored to their native layers. In addition at least 6 inches of topsoil shall be salvaged and reinstalled as a top dressing in seeding areas and 3 inches in sodded areas.
6. Construct embankment.
7. Construct curb and gutter
8. Pave.
9. Right of way areas will be hydro-seeded with a Commercial Seed mix No 260 or sod, Ditch areas will receive erosion control sod, stabilization mats, erosion control blankets depending on slope, and seed mix no 310.
10. Other residential roadway right-of-way and Out lot areas disturbed on the project will be restored with Sod.
11. Restore driveways, pedestrian facilities, and boulevards.
12. Complete final vegetation restoration, hydro-seeding, and sod.

Describe temporary erosion protection or permanent cover used for exposed soil. All exposed soil areas must be stabilized as soon as possible but in no case later than 7 days after the construction activity in that portion of the site has temporarily or permanently.

All disturbed soils will be seeded, mulched, anchored, and fertilized within 7 days. Some areas will be sodded and fertilized. For disturbed soil within 200 lineal feet of a surface water, rapid stabilization method 2 or 3 will be used. Rapid stabilization methods entail hydroseeding, mulching, and fertilizing within 7 days of soil disturbance.

For drainage or diversion ditches, describe practices to stabilize the normal wetted perimeter within 200 lineal feet of the property edge or point of discharge to surface water. The remaining portions of the temporary or permanent ditch or swale must be stabilized within 7 days after connecting to surface waters and construction in that portion of the ditch has temporarily or permanently ceased.

SEDIMENT CONTROL PRACTICES (IV.C)

Describe sediment control practices used to minimize sediments from entering surface waters, including curb and gutter systems and storm drain inlets. At a minimum, these sediment control practices must include:

• Sediment controls for temporary or permanent drainage ditches and sediment basins that are designed as part of a treatment system

• Installation of check dams or other grade control practice to ensure sheet flow and prevent rills (for slope lengths greater than 75 feet with a grade of 3:1 or steeper).

• Sediment control practices on all down gradient perimeters prior to land disturbing activities.

• Storm drain inlet protection for all inlets.

• Silt fencing or other sediment control surrounding temporary soil stockpiles.

• Minimize vehicle tracking of sediments (e.g., stone pads, concrete or steel wash racks, or equivalent systems).

• Street sweeping of tracked sediment.

• Temporary sedimentation basins (see Part III.B).

Biorolls will provide sedimentation along the ditches; silt fence will encompass the remaining project to control sediment within the project area.

Inlet protection will control sediment at structures. Stabilized vehicle entrances will be constructed as shown on plans. Vegetation restoration and sodding will stabilize soils surfaces.

Timing:

1. Install silt fence prior to clear and grub operations.
2. Install inlet protection.
3. Water for dust control as needed.
4. Install Rapid Stabilization Method 3 within 7 days of finish grading by the Contractor.
5. Install permanent turf establishment within 7 days of finish paving operations.
6. Inform abutting property owners of care for permanent turf establishment.

DEWATERING AND BASIN DRAINING (IV.D)
Will the project include dewatering or basin draining? ☐ Yes X No
If yes, describe BMPs used so the discharge does not adversely affect the receiving water or downstream landowners. The project **will not** include dewatering for the entire project. The Contractor shall be responsible for obtaining a Water Appropriation Permit from the Department of Natural Resources (DNR) if necessary. The Contractor will also be responsible for obtaining all other necessary permits and approvals, as well as all fees and documentation associated with the permits.

Additional BMPs for Special Waters and Discharges to Wetlands (Appendix A, Parts C and D)
Special Waters. Does your project discharge to special waters? ☐ Yes X No If no, skip to Wetlands section below.
If proximity to bedrock or road projects where the lack of right of way precludes the installation of any of the permanent stormwater management practices, then other treatment such as grassed swales, smaller ponds, or grit chambers is required prior to discharge to surface waters. Describe what other treatment will be provided. NA
Describe erosion and sediment controls for exposed soil areas with a continuous positive slope to a special waters, and temporary sediment basins for areas that drain 5 or more acres disturbed at one time. NA
Describe the undisturbed buffer zone to be used (not less than 100 linear feet from the special water). NA
Describe how the permanent stormwater management system will ensure that the pre and post project runoff rate and volume from the 1, and 2-year 24-hour precipitation events remains the same. NA
Describe how the permanent stormwater management system will minimize any increase in the temperature of trout stream receiving waters resulting in the 1, and 2-year 24-hour precipitation events. NA

Wetlands. Does your project discharge stormwater with the potential for significant adverse impacts to a wetland (e.g., conversion of a natural wetland to a stormwater pond)? ☐ Yes X No

If Yes, describe the wetland mitigation sequence that will be followed in accordance with Part D of Appendix A.

INSPECTIONS AND MAINTENANCE (IV.E)

Describe procedures to routinely inspect the construction site:

- Once every seven (7) days during active construction and,
- Within 24 hours after a rainfall event greater than 0.5 inches in 24 hours, and within seven (7) days after that.

Inspections must include stabilized areas, erosion prevention and sediment control BMPs, and infiltration areas.

Inspection and maintenance practices:

In addition to complying with the requirements of the NPDES permit, the Erosion Control (EC) Supervisor shall inspect erosion control measures on a weekly basis and after each 1/2" rain event. Inspections are required to be documented by the EC Supervisor. The City of Rochester shall create a job/permit on a website provided by the City (PermiTrack). Further, the City will provide the EC Supervisor with a permit number and access code for the job on the website.

The EC Supervisor shall:

a. Within ten (10) working days of receipt of the permit number and access code, enter the website and create a list of site erosion control practices that are proposed on the approved plan.
b. Within ten (10) working days of actual start of work – enter the website and document that the practices that have been installed in accordance with the approved plan.
c. Provide weekly and event driven erosion inspection documentation of the condition of the practices and note any repairs needed and actions taken.
d. Within ten (10) working days of completion of the project, enter the project and note that the project has been terminated and a notice of termination (NOT) has been submitted to the Minnesota Pollution Control Agency.
e. Upon written or verbal notice by an agent at the City of Rochester to the supervisor or the supervisor's designated representative regarding an erosion control action or repair needed to bring the site into compliance the supervisor shall have not less than 24 nor more than 72 hours to bring the project site into compliance and document those actions on the website. The time allotted to bring the site into compliance shall be noted on the notice.

POLLUTION PREVENTION MANAGEMENT MEASURES (IV.F)

Describe practices to properly manage and dispose of solid waste, including trash (IV.F.1)

As per NPDES Permit Part IV.F.1 all collected sediment, asphalt and concrete millings, floating debris, paper, plastic, fabric, construction and demolition debris and other wastes will be disposed properly and comply with MPCA disposal requirements and MnDOT Specification 1717.A4.

Described practices to properly manage hazardous materials (IV.F.2).

As per NPDES Permit Part IV.F.2 Oil, gasoline, paint and any hazardous substances must be properly stored, including secondary containment, to prevent spills, leaks or other discharge. Restricted access to storage areas must be provided to prevent vandalism. Storage and disposal of hazardous waste must be in compliance with MPCA regulations.

Describe practices for external washing of trucks and other construction vehicles (IV.F.3)

As per NPDES Permit Part IV.F.3 External washing of trucks and other construction vehicles must be limited to a defined area of the site. Runoff must be contained and waste properly disposed of. No engine degreasing is allowed on site.

Describe how are you going to provide a safe, leak proof, concrete washout on site (IV.F.4):

To be completed by contractor. Or follow:

1. External washing of trucks and construction vehicles will be limited to a defined staging area. Runoff will be contained and properly disposed of.
2. Engine degreasing is not allowed on site.
3. Concrete trucks are to wash out or discharge surplus concrete or drum wash water within a designated location away from stormwater drains and waterways.

Describe your spill prevention plan.

To be completed by contractor.

Describe measures to address sanitary and septic waste.

Sanitary and septic waste disposal will comply with the MPCA Septage Management Guidelines incorporating 40 CFR part 503.

FINAL STABILIZATION (IV.G)

Describe how you will achieve final stabilization of the site (IV.G).

See Erosion Control/Turf Establishment Plan sheets. Final stabilization will be achieved by seeding, mulching, anchoring, and fertilizing. In other areas, sodding and fertilizing will occur. In ditch areas concrete armor and/or stabilization mats will be installed to promote stabilization.

All soil disturbing activities at the site have been completed and all soils must be stabilized by a uniform perennial vegetative cover with a density of 70% over the entire pervious surface area, or other equivalent means necessary to prevent soil failure under erosive conditions. All sediment must be removed from conveyance systems and ditches must be stabilized with permanent cover.

Prior to submission of the Notice of Termination (NOT), all temporary synthetic and structural erosion prevention and sediment control BMPs (such as silt fence) must be removed on the portions of the site for which the Permittee is responsible. BMPs designed to decompose on site (such as some compost logs) may be left in place.

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Notice of Termination/ Permit Modification Form

NPDES Construction Stormwater Permit Program

Transfer or terminate your National Pollutant Discharge Elimination System (NPDES) Construction Stormwater Permit. Allowable changes are permit termination and permit transfer for all or a portion of the site. This form replaces the Notice of Termination (NOT), Permit Transfer, Permit Modification, and Subdivision Registration forms used under the former permit.

Instructions for this form are located on the Internet at http://www.pca.state.mn.us/publications/wq-strm2-60i.pdf.

Form will be invalid and returned to sender unless the checkbox associated with the applicable actions is checked and the corresponding signature is provided in section A-1, A-2, A-3, and or A-4.

Please submit to: **Construction Stormwater Permit Program**
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

Existing Permit Identification

a. Current permit ID: C000 _ _ _ _ _ or SUB00 _ _ _ _ _

b. Project name: _____

Project location: _____

Briefly describe where the construction activity occurs (for example: Intersection of 45th St. and Irving Ave.). Include address if available.

Select Option 1, 2, or 3

1. Notice of Termination (NOT) for entire site by existing owner

Select this option when a project has achieved final stabilization with existing owner / contractor and no part of the site is being transferred to a new owner and all construction activity is complete.

c. ☐ Notice of Termination for entire existing permitted site or a subdivided site. (Current owner and contractor must sign under the "Current" Owner and "Current" Contractor sections respectively).

Check above box and sign section A-1 and A-2 on page 2.

2. Transfer of entire site to new owner or contractor (Transfer/Modification)

Select this option if the ***entire*** site (represented by the ID above) has either a new owner and/or new general contractor. Check all the boxes below that apply.

d ☐ New Owner for entire existing permitted site.
e. ☐ New Contractor for entire existing permitted site.
f. ☐ Current Owner for entire existing permitted site.
g. ☐ Current Contractor for entire existing permitted site.

Check above box(es) and sign section A-3 and A-4 page 3 and or check above box(es) and sign section A-1 and A-2 page 2

Both "Current" and "New" Parties must sign this form (preferred), however, separate forms are acceptable.

3. Transfer of a portion of a site to a new owner or contractor (Subdivision)

Select this option if *a **portion*** of a site (permitted under the ID above) has either a new owner and/or new general contractor. Check the boxes below that apply.

h. Describe the portion of the site being transferred: Lot _____ Block _____

Project location/address: _____

City, State, and Zip: _____

Example: SW quadrant of 45th Street and Irving Avenue or Lots 1-17 of block 20. Include list of addresses if available or include a map

i. ☐ New Owner for portion of existing site.
j. ☐ New Contractor for portion of existing site.
k. ☐ Current Owner of the portion to be transferred.
l. ☐ Current Contractor of the portion to be transferred.

Check above box(es) and sign section A-3 and A-4 page 3 and or check above box(es) and sign section A-1 and A-2 page 2

Both "Current" and "New" Parties must sign this form (preferred), however, separate forms are acceptable.

Current Owner Authorized Signature (A-1)

Business/Firm name: _____

Last name: _____ First name: _____ Title: _____

E-mail address: _____ Telephone: ( ) _____ Ext. _____

Mailing address: _____

City: _____ State: _____ Zip code: _____

Alternate contact:

Last name: _____ First name: _____ Title: _____

E-mail address: _____ Telephone: ( ) _____ Ext. _____

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage this system, or the persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I also certify under penalty of law that I have read, understood, and accepted all terms and conditions of the National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) General Stormwater Permit Construction Activity (MN R100001) that authorizes stormwater discharges associated with the construction site identified on this form.

Authorized signature: _____ Date: _____

This Application must be signed by: ***Corporation:*** *a principal executive officer of at least the level of vice-president or the duly authorized representative or agent of the executive officer if the representative or agent is responsible for the overall operation of the facility that is the subject of the permit application.* ***Partnership or Sole Proprietorship****: a general partner or the proprietor.* ***Municipality, State, Federal or Other Public Agency:*** *principal executive officer or ranking elected official.*

Current Contractor Authorized Signature (A-2)

Business/Firm name: _____

Last name: _____ First name: _____ Title: _____

E-mail address: _____ Telephone: ( ) _____ Ext. _____

Mailing address: _____

City: _____ State: _____ Zip code: _____

Alternate contact:

Last name: _____ First name: _____ Title: _____

E-mail address: _____ Telephone: ( ) _____ Ext. _____

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage this system, or the persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I also certify under penalty of law that I have read, understood, and accepted all terms and conditions of the National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) General Stormwater Permit Construction Activity (MN R100001) that authorizes stormwater discharges associated with the construction site identified on this form.

Authorized signature: _____ Date: _____

This Application must be signed by: ***Corporation:*** *a principal executive officer of at least the level of vice-president or the duly authorized representative or agent of the executive officer if the representative or agent is responsible for the overall operation of the facility that is the subject of the permit application.* ***Partnership or Sole Proprietorship****: a general partner or the proprietor.* ***Municipality, State, Federal or Other Public Agency:*** *principal executive officer or ranking elected official.*

"New" Owner Authorized Signature (A-3)

Business/Firm name: _____

Last name: _____ First name: _____ Title: _____

E-mail address: _____ Telephone: ( ) _____ Ext. _____

Mailing address: _____

City: _____ State: _____ Zip code: _____

Alternate contact:

Last name: _____ First name: _____ Title: _____

E-mail address: _____ Telephone: ( ) _____ Ext. _____

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage this system, or the persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I also certify under penalty of law that I have read, understood, and accepted all terms and conditions of the National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) General Stormwater Permit Construction Activity (MN R100001) that authorizes stormwater discharges associated with the construction site identified on this form.

Authorized signature: _____ Date: _____

This Application must be signed by: ***Corporation:*** *a principal executive officer of at least the level of vice-president or the duly authorized representative or agent of the executive officer if the representative or agent is responsible for the overall operation of the facility that is the subject of the permit application.* ***Partnership or Sole Proprietorship****: a general partner or the proprietor.* ***Municipality, State, Federal or Other Public Agency:*** *principal executive officer or ranking elected official.*

"New" Contractor Authorized Signature (A-4)

Business/Firm name: _____

Last name: _____ First name: _____ Title: _____

E-mail address: _____ Telephone: ( ) _____ Ext. _____

Mailing address: _____

City: _____ State: _____ Zip code: _____

Alternate contact:

Last name: _____ First name: _____ Title: _____

E-mail address: _____ Telephone: ( ) _____ Ext. _____

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage this system, or the persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I also certify under penalty of law that I have read, understood, and accepted all terms and conditions of the National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) General Stormwater Permit Construction Activity (MN R100001) that authorizes stormwater discharges associated with the construction site identified on this form.

Authorized signature: _____ Date: _____

This Application must be signed by: ***Corporation:*** *a principal executive officer of at least the level of vice-president or the duly authorized representative or agent of the executive officer if the representative or agent is responsible for the overall operation of the facility that is the subject of the permit application.* ***Partnership or Sole Proprietorship****: a general partner or the proprietor.* ***Municipality, State, Federal or Other Public Agency:*** *principal executive officer or ranking elected official.*

If you have questions about the administrative details of the permit process go to: http://www.pca.state.mn.us/publications/wq-strm2-60i.pdf or call the Minnesota Pollution Control Agency at **651-296-6300 or 800-657-3864** and ask for *"Construction Stormwater."* If you have technical questions, ask for the *"Stormwater Policy and Technical Assistance Unit."*

ATTACHMENTS TO THE SPECIAL PROVISIONS

MNDOT PERMIT SHORT FORM TP–1723

INSTRUCTIONS FOR COMPLETING APPLICATION FOR INSTALLATION OF UTILITIES OR MISCELLANEOUS WORK ON TRUNK HIGHWAY RIGHT OF WAY SHORT FORM TP–1723

Note: An incomplete application will delay processing.

This form is for minor work such as installation of utility service connections that do not cross or parallel the roadway within the trunk highway right of way. This form is also used for repair and maintenance of existing utility facilities, installing miscellaneous guy wires and anchors, to place temporary obstructions on the right of way, to perform temporary relocations, and to accommodate construction projects.

Utility Long Form TP–2525 is used for the vast majority of utility placements and relocations. Form 2525 is for placing, constructing, and reconstructing utilities within trunk highway right of way, whether longitudinally, oblique, or perpendicular in relationship to the centerline of the highway (utilities crossing the highway, or parallel installations).

Fill Out Form Completely

Print (in ink), type the application, or fill out online and print the form at:

www.dot.state.mn.us/utility/forms/index.html

- Be sure to sign it at the bottom. Submit the original form only.
- *COPIES AND FAXES ARE UNACCEPTABLE AND WILL BE RETURNED TO YOU.*

Complete each item on the application. If any item does not apply, print "N.A." in the blank.
Provide a detailed location of proposed work and give reference to nearest cross streets.
Include plans of proposed work along with:

- detailed drawings showing type and location of work in relation to Mn/DOT right of way, on no larger than 11x17 sheets
- detail any type of traffic interference this work may require and submit traffic control plan. Detouring of the traffic from the Trunk Highway will not be permitted, except by special arrangements with this office. All costs involved in the re-routing of traffic including, but not limited to, furnishing barricades, installation or rearrangement of traffic control signs, pavement marking and special flag person services will be charged to the applicant at rates set by the Department for the equipment, labor, and materials used.
- indicate type, kind and size of utility to be placed.

Indicate the method of installation; equipment to be used for excavation and compaction.

After the application has been completed, signed and dated, mail the application (both sides of form) with the required plans to the District office. Contacts and addresses can be found at:

www.dot.state.mn.us/utility/files/pdf/contacts/permits-contacts.pdf

After the Short Form Permit has been approved

The applicant will be notified and the security deposit maybe requested. The permit will have special provisions indicating the construction requirements. Read and observe these instructions during construction operations.

Security Deposit

A security deposit is required for permits that authorize work in state right of way to ensure that work is completed to Mn/DOT's satisfaction. The actual amount required will depend on the specific situation.
The District Permit Section will determine the amount and type of deposit to be submitted, (if applicable), payable to the Minnesota Commissioner of Transportation. Minnesota rules require that deposits be submitted in the form of a certified check, cashier's check, or surety bond payable to the Minnesota Commissioner of Transportation. Deposits must be irrevocable and cannot expire. *A permit will not be issued until the deposit is received.*

After construction is completed

After construction has been completed and all turf items re-established, the applicant must notify the permit office for final inspection. If all work is satisfactory, the deposit will be returned to the applicant.

MnDOT TP-1723 (SHORT FORM PERMIT) (11-2012)

MINNESOTA DEPARTMENT OF TRANSPORTATION APPLICATION FOR INSTALLATION OF UTILITIES OR MISCELLANEOUS WORK ON TRUNK HIGHWAY RIGHT OF WAY

Document Management System # _____
District _____ Permit # _____
C.S. _____ T.H. _____
R.P. _____
(THIS SECTION FOR MnDOT OFFICE USE ONLY.)

ATTACH A SKETCH OF THE PROPOSED WORK AREA AND RELATION TO TRUNK HIGHWAY. SUCH SKETCH SHALL BE DRAWN TO SCALE WHEN REQUIRED BY THE ENGINEER. PRINT OR TYPE APPLICATION. SIGN IN SPACE PROVIDED. SUBMIT TO LOCAL OFFICE OF MINNESOTA DEPARTMENT OF TRANSPORTATION.

APPLICANT	TELEPHONE	ADDRESS (Street, City, State, Zip)
City of Rochester	(507) 328-2400	201 4th Street SE, Room 108, Rochester, Mn 55904
PARTY PERFORMING WORK	**TELEPHONE**	**ADDRESS (Street, City, State, Zip)**
City of Rochester, Contractor TBD	NA	NA

LOCATION OF PROPOSED WORK (City/Township) (County) (Distance) (N-S-E-W) SPECIFIC ROAD INTERSECTION OR LANDMARK

Highway 52 in Rochester Olmsted 0.12 Miles East of 41st St NW (On TH 52 E Frontage Road)

NATURE OF WORK
Rehabilitation - Bit. Milling and Overlay, Roadway widening, addition of curb, sidewalk, signal relocation on NW corner of 41st St NW.

SURFACE TO BE DISTURBED (Check Appropriate Boxes)
☐ Roadway ☐ Shoulder ☐ Concrete ☐ Bituminous ☐ Gravel
☐ Turf Only ☐ Other _____

DEPTH OF EXCAVATION BELOW SURFACE	NUMBER & SIZE OF EXCAVATIONS	METHOD OF INSTALLATION/CONSTRUCTION
Approx. 4 ft	9 - 10ft x 10ft x 4ft deep	Open Trench
WORK TO START ON OR AFTER	**WORK TO BE COMPLETED BY**	**IS TRAFFIC DETOUR NECESSARY?** ☐ Yes ☐ No
(Date) July 8, 2013	(Date) October 11, 2013	(IF YES, TRAFFIC CONTROL PLAN IS REQUIRED.)

WILL THIS WORK BE WITHIN TRIBAL LANDS ☐ Yes ☑ No IF YES, WHICH ONE

The undersigned applicant hereby accepts the terms and conditions of this permit and agrees to fully comply therewith to the satisfaction of the Minnesota Department of Transportation. The applicant understands and agrees that no work in connection with this application will be started until the application has been approved and the permit issued. The applicant also understands that this permit may also be subject to the approval of local road authorities having joint supervision over said street or highway, and may be subject to applicant's compliance with the rules and regulations of the Minnesota Environmental Quality Board and/or any other affected governmental agencies.

The undersigned applicant expressly agrees that except for negligent acts of the State, its agents and employees, the applicant or his/her agents or contractor shall assume all liability for, and save the State, its agents and employees, harmless from any and all claims for damages, actions or causes of action arising out of the work to be done in connection with this application and permit.

Name and Title Doug Nelson, PE, Manager of Engineering (Print or Type) Email address dnelson@rochestermn.gov

Date 5/9/2013 Signature _____

DO NOT WRITE BELOW THIS LINE

PERMIT NOT VALID UNLESS BEARING SIGNATURE AND NUMBER	**AUTHORIZATION OF PERMIT**	SEE PAGE 2 FOR PERTINENT REGULATIONS AND CONDITIONS

It is expressly understood that this permit is conditioned upon restoration of the trunk highway right-of-way to its original condition or to a satisfactory condition. In consideration of the applicant's agreement to comply in all respects with the applicable laws and the conditions of the Commissioner of Transportation pertaining to this permit, permission is hereby granted for the work to be performed as described in the above application, said work to be performed in accordance with the following special provisions:

SEE ATTACHED SPECIAL PROVISIONS

Date All Work To Be Completed By	Authorized MnDOT Signature	Date of Authorized Signature

DISTRIBUTION	DEPOSIT REQUIREMENTS	DEPOSIT TYPE
Original to Area Maintenance Engineer	☐ No Deposit Required	Cashier's Check # _____
Applicant	☐ Deposit Required in the Amount of $ _____	Certified Check # _____
Subarea Supervisor	Date Deposit Received _____	Money Order # _____
Roadway Regulations Supervisor	**Deposit to be returned upon satisfactory completion of all work.**	Bond # _____

DATE WORK COMPLETED _____ ***(The date when the work is completed must be reported to the local MnDOT Roadway Regulations Supervisor)***

Page 1 of 2

SHORT FORM GENERAL INFORMATION

This application form shall be used for installations of utility service connections that do not cross the trunk highway roadbeds, for miscellaneous guys and anchors, and for performing miscellaneous work on the highway right of way.

PERTINENT REGULATIONS

Safety

- Where work on or near the traveled roadway is necessary, proper signs, channelizing devices, warning lights, and barricades shall be erected to protect traffic, employees, and pedestrians. All traffic control devices and methods shall conform to the Minnesota Field Manual on Temporary Traffic Control Zone Layouts, Minnesota Manual on Uniform Traffic Control Devices (MMUTCD), Minnesota Standard Sign Manual, and the appropriate provisions of Standard Specification 1710.
- If work to be done lies within a municipality or platted town, permission must be obtained from such village, town, or city.
- Excavations must be cribbed when necessary, depending upon type of soil, in order to prevent cave-ins. All excavations, trenching and/or jacking and boring pits shall be shored or sloped in accordance with OSHA requirements.
- No guys, stays, or any structures are to be attached to trees on trunk highway right of way.
- Underground construction must be so constructed as not to harm or unnecessarily destroy the root growth of specimen trees.

Roadway

- Installation of pipe under concrete or bituminous pavements shall be done by jacking or boring or other approved methods.
- When open trenching or excavating in existing roadways, all subgrade, base, and surfacing materials shall be replaced with the same type, depth, and density of materials which were removed.
- All backfill must be placed in 6" or less layers and thoroughly tamped and material must be flush and even with the adjacent surface when finally in place.
- If pavement or roadway is damaged, same shall be restored to a condition as good as or better than the original condition.
- All pavements shall be replaced in accordance with State specifications.
- If settlement occurs or excavation caves in so that replaced materials settle (bituminous mat or concrete base), same shall be restored to a condition as good as or better than the original condition.
- Unless adequately protected by a traffic barrier, there shall be no work within the clear zone, nor shall pipe materials, equipment or other objects as determined by the State, be stored within the clear zone as determined by the Department and as defined by the latest edition of AASHTO's "Guide for Selecting Locations, and Designing Traffic Barriers".
- No poles, anchors, anchor braces, or other construction shall be placed on the roadway shoulder or within the prescribed clear zone.
- No driving onto highway from ditch or driving on shoulders will be permitted where damage will occur.
- No foreign material such as dirt, gravel, or bituminous material shall be deposited or left on the road during any construction activities.

LIMITATIONS

- No lugs shall be used on equipment traversing the road which will damage the road surface.
- Roadside shall be cleaned to original status upon completion of work.
- If Department of Transportation shall make any improvements or change on all or any part of its right of way upon, over, under, or along the highway, then and in every case the applicant herein named shall after notice from the Commissioner of Transportation or his authorized agents proceed to alter, change, vacate, or remove from trunk highway right of way said works necessary to conform with said changes without cost whatsoever to the State of Minnesota.
- Drainage on the trunk highway right of way shall be done under Form 30795-02 available at the District/Area Maintenance office.
- After work on a project is completed said persons doing such work must notify the Area Maintenance Engineer or his authorized representative in which district the work is being performed that such work has been completed and ready for final inspection and acceptance by the State of Minnesota.
- Cutting and trimming of trees within the right of way and removal of resulting stumps require prior approval of the Area Maintenance Engineer or his authorized representative.

SECURITY DEPOSIT may be required to insure proper restoration of highway surfaces and to cover payment for any damage to highways or State property. Additionally, any expense incurred by the Minnesota Department of Transportation above the posted deposit will be assessed against the applicant. In the event construction has not been started by the "WORK TO BE COMPLETED BY" date, this permit becomes null and void and deposit refunded.

TEMPORARY RAISED PAVEMENT MARKERS (TRPMS)

TRPMs may be used to simulate solid lines without the use of any other pavement marking material and may be used to supplement other types of pavement markings.

TRPMs shall not be used as an interim pavement marking between October 1 and May 1 because of snowplowing operations.

Simulating a Solid Line and a Broken Line

When TRPMs are used to **simulate** a line the following guideline applies, unless otherwise indicated in the Plan or directed by the Engineer:

- Broken Line - place two (2) TRPMs per 2-meter-skip stripe, 2 m on center, and eight (8) meter gap **(use four (4) TRPMs per 10-foot skip strip, 3-1/3 feet on center and 40 foot gap)**. The same spacing shall be used whether the marking is for an interim or long-term situation.
- Solid Line - place TRPMs, 3 m (10 foot) on center for tangent sections; place TRPMs, 1.5 m **(5 foot)on center for curve sections over six (6) degrees (291-m radius)**, steep grades, and concrete pavements.
- Double Solid Line - place two (2) TRPMs separated by 100 mm (**4 inches**) side-by-side using the same spacing required for Solid Lines.

Refer to the details on Page 2 of 2.

Supplementing a Solid Line and a Broken Line

In the following situations, TRPMs do not provide adequate simulation of solid lines and shall only be used to Supplement Solid Lines:

- Areas where the markers, even 1.5 m (**5 foot**) on center, become visually separated. This occurs frequently on low speed urban highways with sharp curves and short transition areas. This also occurs where there are steep grades and dips.
- Areas with high ambient lighting which may diminish the retroreflective capabilities of the markers.
- When TRPMs are used to supplement a line, the following guideline applies, unless otherwise indicated in the Plan or directed by the Engineer:
- Solid Line - place TRPMs, 3 m (**10 foot**) on center.
- Double Solid Line - place two (2) TRPMs separated by 100 mm (**4 inches**) side-by-side, using the same spacing required for Solid Lines.
- Broken Line – place two (2) TRPMs to supplement each broken line segment.

Types of TRPMs

The TRPMs are classified into four types as follows:

- TRPM Type 1 - These markers are acceptable for use on all roadways for short or long term projects. They may be used to supplement or simulate solid or broken lines.
- TRPM Type 2 - These markers are acceptable for use on projects with Average Daily Traffic (ADT) of less than 3,000. They may be used to supplement or simulate solid or broken lines.
- TRPM Type 3 - These markers are acceptable for use on all roadways for short or long term projects. They may be used to supplement solid or broken lines. These markers are **NOT** acceptable to simulate solid or broken lines. If these markers do not conform to the color requirements herein they shall not be placed directly on the pavement marking line.

• TRPM Type 4 - These markers are acceptable for use on chip or sand sealing operations. These markers are designed to be placed prior to the sealing operation with a protective cover that is removed after the seal coat is applied.

A list of approved raised pavement markers of each type is available on the Qualified Products List (QPL) for Work Zones, posted on the Office of Traffic, Security and Operations website at http://www.dot.state.mn.us/trafficeng/products/index.html

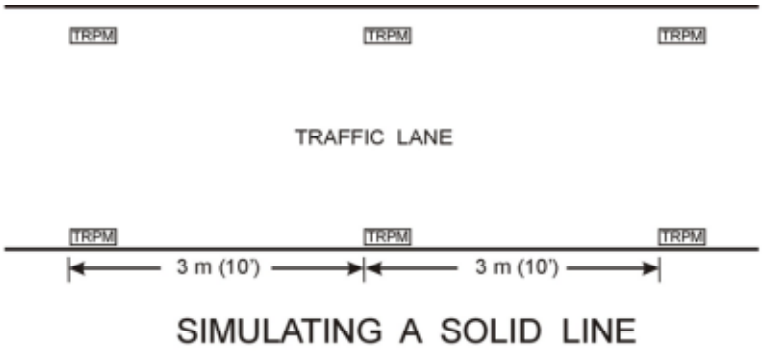
Installation, Maintenance And Removal

Installation, maintenance and removal of the TRPMS shall be done on a continuous basis as directed by the engineer. the contractor shall remove all containers, wrappers and used or damaged markers, etc. from the job site at the time of installation, during the project, and at the time of removals. ALL TRPMS shall be new and unused when placed.

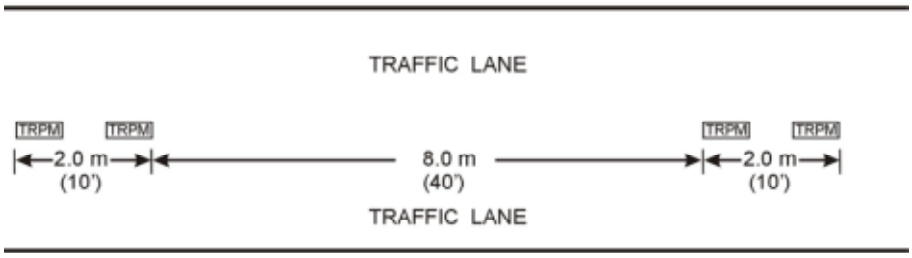
Damaged or missing TRPMS shall be replaced by the contractor within twenty-four (24) hours after notification by the engineer, at no cost to the department.

Prior to installing TRPMS, the pavement surface shall be air blown or brushed to remove surface dust and dirt. the TRPMS shall then be fixed to the pavement surface as per the manufacturer's recommendation.

page 2



SIMULATING A SOLID LINE



SIMULATING A BROKEN LINE (10 m (50') CYCLE)

TRPM 03/02/06

SPECIFICATIONS for TEMPORARY RAISED PAVEMENT MARKERS (TRPMS)
This specification provides four types of Temporary Raised Pavement Markers (TRPMs) for use in highway work zones.

GENERAL DESCRIPTION
The TRPMs used shall conform to the following specifications:

Color Requirements
TRPM TYPE 3 is not required to meet these daytime color requirements. ALL TRPM Types shall appear the same color at night as the pavement markings they simulate or supplement.
All TRPM Types 1, 2, and 4 shall conform to the following requirements:

White TRPMs shall conform to color number 17778 of the Federal Standard Number 5952 for daytime visibility.

Yellow TRPMs shall conform to the Federal Highway Administration's (FHWA's) Yellow Color Tolerance Chart for daytime visibility.

A document certifying that the markers meet the above color standards shall be included with each shipment.

Number of Retroreflective Surfaces

All white TRPMs shall contain a one way reflector unless otherwise specified. This means that only one face of the marker contains a retroreflective surface. All yellow TRPMs shall contain a two way reflector unless otherwise specified. This means that both faces of the marker shall contain a retroreflective surface. If this is not possible, then two (2) markers installed back-to-back shall be used to provide two way reflectivity when needed as shown in the Plans or directed by the Engineer.

March 1, 1999

METRIC (ENGLISH)

SPECIFICATIONS FOR EPOXY RESIN PAVEMENT MARKINGS (FREE OF TOXIC HEAVY METALS)

NOTE: Section 10.0 has been revised in the Special Provisions

1.0 DESCRIPTION

The work shall consist of furnishing and installing reflectorized white and yellow two-component, 100 percent solids epoxy pavement markings. Applications are lines, legends, symbols, crosswalks and stop lines placed on properly prepared asphaltic and portland cement concrete pavement surfaces in accordance with the Special Provisions, Plans, this Attachment and as directed by the Engineer. Upon curing, the materials produce pavement markings of specified thickness, width and retroreflectivity that resist wear from high traffic volumes for several years. During darkness and weather permitting, yellow markings shall be readily distinguishable from white markings.

Values stated in the International System of Units SI apply only to projects to be constructed in Metric units of measure. Values stated in inch-pound units (in parenthesis) apply only to projects to be constructed in English units of measure.

2.0 QUALIFICATIONS

2.1 Epoxy striping is a technical process requiring specialized equipment, quality controlled materials and well-trained operators to produce functional, long life pavement markings. To minimize application failures, MnDOT requires epoxy materials, beads, the pavement marking Contractor, and striper to be approved prior to the bidding process.

2.1.1 A pavement marking Contractor and/or equipment may be qualified as follows:

1. No previous epoxy striping on any construction contract-- contact MnDOT to arrange for field demonstration.
2. Recent epoxy striping experience with other state transportation departments-- contact MnDOT and provide experience summary, including names of persons to be contacted.
3. If striper is new, contact MnDOT to arrange for field demonstration.

2.1.2 Before any epoxy product is acceptable for bid, it shall be field tested, evaluated, approved and assigned a product identification number by the MnDOT Materials Engineering Section. An approved product is placed on the APPROVED PRODUCTS LIST which is shown in Section 2.1.4.

2.1.3 No change in product identification, chemical composition as indicated by infrared spectrophotometry and/or chemical analysis, or changes in the application requirements will be allowed. Any such changes shall be submitted for further evaluation.

MnDOT EPOXY PAVEMENT MARKING MATERIAL
APPROVED PRODUCTS LIST

2.1.4

Fast Dry (Type I)

Manufacturer	Product	Appr Date
Polycarb Inc.	MARK 55.3	1998
Epoplex	LS 50	1998

Slow Dry (Type II)

Manufacturer	Product	Appr Date
Polycarb Inc.	MARK 55	1991
Epoplex	LS 60	1998

3.0 MATERIAL CLASSIFICATIONS

3.1 This specification provides for the classification of epoxy resin pavement marking systems by type.

3.1.1 Type I - A fast cure material suitable for line applications and, under ideal conditions , may not require coning.

3.1.2 Type II - A slow cure material suitable for all applications of pavement markings under controlled traffic conditions, i.e., coning is required and flagging may be as directed by the Engineer.

3.1.2 **Only Slow Dry Type II epoxy material shall be used for epoxy pavement markings** except when specified as otherwise in the Special Provisions.

4.0 EPOXY AND BEAD REQUIREMENTS

4.1 Epoxy Resin Material

4.1.1 The material shall be composed of epoxy resins and pigments only. No solvents are to be given off to the environment upon application to a pavement surface.

4.1.2 The composition shall be within the tolerance permitted for the product tested and approved by MnDOT. Type II material shall be completely free of TMPTA (Tri-Methyol Propane Tri-Acrylate) and other multi-functional monomers.

4.1.3 All materials shall be free of lead, cadmium, mercury, hexavalent chromium and other toxic heavy metals as defined by the United States Environmental Protection Agency.

4.1.4 Color -- The color of the white epoxy shall be a pure flat white, free of tints. The color of the yellow epoxy shall closely match Color Number 33538 of Federal Standard 595 and shall conform to the following CIE Chromaticity limits using illuminant ”C”:

x	0.470	0.485	0.520	0.480
y	0.440	0.460	0.450	0.420

Daylight Directional Reflectance (Y), white, minimum 83
Daylight Directional Reflectance (Y), yellow, minimum 50

Testing will be according to :

Daylight Directional Reflectance ASTM D 2805

Color ASTM D 2805

4.1.5 Adhesion Capabilities -- When the adhesion of the material to portland cement concrete (the concrete shall have a minimum of 2,070 kPa (300 psi.) tensile strength) is tested according to American Concrete Institute Committee 403 testing procedure, the failure of the system must take place in the concrete. The concrete shall be 32□C when the material is applied, after which the material shall be allowed to cure for 72 hours at 23±2□C.

4.1.6 Abrasion Resistance -- When the abrasion resistance of the material is tested according to ASTM C 501 with a CS-17 wheel under a load of 1000 grams for 1000 cycles, the wear index shall be no greater than 82. (The wear index is the weight in milligrams that is abraded from the sample under the test conditions).

4.1.7 Hardness -- The Type D durometer hardness of the material shall be not less than 75 nor more than 90 when tested according to ASTM D2240 after the material has cured for 72 hours at 23±2□C.

4.1.8 Tensile Strength -- The tensile strength of the material, when tested according to ASTM D 638, shall not be less than 41,370 kPa (6,000 psi.) after 72 hours cure at 23±2□C.

4.1.9 Compressive Strength -- The compressive strength of the material, when tested according to ASTM D 695, shall not be less than 82,700 kPa (12,000 psi.) after 72 hours cure at 23±2□C.

4.1.10 Shelf Life -- The individual components shall not require mixing prior to use when stored for a period of 12 months.

4.2 Glass Beads

4.2.1 Glass beads shall meet the requirements of AASHTO M247, Type I, and:

a. Coatings -- the beads shall be treated according to the manufacturers recommendations and meet the requirements of Section 4.4.2 of M247, and
b. Roundness-- the beads shall have a roundness of at least 80%.

4.2.2 For 380 µm (15 mil) applications, glass beads shall be applied at a rate of at least 3.0 kg/L (25 lb./gal.). **A greater bead application rate may be necessary for meeting the performance criteria (minimum levels of retroreflectivity). This will require Contractors to consult with all the material manufacturers.**

4.3 Time to No-Track -- Type I material shall be in "no-tracking" condition in 15 minutes or less and within 45 minutes for Type II material. The "no-tracking" condition shall be determined on an application of specified thickness to the pavement and covered with glass beads at the rate of at least 3.0 kg/L (25 lb./gal.). The lines for this test shall be applied with striping equipment operated so as to have the material at manufacturer's recommended application temperature. This maximum "no-tracking" time shall not be exceeded when the pavement temperature varies from 10 to 49□ C (50 to 120□ F) and under all humidity conditions, providing the pavement is dry. The no-tracking time shall be determined by passing over the line with a passenger car or pickup truck at a speed of 40 to 55 kmph (25 to 35 mph) in a simulated passing maneuver. A line showing no visual deposition of the material to the pavement surface when viewed from a distance of 15 m (50 ft.) shall be considered as showing "no-tracking" and conforming to this requirement for time to "no-track."

5.0 APPLICATION EQUIPMENT AND PROCEDURES

5.1 Equipment

5.1.1 Equipment furnished shall include an applicator truck of adequate size and power, designed to apply an epoxy resin material and glass beads in a continuous or intermittent line pattern. The equipment shall be capable of placing stripes on the left and right sides. The left carriage shall be capable of placing two lines simultaneously with either line in a solid or intermittent pattern in yellow or white. With change in color usage, an amount of material equal to fifteen 3 m (10 ft.) stripes shall be wasted to eliminate the change of the incorrect color being applied.

5.1.2 The applicator truck (striper) and other vehicles in the striping train shall have permanently mounted Type C flashing arrowboards. They shall be visible to oncoming or following traffic, depending on the type of line being placed. Arrowboard requirements are detailed in the "Field Manual" of the *Minnesota Manual of Traffic Control Devices*. Also, truck equipment shall be capable of accumulating the footage applied per gun, individually each day. Only material application shall activate the footage accumulators. The readout shall be digital and not adjustable.

5.1.3 The equipment shall be capable of applying glass beads in a pressurized system at a rate of at least 3.0 kg/L (25 lb./gal.). **A greater bead application rate may be necessary for meeting the performance criteria (minimum levels of retroreflectivity). This will require Contractors to consult with all the material manufacturers.**

5.1.4 All guns on the spray carriages shall be in full view of the operator(s) during operation.

5.1.5 Each crew shall include at least one technical expert knowledgeable in equipment operation, application techniques, control of traffic, and safety regulations.

5.2 Procedures

5.2.1 Pavement markings shall be placed in accordance with the details shown in the Plans and the control points established by the Engineer.

5.2.2 The road surface shall be cleaned at the direction of the Engineer just prior to an application. Pavement cleaning shall consist of at least brushing with a rotary broom (non-metallic), or as recommended by the material manufacturer and acceptable to the Engineer. New Portland cement concrete surfaces shall be sandblasted clean to remove any surface treatments and/or laitance. On low speed [Speed Limit 65 km/h (40 mph) or less] urban portland cement concrete roadways, sandblast cleaning shall be used for all epoxy pavement markings.

5.2.3 If the roadway surface is dry, the epoxy material application shall immediately follow the pavement cleaning and be preceded by an air blast. However, markings shall not be applied when the wind or other conditions cause a film of dust to be deposited on the pavement surface before the material can be applied.

5.2.4 The Engineer will place necessary spotting at appropriate points as overall horizontal control for striping and to indicate necessary starting and cutoff points. Broken line intervals will not be marked. Longitudinal joints, pavement edges, and existing markings shall serve as control points when so directed.

5.2.5 A 380 µm (15 mil) epoxy line requires a liter of mixed components for every 25.8 m (84.5 ft.) of 100 mm (4 in.) wide line. Field measurements are inserted into the following equation: Line Thickness in micrometers = Liters x 0.001 x 10^{-3} x m^3 divided by the quantity Length in meters x width in meters (Thickness in inches = Gallons x 231 cubic inches divided by the quantity Length (inches) x Width (inches)). Use 3.785 liters per gallon if epoxy is metered in gallons.

5.2.6 The minimum line width shall be its nominal width with 6 mm (¼ in.) greater than the nominal width allowed provided the variation is gradual and does not detract from the general appearance. Broken line segments, normally 2 m (6.56 ft.) every 10 m (32.81 ft.), may vary up to 75 mm (3 in.) from the specified lengths provided the over and under variations are reasonably compensatory. Alignment deviations from the control guide shall not exceed , except when approved by the Engineer. Material shall not be applied over a longitudinal joint. Establishment of application tolerances shall not relieve the Contractor of his responsibility to comply as closely as practicable with the planned dimensions.

5.3 Spraying Operation

5.3.1 Placement of epoxy materials shall be permitted only on a clean, dry pavement surface and air and pavement temperatures at least 10□ C (50□ F) unless the manufacturer, in writing, approves a lower temperature.

5.3.2 Two parts of epoxy component A (pigment) and one part component B (hardener) shall be heated separately at 43□±1□ C (110□±30□ F) and thoroughly mixed. All material heated over 60□ C (140□ F) shall be discarded. The sprayed epoxy shall be applied at 43□±1□ C (110□±30□F) **or as recommended by the manufacturer**.

5.3.3 Glass beads shall be applied immediately after the placement of the epoxy. If two bead gradations are required by the Special Provisions, two bead dispensers are required to deliver the specified drop rates. Otherwise the dispenser system must deliver at a minimum 3.0 kg (25 lb./gal.) of beads per liter of epoxy material. **A greater bead application rate may be necessary for meeting the performance criteria (minimum levels of retroreflectivity). This will require Contractors to consult with all the material manufacturers.**

5.3.4 The Contractor shall cooperate with inspection personnel in reviewing operation of the equipment, safety precautions, measurement of materials (components and beads), computations to determine specific and daily application rates, sampling materials, making other measurements, such as epoxy thickness, and notifications as to work schedule.

5.3.5 **Only Type II epoxy material shall be used for epoxy pavement markings except when specified as otherwise in the Special Provisions.**

5.3.6 Traffic control for the pavement marking operations shall be in substantial conformance with the "Field Manual," *Minnesota Manual of Uniform Traffic Control Devices* . **A shadow vehicle with a truck-mounted attenuator shall be used on high speed [SPEED LIMIT (65 km/h) (40 mph) and greater], high volume (ADT 1500 and greater) highways.**

6.0 SAMPLING RATE & PROCEDURES

6.1 One pint samples of each manufacturer's lot or batch furnished for the contract shall be **submitted to MnDOT at the time of manufacturing.** One pint samples of both Part A (yellow/white) & part B must be submitted to the MnDOT Materials Laboratory, 1400 Gervais Ave., Maplewood, Minnesota 55109. (612) 779-5550 or 5549, FAX: (612) 779-5616. Samples shall be identified as follows:

1. Manufacturer's Name
2. Manufacturer's Product Number
3. Lot/Batch Number
4. Date Manufactured
5. Color
6. Intended state project numbers.

6.2 Contractors will not be allowed to use material that has not meet the requirements of Sections 6.1 & 7.0. Contractors will be asked to remove material that does not conform to Sections 6.1 & 7.0 and replace with material that does.

7.0 CERTIFICATIONS

7.1 The manufacturer shall certify that the components meet the requirements of these specifications and are on the MnDOT Approved Product List.

7.2 Certifications shall be sent along with the samples in section 6.1.

8.0 CONTAINER MARKINGS

8.1 Containers for epoxy components shall be marked with the manufacturer's name, product identification number, lot or batch number, date of manufacture, color, net weight of contents.

8.2 Containers for glass beads shall be marked with the name of manufacturer, the wording "Glass Beads," lot or batch number, coating type, date manufactured, and the net weight.

9.0 ACCEPTANCE OF PAVEMENT MARKINGS

In order to be a long-life pavement marking, epoxy markings placed in Minnesota must retain a satisfactory level of retroreflectivity in addition to demonstrating good adhesion, resisting chipping, and exhibiting proper daytime and nighttime colors. These attributes have been observed and evaluated for several years and are the basis for acceptance/rejection procedures and values used herein.

9.1 Retroreflectivity

9.1.1 Acceptable Minimum Retroreflectivity Values

MINIMUM AVERAGE RETROREFLECTIVITY VALUES
FOR EPOXY MARKINGS
($mcd/m^2/lux$)

Period	White	Yellow
Initial*	300	200
After-One-Winter*	175	140

* Described in Section 9.1.4 Miscellaneous Traffic Controls, Numbers 4 and 5.

9.1.2 Retroreflectometers-- Measurements shall be taken with either a portable or mobile retroreflectometer conforming to 30-meter geometry which is defined as: the entrance angle (the angle between the illumination axis and the retroreflector axis) shall fall between 88.50□ and 88.76□ and the observation angle (the angle between the illumination axis and the observation axis) shall fall between 1.0□ and 1.05□; and, the co-viewing angle (the complement of the entrance angle) shall fall between 2.29□ and 2.50□. All retroreflectivity readings and data analysis will be provided by MnDOT at no cost to the Contractor. MnDOT reserves the right to:

- make daytime and/or nighttime visual inspections with or without the presence of the Contractor's representative, mainly to locate obvious or suspect areas of deficiency, and

- determine retroreflectivity of symbols, legends and lines wider than 200 mm (8 in.) using the portable retroreflectometer only.

9.1.3 Test Segments -- The following methodology will be used to evaluate retroreflectivity performance of in-service longitudinal line pavement markings:

LENGTH AND NUMBER OF TEST SEGMENTS[a] PER ROADWAY[b] PER LINE TYPE[c]

Length of Roadway	Number of Test Segments	Length of Test Segments
Less than 1.5 km (1 mi.)	1	300 m (0.2 mi.)
Greater than or equal to 1.5 km (1 mi.)	1 per 1.5 km (1 mi.)	300 m (0.2 mi.)

[a] TEST SEGMENTS-- Areas of a roadway chosen for measuring retroreflectivity of the line types.

[b] ROADWAY--As used here, means that portion of a street or highway ordinarily used for vehicular traffic. In the event a street or highway includes two or more separate roadways, the term roadway shall refer to each roadway separately.

[c] LINE TYPE-- Longitudinal lines of the same color and function. For example, white and yellow edge lines are each a line type.

9.1.4 Measurements in Test Segments

Portable Retroreflectometer

1. Take a minimum of 20 readings in each test segment per line type.
2. On broken lines (skip striping), measure every other stripe, taking no more than two readings per stripe with readings 0.5 m (20 in.) from the ends of the marking.
3. For solid lines, divide test segment into ten areas of 30 m (100 ft.); space readings a minimum of 10 m (33 ft.) and a maximum of 30 m (100 ft.) apart.
4. For 10 percent of each message type, take 5 readings on each message line; for 10 percent of each symbol type, take 5 readings on each symbol.
5. Upon completion of the evaluation, regardless of the results, additional test segments may be ordered by the Engineer.

Mobile Retroreflectometer

1. Calibration of the instruments shall be in accordance with the manufacturer's instructions.
2. Retroreflectivity shall be measured at a minimum rate of 20 percent of each roadway length by line type.
3. Should another mobile unit be available, the maximum acceptable deviation for measurements made by the two different instruments of the same manufacturer and for the same roadway length shall be ± 10%.
4. Repeatability for the given mobile unit shall be ± 6%.
5. Upon completion of the evaluation, regardless of the results, additional test segments may be ordered by the Engineer.

Miscellaneous Controls

1. Take measurements on a clean, dry roadway.
2. Collect data in direction of traffic flow.
3. Measurement units are: mcd/m^2/lux.
4. Wait at least two (2) weeks from date of placement of the markings before taking initial readings.
5. Take after-one-winter readings in May or June to assure that spring rains have cleaned the beads.
6. Randomly select test segments unless night reviews or other knowledge supersedes a random selection process.
7. Measure each line type separately.
8. The Engineer may request additional readings or test segments.
9. In the event LASERLUX is not available, the Engineer may require the use of the portable retroreflectometer or establish an alternative evaluation plan.

9.1.5 Contents of Retroreflectivity Report

The report shall consist of:

- State Project number
- Trunk Highway number
- Test date
- Geographical location of the test site(s), including distance from the nearest permanent site identification, such as a reference point.
- Identification of the pavement marking material tested: type, color, age, and transverse location on the road
- Identification of the retroreflectometer
- Remarks concerning the overall condition of the line, messages and symbols such as carryover of asphalt, snow plow damage, uneven distribution of beads, etc.
- Average of the readings for each test segment with one standard deviation calculated.
- Average of the readings for each message and symbol type.

9.2 Correction of Defects/Penalties

1. All pavement markings not conforming to the requirements of the Contract shall be removed and replaced or otherwise repaired to the satisfaction of the Engineer. Removal of unacceptable work shall be accomplished with suitable blasting or grinding equipment unless other means are authorized by the Engineer.
2. Where yield computations show a deficiency in material usage of not more than 20 percent, MnDOT may require satisfactory repair or may accept the work at a reduced unit price which is in direct proportion to the percent of the deficiency. Where the deficiency in material usage exceeds 20%, MnDOT may require removal and replacement to the satisfaction of the Engineer unless other means are approved by the Engineer.
3. If the Engineer requires removal and replacement, the Contractor shall remove (by an approved process) at least 90% of the deficient line, with no excessive scarring of the existing pavement. The removal width shall be one inch wider all around the nominal width of the pavement marking to be removed.

4. Where initial retroreflectivity falls below the minimum acceptable levels but not more than 20%, the Engineer may require satisfactory repair or may accept the work at a reduced unit price which is in direct proportion to the percent of the deficiency. Where the deficiency in retroreflectivity exceeds 20%, i.e., less than 240 mcd/m^2/lux for white and 160 mcd/m^2/lux for yellow, the Engineer may require the removal and replacement to the satisfaction of the Engineer unless other means are approved by the Engineer. Where minimum levels after one winter fall below the specified levels (170 mcd/m^2/lux - 135 mcd/m^2/lux), MnDOT will notify the project Contractor and manufacturer(s) of the failure. If the initial readings were above MnDOT's specified initial minimum levels (300 mcd/m^2/lux - 200 mcd/m^2/lux), the Engineer, Contractor, and manufacturer(s) of the material(s) shall review the project together. Based on the review an of all known aspects, the Engineer will make a determination as to why the job failed and notify the Contractor, pavement marking Contractor, and/or manufacturer(s) in writing.
5. If this process has to be repeated on several projects with either the same Contractor and/or manufacturer(s), MnDOT will take corrective action. This corrective action will be a two step process:

Step 1 Pavement marking Contractor/manufacturer(s) will be considered not approved for MnDOT projects, except to bring workmanship/product back into compliance.

Step 2 If the first step cannot be attained, pavement marking Contractor/ manufacturer(s) will not be allowed to participate in MnDOT projects and/or be removed from Approved Product List.

10.0 DOCUMENTATION

~~Contractors applying epoxy pavement markings for Mn/DOT under a contract are required to fill out the attached "Construction Striper Operations Daily Log" form. These forms shall be completed at the end of each project and faxed to the "Reflective Systems Unit" at (612) 797-3181 Attn: Jim Carlson. Failure to submit completed forms may result in 10% of the overall contract price for epoxy pavement markings held back. Also, if forms are not sent in to the reflective systems unit in a timely manner projects will not be inspected during optimum times for meeting their performance criteria. Any questions regarding this form can be answered by calling the Reflective Systems Unit at (612) 797-3183.~~

S-262.1 Section 10.0 of the attached "Specification for Epoxy Resin Pavement Markings" is hereby deleted and the following substituted therefore:

Contractors applying epoxy pavement markings for Mn/DOT under a contract are required to fill out the attached "Construction Striping Report" form. These forms shall be completed at the end of each project. The original shall be given to the Engineer. Failure to submit completed forms may result in 10% of the overall contract price for epoxy pavement markings held back. The Engineer will fax them "ATTN: Pavement Marking Engineer" at 651-234-7370. If forms are not sent in to the reflective systems unit in a timely manner projects will not be inspected during optimum times for meeting their performance criteria. Any questions regarding this form can be answered by calling the Pavement Marking Engineer at (651) 234-7373. The form is on the website at: http://www.dot.state.mn.us/trafficeng/products/ContractorStripingDailyReportForm.doc

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Department of Public Works
201 4th Street SE, Room 108
Rochester, MN 55904-3740
(507) 328-2400

(1910) FUEL ESCALATION CLAUSE

January 28, 2009

The provisions set forth in MnDOT 1910 are hereby deleted, and the following is substituted therefore:

These provisions provide for compensation adjustments in the cost of motor fuels (diesel and gasoline) consumed in prosecuting the Contract work. The Engineer will calculate the Fuel Cost Adjustments. Payments or credits will be applied to partial and final payments for work items set forth herein.

For this purpose, the Department will establish a Base Fuel Index (BFI) for fuel to be used on the Project. The Base Fuel Index will be the average of the high and low rack prices shown for No. 2 ultra low sulfur fuel oil in the "OPIS Energy Group" tabulation titled "RackFax, Minneapolis, MN, OPIS Direct Gross No. 2 Distillate Fuels" for the day of the Contract letting.

A Current Fuel Index (CFI) in cents per gallon will be established for each month. The CFI will be the average of the high and low rack prices shown for No. 2 ultra low sulfur fuel oil in the "OPIS Energy Group" tabulation titled "RackFax, Minneapolis, MN, OPIS Direct Gross No. 2 Distillate Fuels" averaged for the beginning and ending dates of the monthly period being adjusted.

The Engineer will compute the ratio of the Current Fuel Index to the Base Fuel Index (CFI/BFI) each month. If that ratio falls between 0.85 and 1.15, no fuel adjustment will be made that month. If the ratio is less than 0.85, a credit to the Department will be computed. If the ratio is greater than 1.15, additional payment to the Contractor will be computed.

Credit or additional payment will be computed as follows:

(1) The Engineer will estimate the quantity of work done in that month under each of the Contract items listed below.

(2) The Engineer will compute the gallons of fuel used in that month for each of the Contract items listed below by applying the unit fuel usage factors shown.

(3) The Engineer will summarize the total gallons (Q) of fuel used in that month for the applicable items.

(4) The Engineer will determine the Fuel Cost Adjustment (FCA) from the following formulas:

If the Current Fuel Index (CFI) is greater than the Base Fuel Index (BFI), the following formula shall be used to determine the amount of Fuel Cost Adjustment to be paid to the Contractor. FCA = [(CFI/BFI) – 1.15] x Q x BFI

If the Current Fuel Index (CFI) is less than the Base Fuel Index (BFI), the following formula shall be used to determine the amount of Fuel Cost Adjustment to be <u>credited to the Department</u>.

FCA = [(CFI/BFI) – 0.85] x Q x BFI

Where FCA = Fuel Cost Adjustment (cents)
CFI = Current Fuel Index (cents per gallon)
BFI = Base Fuel Index (cents per gallon)
Q = Monthly total gallons of fuel

Basis of Payment

A Fuel Cost Adjustment payment to the Contractor will be made as a lump sum each payment period based on the last published CFI. A Fuel Cost Adjustment credit to the Department will be deducted as a lump sum each payment period from any monies due the Contractor. Upon completion of the work under the Contract, any difference between the estimated quantities previously paid and the final quantities will be determined. The CFI in effect on the day of completion of the Contract will be applied to the quantity differences in accordance with the procedures set forth above.

Schedule of Work Items
(Only items shown will be considered for compensation adjustments.)

	ITEM	UNIT	GALLONS OF FUEL PER UNIT	UNIT	GALLONS OF FUEL PER UNIT
(1) Earthwork:					
2105.501	Common Excavation	Cu. Yd	0.17	m3	0.22
2105.503	Rock Excavation	Cu. Yd	0.27	m3	0.35
2105.505	Muck Excavation	Cu. Yd	0.17	m3	0.22
2105.507	Subgrade Excavation	Cu. Yd	0.17	m3	0.22
2105.515	Unclassified Excavation	Cu. Yd	0.23	m3	0.30
2105.521	Granular Borrow (EV)	Cu. Yd	0.17	m3	0.22
	Granular Borrow (CV)	Cu. Yd	0.19	m3	0.25
	Granular Borrow (LV)	Cu. Yd	0.14	m3	0.18
2105.522	Select Granular Borrow (EV)	Cu. Yd	0.17	m3	0.22
	Select Granular Borrow (CV)	Cu. Yd	0.19	m3	0.25
	Select Granular Borrow (LV)	Cu. Yd	0.14	m3	0.18
2105.523	Common Borrow (EV)	Cu. Yd	0.17	m3	0.22
	Common Borrow (CV)	Cu. Yd	0.19	m3	0.25
	Common Borrow (LV)	Cu. Yd	0.14	m3	0.18
2105.535	Topsoil Borrow (EV)	Cu. Yd	0.17	m3	0.22
	Topsoil Borrow (CV)	Cu. Yd	0.19	m3	0.25
	Topsoil Borrow (LV)	Cu. Yd	0.14	m3	0.18
2106.607	Common Embankment (CV)	Cu. Yd	0.19	m3	0.25
2106.607	Granular Embankment (CV)	Cu. Yd	0.19	m3	0.25
2106.607	Select Granular Embankment(CV)	Cu. Yd	0.19	m3	0.25
2106.607	Select Granular Embankment Modified (__ %) (CV)	Cu. Yd	0.19	m3	0.25
2106.607	Excavation – Rock	Cu. Yd	0.27	m3	0.35
2106.607	Excavation – Muck	Cu. Yd	0.17	m3	0.22

	ITEM	UNIT	GALLONS OF FUEL PER UNIT	UNIT	GALLONS OF FUEL PER UNIT
(2) Aggregate Base:					
2211.501	Aggregate Base	Ton	0.55	t	0.61
2211.502	Aggregate Base (LV)	Cu. Yd	0.77	m3	1.01
2211.503	Aggregate Base (CV)	Cu. Yd	0.99	m3	1.29
2211.607	Open Graded Aggregate Base (CV)	Cu. Yd	0.99	m3	1.29
(3) Aggregate Shouldering:					
2221.501	Aggregate Shouldering	Ton	0.55	t	0.61
2221.502	Aggregate Shouldering (LV)	Cu. Yd	0.77	m3	1.01
2221.503	Aggregate Shouldering (CV)	Cu. Yd	0.99	m3	1.29
(4) Concrete Pavements:					
2301.511	Structural Concrete	Cu. Yd	0.98	m3	1.28
2301.513	Structural Concrete HE	Cu. Yd	0.98	m3	1.28
2301.604	Structural Concrete	Sq. Yd.	0.027*t	m2	0.00128*t
(5) Bituminous Pavements:					
2350.501	Type ( ) Wearing Course Mixture ( )	Ton	0.90	t	0.99
2350.502	Type ( ) Non-Wearing Course Mixture ( )	Ton	0.90	t	0.99
2350.503	Type ( ) ( ) Course ( ), (***t***)" Thick	Sq. Yd	0.051****t***		
2350.503	Type ( ) ( ) Course (,), (***t***) mm Thick			m2	0.0024****t***
2360.501	Type SP ( ) Wearing Course Mixture ( )	Ton	0.90	t	0.99
2360.502	Type SP ( ) Non-Wearing Course Mixture (,)	Ton	0.90	t	0.99
2360.503	Type SP ( ) ( ) Course (,), (***t***)" thick	Sq. Yd	0.051****t***		
2360.503	Type SP ( ) ( ) Course (,), (***t***) mm thick			m2	0.0024****t***
(6)Pipe:***:					
2501.511	__ ____ Pipe Culvert ___	Lin. Ft.	0.70	m	2.30
2501.521	Pipe Arch Culvert	Lin. Ft.	0.70	m	2.30
2501.561	__ ____ Pipe Culvert Des 3006 ___	Lin. Ft.	0.70	m	2.30
2501.603	Pipe Culvert	Lin. Ft.	0.70	m	2.30
2503.511	__ ____ Pipe Sewer ___	Lin. Ft.	0.70	m	2.30
2503.521	__ ____ Pipe Arch Sewer ___	Lin. Ft.	0.70	m	2.30
2503.541	__ ____ Pipe Sewer Des 3006___	Lin. Ft.	0.70	m	2.30
2503.603	__ ____ Pipe Sewer	Lin. Ft.	0.70	m	2.30

t = thickness

NOTE: No price No price adjustments will be made on fuel used for drying and heating aggregates.

*** No price adjustment will be made for pipes less than 12" in diameter or jacked pipes.

2571 PLANT INSTALLATION AND ESTABLISHMENT

2571.1 DESCRIPTION

This work consists of providing, planting, and establishing trees, shrubs, vines, and perennials of the species, variety, grade, size, or age, and root category specified for the locations shown on the plans, including planting or transplanting plants provided by the Department.

Perform this work in accordance with the current edition of the Inspection and Contract Administration Manual for Mn/DOT Landscape Projects (ICAMMLP).

2571.2 MATERIALS

A Nursery Plant Stock 3861

Provide plants of the species shown on the plans in the variety, grade, and size, or age indicated.

A.1 Investigations and Supply of Planting Stock and Materials

By submitting a proposal and accepting award of the contract in accordance with 1205, "Examination of Plans, Specifications, Special Provisions and Site of Work," the Contractor assures familiarity with the project site and contract documents, commitments from suppliers, and delivery of the plant stock and materials required to complete the contract.

A.2 Plant Stock and Materials Documentation

Provide the following plant stock and materials documentation:

(1) At or before the preconstruction conference, provide the Engineer with a Mn/DOT-preliminary *Certificate of Compliance for Plant Stock, Landscape Materials, and Equipment* (copy of form provided in the current edition of ICAMMLP).

(2) At least one week before plant stock delivery to the project, provide the Engineer with the following:

- (2.1) A copy of a valid nursery stock, dealer or grower certificate, registered with the Minnesota Department of Agriculture (MDA), a current nursery certificate or license from a state or provincial Department of Agriculture for each plant stock supplier, or both;
- (2.2) Documentation certifying that plant material shipped from out-of-state nursery vendors subject to state and federal quarantines, is free of currently regulated pests, including Emerald Ash Borers, and Gypsy Moths. To determine if Minnesota vendors are subject to quarantines, call the MDA Supervisor of Nursery Inspection and Export Certification at (651) 201-6388; and
- (2.3) An updated *Certificate of Compliance*, signed by the Contractor's authorized representative.

(3) Upon delivery of plant stock and materials to the project, provide the Engineer with the following:

- (3.1) Bills of lading or shipping documents for plant stock and landscape materials delivered to the project, and
- (3.2) An updated and signed *Certificate of Compliance*, if necessary, to reflect deviations from the original *Certificate of Compliance* documentation submitted at or before the preconstruction conference.

(4) As a condition for authorization of payments, provide the Engineer with vendor invoices or billing statements for plant stock and materials used on the project.

The Engineer will consider work performed with plant stock, materials, or equipment that was misrepresented in the documentation, as unauthorized work.

If the Contractor does not provide the documentation required by this section, the Engineer may consider subsequent work unauthorized and the Department may assess a daily charge of $200.00, on a calendar day basis, until the Contractor achieves compliance.

A.3 Substitutions

The Engineer may allow substitutions in accordance with 1605, "Substitute Materials." Before requesting substitutions, provide written documentation that plants shown on the plans are not available in quantities to fulfill the contract requirements from the individual suppliers on the *Partial List of Nursery Dealers and Growers* in the most current edition of the ICAMMLP. The Engineer, in consultation with the project designer, may authorize specific substitute plants or may extend the contract time to ensure availability of the plants shown on the plans. Provide substitutions equal to or better than the initially specified materials.

B Department Furnished Stock and Transplant Stock

Obtain Department provided stock and transplant stock from sources shown on the plans or specified by the special provisions.

C Incidental Materials and Work

The Department considers incidental materials and work, specified, non-specified, replacement, or miscellaneous, to include materials and work that are incidental to payment for the individual plant installation contract items and for which the Department does not make direct payment.

C.1 Specified Incidental Materials and Work

Supply, install, and maintain incidental materials as required for plant installation and establishment in accordance with the special provisions, plans, and standard planting details.

C.2 Non-specified Incidental Materials and Work

Supply, install, and maintain non-specified incidental materials for plant installation and establishment success in accordance with product labeling, manufacturer's instructions, and applicable laws, regulations and ordinances.

C.3 Replacement Materials and Work

Provide materials and work to replace unacceptable or missing plants, materials, and incidental items in accordance with the special provisions, plans, and standard planting details. Provide replacement materials and work that is equal to or better than the initially specified materials and work.

C.4 Miscellaneous Incidental Materials, Equipment and Work

Miscellaneous incidental materials, equipment, and work include the following:

(1) Mobilization,
(2) Traffic control,
(3) Protection and restoration of vegetation and property,
(4) Layout and staking,
(5) Soil cultivation,
(6) Compost,
(7) Mulch,
(8) Rodent protection,
(9) Staking and guying,
(10) Seedling shelters,
(11) Temporary erosion control,
(12) Mowing,
(13) Application of herbicides, insecticides, fungicides, and water and

(14) Other materials, equipment, and work necessary to install, maintain, and establish plants as shown on the plans and in a healthy, vigorous, and weed-free condition.

2571.3 CONSTRUCTION REQUIREMENTS

A General

A.1 Landscape Specialist

Provide a Landscape Specialist, certified by the Department, to perform or supervise plant installation and establishment work. Provide documentation of the Certified Landscape Specialist at or before the preconstruction conference. Landscape specialists may obtain certification by completing the one-day Department Landscape Project Inspection and Administration Training Class and passing a test administered by the Department's Landscape Architecture and Forestry Units. Full certification is valid for 3 years. Landscape Specialists may obtain provisional certification for 1 year by passing a test without completing the training class.

A.2 Notices by Contractor

Notify the Engineer at least 3 calendar days before planned deliveries of initial and replacement planting stock to the project to allow for inspection scheduling. Notify the Engineer at least 24 hours before beginning or changing distinct operations. Include the following in the notice:

(1) The project number,
(2) Engineer's name,
(3) Notification date,
(4) Intended dates and times for the operations, and
(5) The planned locations of work.

Provide notifications in writing, using confirmable e-mail, or facsimile transmissions.

A.3 Unauthorized Work and Penalties for Non-compliant Operations

The Engineer will consider work performed as follows to be unauthorized work:

(1) Without required and acceptable documentation and notifications,
(2) Without supervision by a certified landscape specialist,
(3) Without conducting required and acceptable competency tests, or
(4) In conflict with the working hours of 1803, "Prosecution of Work."

In the case of non-compliant operations, the Department may assess a daily charge of $200.00, on a calendar day basis, until the Contractor achieves compliance.

A.4 Required Equipment

Provide equipment meeting the requirements of 1805, "Methods and Equipment," and with the following available on the project at all times:

(1) At least one portable compaction tester capable of measuring compaction in the soil to at least 18 in [450 mm] deep,
(2) At least one soil recovery probe for assessment of soil moisture conditions, and
At least one tree caliper with measurement readings in inches.

B Preconstruction Work

Preconstruction work includes:

(1) Attending a preconstruction conference,
(2) Submitting preconstruction documentation,
(3) Mobilizing equipment and supplies to the project,
(4) Protecting existing vegetation, resources, and property in accordance with the plans, special provisions, and 1712, "Protection and Restoration of Property," 2031, "Field Office and Laboratory," 2557, "Fencing," and 2572, "Protection and Restoration of Vegetation."

C Staking Planting Holes and Beds

Stake the exact locations and layouts for the Engineer's approval.

To remedy unanticipated, localized problems and seasonal conditions that may hinder plant establishment, the Contractor may request the Engineer's approval to perform the following in accordance with the standard planting details and options shown on the plans:

(1) Relocate plantings,
(2) Make plant substitutions, or
(3) Modify soil or drainage characteristics.

Locate plantings to provide the following:

(1) A clear sight distance of at least 1,200 ft [360 m] in front of traffic signs and extending 50 ft [15 m] beyond the signs; and
(2) Clear zones and safety sight corners and lines shown on the plans free of plants.

D Preparing Planting Holes and Planting Beds

To prevent site compaction and damage, do not work in planting holes and bed areas if the soil moisture is greater than field capacity.

D.1 Utilities

Before cultivating soil or excavating holes on the project, meet the requirements of 1507, "Utility Property and Service."

The Contractor may request the Engineer's approval to relocate plantings to avoid unanticipated conflicts with utilities.

D.2 Weed Control and Soil Cultivation

Apply herbicide to actively growing vegetation beginning in spring or fall. Before cultivating individual planting holes and bed areas, kill turf and weed growth within the limits of planting areas that will receive mulch in accordance with the following:

(1) Mow existing vegetation to at least 3 in [75 mm] at least one week before spraying herbicide. Remove the cuttings. Allow the vegetation to re-grow to a height from 4 in to 8 in [100 mm to 200 mm] before applying the herbicide.
(2) At least three days before applying herbicide, submit to the Engineer, labels of the intended herbicides and a copy of a valid MN Pesticide Applicator License, including Category A and Category J.

(3) Spray and kill turf and weeds, including the top growth and roots, only within designated areas using a non-selective, non-residual post emergent herbicide containing 41 percent glyphosate as the active ingredient. Ensure personnel, licensed by the MDA and experienced in the use of chemical pesticides perform the work in accordance with the manufacturer's instructions and recommendations. Apply the herbicide to dry foliage on actively growing vegetation. Apply the herbicide in August or early September

before the fall or spring Plant Installation Period (PIP) as required by the contract.

If an August or September application is not possible for the spring PIP, apply the herbicide in late April or early May. If precipitation occurs within 6 hours after applying herbicide, reapply herbicide as needed to achieve 100 percent kill.

(4) Before beginning soil cultivation work, schedule and perform a Competency Test to the satisfaction of the Engineer. The Engineer considers a satisfactory Competency Test one that demonstrates acceptable soil cultivation, incorporation of soil additives, compaction levels, and soil drainage in one planting bed area and one individual tree planting area.

(5) Before placing soil additives as shown on the plans, use a spading machine to deep cultivate the planting hole and bed areas by loosening the soil to at least 12 in [300 mm] deep and a compaction level of no more than 200 psi [1,400 kPa] to this depth, as measured from the finished grade elevation of the soil. The Engineer may approve other equipment to address site constraints, if requested by the Contractor. For hydraulic spade-type, machine-moved tree-transplanting, the Engineer will not require planting hole cultivation, other than loosening the soil outside the soil-ball perimeter in accordance with the standard planting details shown on the plans.

(6) Unless otherwise shown on the plans, add 4 in [100 mm] of Grade 2 compost, in accordance with 3890, "Compost" and other soil additives shown on the plans or as requested by the Contractor and approved by the Engineer, over the cultivated planting hole and bed areas and use a spading machine to incorporate it to a depth of at least 12 in [300 mm], as measured from the finished grade elevation of the soil.

(7) Use a compaction tester to ensure compaction in the planting hole and bed areas does not exceed 200 psi [1,400 kPa] to a depth of at least 16 in [400 mm]. If Contractor-operations result in zones of hardpan or excessively compacted soil, repeat deep cultivation or de-compact the subsoil in accordance with 2105.3.G.2, "Compaction Testing and the Grading and Base Manual " specifically the requirements for turf establishment areas, at no additional cost to the Department.

(8) Ensure drainage in the planting hole and bed areas. For suspected drainage problems, perform a percolation test by filling a 16 in [400 mm] deep planting hole with water and measuring the time it takes the water to drain from the hole. The Engineer considers adequate drainage equal to or greater than a percolation rate of ½ in/h [12 mm/h]. If drainage does not meet these requirements, request approval from the Engineer to relocate or delete affected planting locations or proceed with Extra Work using one or a combination of the planting details for poorly drained soils, as shown on the plans.

(9) Apply temporary erosion control measures in accordance with the NPDES permit, SWPPP notes, and 2573, "Storm Water Management." The Contractor may use Type 6 wood chip mulch at a depth no more than 1 in [25 mm] for temporary erosion control in prepared planting bed areas.

D.3 Wet Soils, Rock, and Debris

If the Contractor encounters excessively wet soils, bedrock, or excessive quantities of boulders and construction debris, the Contractor may request the Engineer's approval to relocate or delete plantings, or modify soil or drainage characteristics in accordance with the alternative options in the standard planting details shown on the plans.

E Delivery and Storage of Plants

Before installation, the Engineer will provide for inspection and acceptance of plant stock delivered to the project in accordance with the current edition of the ICAMMLP and 3861, "Plant Stock."

Install plant stock on the day of delivery to the project unless using temporary storage methods. Before installation, keep the roots of plants completely covered with a moisture-holding material consisting of wood chips, straw, sawdust, moss, or soil.

Keep the moisture-holding material continuously moist and protect it from drying winds, direct sunlight, excessive heat, freezing, low humidity, inadequate ventilation, and animal or human harm. The Engineer will consider plants with damage that occurred or was discovered during temporary storage, unacceptable. Do not store plants from one planting season to the next.

E.1 Pruning — Top Growth and Roots

Immediately before planting, prune the roots of bare-root plants, except seedlings, and the top growth of deciduous plants. Cut-back broken or badly bruised roots and dry root tips to sound, healthy tissue. Prune to remove dead, rubbing, damaged, diseased, and suckering branches, and to improve plant symmetry, structure, and vigor. Prune coniferous trees and shrubs only to remove damaged growth or a competing leader.

Prune in accordance with the horticultural practices specified in the current edition of the ICAMMLP and the standard planting details on the plans.

Do not prune oak trees during the oak wilt season from April through July, to prevent the spread of oak wilt disease. Immediately treat accidental cuts or wounds to oaks with a wound dressing in accordance with the standard planting details shown on the plans. Keep wound-dressing material on the project during the oak wilt season.

E.2 Buried Root Flares

The Engineer will consider container-grown and balled and burlapped plant stock unacceptable if provided with more than 4 in [100 mm] of soil depth above the root flare. The Engineer may accept plants provided with no more than 4 in [100 mm] excess soil above the root flare if the excess soil can be removed without damaging the root system of the plants.

E.3 Excessive Roots

Reject containerized or balled and burlapped plants with roots extending at least 4 in [100 mm] beyond the container or burlap.

F Installation of Plants

F1 General

Before proceeding with plant installation work, schedule and perform a competency test demonstrating acceptable plant installation methods to the Engineer's satisfaction and in accordance with the plans and standard planting details, for each plant pay item and root category on the project. The Engineer considers a satisfactory competency test to be one that demonstrates acceptable handling of plants, digging of holes and beds, and installation of plants, initial watering, installation of protection materials and mulching.

Before digging planting holes, rake temporary erosion control wood chip mulch off prepared planting areas to prevent wood chip contamination of the planting soil in the holes.

The Contractor may re-spread wood chip mulch formerly used as temporary erosion control around plants to a depth no greater than 1 in [25 mm] following plant installation, if newly provided and acceptable Type 6 mulch is applied over the top to the depth shown on the standard planting details in the plans.

Dig planting holes to the configuration and minimum dimensions shown in the standard planting details on the plans. If the soil moisture is greater than field capacity, do not work in planting holes and beds.

Ensure drainage in the planting hole and bed areas. For a suspected drainage problem, perform a percolation test by filling a 16 in [400 mm] deep planting hole with water and measuring the time it takes the water to drain from the hole. The Engineer considers adequate drainage equal to or greater than a percolation rate of ½ in/h [12 mm/h]. If drainage does not meet these requirements, request approval from the Engineer to relocate or delete affected planting locations or proceed with extra work using one or a combination of the planting details for poorly drained soils as shown on the plans.

F.2 Individual Plant Stock Types and Installation Requirements

Install plants in accordance with the steps and requirements in the standard planting details shown on the plans and specific to each plant stock type.

G Watering

During the PIP, provide watering equipment and forces on the project capable of completely watering plants as often as necessary to maintain soil moisture in the root zones.

Within 2 hours of installation, saturate the backfill soil of each plant with water. After settling, provide additional backfill to fill in the voids.

H Mulch

Before placing mulch, fine grade and level the planting bed soils with hand tools. Place mulch material in accordance with the standard planting detail shown on the plans no more than seven days after plant installation. The Engineer will consider placement of mulch, contaminated with soil or other materials and not complying with the requirements of 3882, “Mulch Materials,” unacceptable. Remove unacceptable mulch from the project.

I Protection of Installed Trees

Use protective materials to ensure the healthy growth and survival of installed trees.

I.1 Staking and Guying

Unless staking and guying is shown on the plans, only stake and guy trees if necessary to maintain the trees in a plumb condition. The following circumstances may warrant staking and guying:

(1) Excessive soil moisture,
(2) Light-textured soil,
(3) Steep slopes,
(4) Exposure to excessive wind, and
(5) The likelihood of vandalism.

Install staking and guying in accordance with the standard planting details shown on the plans.

Remove staking and guying within 1 year of initial installation.

I.2 Rodent Protection

Place rodent protection around deciduous, pine, and larch trees in accordance with the standard planting details shown on the plans.

I.3 Tree Painting

Paint trees in accordance with the standard planting details shown on the plans.

I.4 Seedling Tree Shelters

Install seedling tree shelters in accordance with the standard planting details shown on the plans.

J Cleanup and Restoration Work

Perform the following cleanup and restoration work on an ongoing basis and as the final step of the initial planting operations:

(1) Remove excess materials, rocks and debris from the project;

(2) Repair turf in disturbed areas with seed mixes as shown on the plans or to match in-place turf;

(2.1) Immediately before sowing seed or laying sod, prepare soil as specified in 2575.3.B, "Grading Preparations Prior to Seeding;"

(2.2) Uniformly broadcast a Type 4 natural base fertilizer, as specified by 3881.2.B.4, "Type 4 — Natural Based Fertilizer," that provides nitrogen at an application rate of 43 lb/acre;

(2.3) Lay sod, or uniformly broadcast seed at 1.5 times the rate specified in Table 2575-1, "Seed Mixture Application Rates." Provide seed in accordance with the requirements of 3876, "Seed" and perform seeding in accordance with Table 2575-2, "Season of Planting;"

(2.4) Rake and firm seeded areas to ensure seed contact with the soil;

(2.5) Broadcast or disc anchor Type 1 mulch in all seeded areas;

(3) Install erosion control measures to prevent erosion.

K Plant Establishment Period

K.1 Establishment Period

A Plant Establishment Period (PEP) of at least 2 calendar years begins on the date that initial planting operations on the project are completed and continues until final acceptance of the project, unless otherwise shown on the plans.

K.2 Establishment Work

Keep plants in a healthy growing condition in accordance with the current edition of the ICAMMLP throughout the establishment period and submit Mn/DOT *Landscape Contractor Scouting Reports* in accordance with item 1 of 2571.3.K.2.a, "All Plants." Perform plant establishment work throughout the growing seasons from April through October and as necessary during the dormant seasons from November through March. The Engineer may perform random inspections throughout the PEP to verify compliance. The Engineer will consider the Contractor non-compliant if the Contractor does not maintain plants throughout the PEP and does not submit scouting reports.

The Department may assess a daily charge of $200.00 for non-compliance, on a calendar day basis, until the Contractor achieves compliance.

K.2.a All Plants

In plant establishment work, perform the following:

(1) Scout to assess the condition of the plants and the planting site and factors that may influence plant health, vigor, and establishment success. Scout these conditions at least every two weeks during the growing season and at least every month during the dormant season;

(2) Submit a written scouting report to the Engineer via e-mail by the 1st and 15th of each month during the growing season from April to October and by the 1st of each month during the dormant season from November to March. The Engineer will use the report-frequency and content to assess plant establishment compliance. The report may include scanned

copies of the plan sheets with the Contractor notes, copies of the report form found in the current edition of the ICAMMLP, or both. Include the following in the report:

(2.1) The project number;
(2.2) Engineer's name;
(2.3) Name of Contractor's responsible scout or representative;
(2.4) Dates work was performed;
(2.5) Work locations;
(2.6) Work completed;
(2.7) Prevailing weather conditions;
(2.8) Soil moisture assessments;

(2.9) Insect, animal, vehicular, weather, or other damage;
(2.10) Disease problems;
(2.11) Treatment recommendations' and
(2.12) Assessment of overall plant conditions including weed competition and control.

(3) Maintain soil moisture in accordance with 2571.3.G, "Watering" and the watering guidelines of the standard planting details shown on the plans;
(4) Repair, adjust, or replace staking and guying, mulch material, planting soil, rodent protection, seedling tree shelters, tree paint, and other incidental items in accordance with the plans;
(5) Maintain healthy, vigorous plants. free of harmful insects, fungus, and disease;
(6) Remove dead, dying, and unsightly plants. Provide and install replacement plants in accordance with 2571.2.K.2.b, "Replacement Requirements;"
(7) Maintain plants in a plumb condition at the planting depth shown on the planting details in the plans;
(8) Maintain planting areas in a weed-free condition as follows:
(8.1) Remove weeds, top growth and roots, within the mulch limits by hand pulling. Pre-water mulched areas to ensure weed top growth and roots are entirely removed. Ensure weeding operations do not contaminate the mulch or project with weed seed, weed-laden soil or propagating weed parts. Remove State and County-regulated noxious weeds to at least 5 ft [900 mm] beyond the mulch limits. Remove weed parts or weed-laden material from the project to avoid the spread of weed infestations;
(8.2) Do not spray chemicals for weed control in mulched planting areas during the PEP. The Contractor may apply a non-selective, non-residual post-emergent herbicide containing 41 percent glyphosate, as the active ingredient with a surfactant on a spot treatment basis with a brush or wick applicator. The Contractor may also apply a broad-spectrum dichlobenil based granular, pre-emergent herbicide in accordance with product labeling and manufacturer's recommendations;
(8.3) Do not weed whip or weed clip as weed control;
(8.4) Mow turf bands around the mulch limits at least 5 ft [900 mm] beyond the limits and at least 4 in [100 mm] high if the turf height exceeds 9 in [230 mm] adjacent to mulched planting areas;
(8.5) Mow turf areas installed as part of the project when the growth exceeds 18 in [500 mm] high. Mow turf from 6 in [150 mm] to 12 in [300 mm] high. Control State and County-listed noxious weeds;
(9) Prune to remove dead, rubbing, damaged or diseased branches, unwanted suckers, and to improve plant form and structure;
(10) Prevent or repair rutting and other damage that may lead to soil erosion and weed infestation;
(11) Perform plant establishment operations consistent with plant care and horticultural practices detailed in the current edition of the ICAMMLP; and
(12) Remove excess material, obsolete temporary erosion control devices, rocks, and debris from the project.

K.2.b Replacement Requirements

Within the first year of the 2-year PEP, determine which plants need replacing. Replace dead, defective, or missing plants and incidental materials in accordance with initial installation requirements, including plants lost due to accidents, vandalism, theft, rodent damage, damage caused by the Contractor, or if ordered by the Engineer, at no additional cost to the Department. Conduct plant replacement operations during the month of May within the first year of the PEP. At least one week before plant replacement, submit a summary report of proposed plant replacements to the Engineer. Include by attachment, copies of plan sheets with the proposed replacement quantities and locations identified and a Mn/DOT

Certificate of Compliance for Plant Stock, Landscape Material, and Equipment, in the report. Using brightly colored paint, mark on site plants requiring replacement.

Provide replacement plants and incidental materials that are equal to or better than the initial material required by the contract.

If less than a full year remains in the PEP, do not replace plants unless the PEP is extended by a supplemental agreement or change order to provide at least one full year of establishment care.

L Acceptance of Work

For acceptance at full payment, ensure each plant meets the *Criteria For Accepting Plant Size* shown in the current edition of the ICAMMLP.

L.1 Acceptance of Preconstruction Work

The Engineer will accept the preconstruction work after the Contractor secures commitments for required materials, submits a Mn/DOT *Certificate of Compliance for Plant Stock, Landscape Materials, and Equipment*, participates in a preconstruction conference, obtains the Engineer's approval for the progress schedule, moves equipment and supplies to the project, and provides protection for existing plants.

L.2 Acceptance of Preparation of Planting Holes and Beds

For the Engineer's acceptance of preparation of planting holes and beds, complete a competency test, other specified staking, initial weed control, soil cultivation including incorporation of additives, and temporary erosion control work.

L.3 Acceptance of Initial Planting Operation

The Engineer will provisionally accept initial planting operations based on the following:

(1) Plant stock acceptance,
(2) Completion of a competency test,
(3) Installation of individual plants, and
(4) All incidental material and work items shown in the initial planting operations chapter of the current edition of the ICAMMLP, including initial but not limited to watering, tree protection materials, mulching, proper drainage, pruning, staking and guying, tree painting, fertilizing, erosion control, seeding and clean up.

L.4 Final Acceptance

As a condition for terminating the PEP and conducting the final inspection, the Engineer may require the Contractor to bring the plant establishment work into compliance.

On or about the date of termination of the PEP, the Engineer will perform a final inspection of the project.

The Engineer will determine which plants to accept for payment at the contract unit price, at a reduced payment, or with no payment.

Upon final acceptance, the Engineer will not require further Contractor-care of plantings.

The Engineer will make final acceptance at the completion of the two-year PEP and based on a final inspection of the completed project.

2571.4 METHOD OF MEASUREMENT

The Engineer will measure plants separately by the number of acceptable plants for each contract item in accordance with 2571.5.G, "Payment Schedule."

2571.5 BASIS OF PAYMENT

The Department will make payment for plant installation and establishment at a percentage of the contract unit price per item unit of measure for all costs relating to furnishing, installing, and maintaining, the required plants and associated incidental materials as specified and shown on the plans.

The Engineer may require additional materials and work beyond that specified or shown in the contract. The Department will make payment for the additional materials and work as extra work.

The Department may make full payment, reduced payment or no payment of no more than the maximum eligible partial payment percentage at any payment phase (initial, interim, final) based on the performance of the Contractor (see Payment Checklist in the current edition of the ICAMMLP).

A Full Payment

The Department will make full payment of 100 percent of the contract unit price for each plant the Engineer considers acceptable, upon inspection, if the Contractor fully achieves all Payment Criteria as defined in the Payment Checklist in the current edition of the ICAMMLP.

B Reduced or No Payments

The Department will make a reduced payment or no payment of the contract unit prices for each plant if the Contractor does not achieve all Payment Criteria, as defined in the Payment Checklist in the current edition of the ICAMMLP.

C Initial Payment

The Department will make partial payment up to 70 percent of the contract unit price for each plant for completion of the following work:

C.1 Preconstruction Work

The Department will pay no more than 10 percent of the contract unit price for each plant with the completion and acceptance of preconstruction work as defined in the *Preconstruction Work Checklist* in the current edition of the ICAMMLP.

C.2 Preparation of Planting Holes and Beds

The Department will pay no more than 15 percent of the contract unit price for each plant with the completion and acceptance of preparation of planting holes and beds work as defined in the *Preparation of Planting Holes and Beds Checklist* in the current edition of the ICAMMLP.

C.3 Initial Planting Operations

The Department will pay no more than 45 percent of the contract unit price for each plant with the completion and acceptance of initial planting operations work as defined in the *Initial Planting Operations Checklist* in the current edition of the ICAMMLP.

D Interim Payment

At the end of the first calendar year of the PEP, and after completion and acceptance of the Contractor's work and continuous compliance with the plant establishment requirements as defined by the *Plant Establishment-Year One Checklist* in the current edition of the ICAMMLP, the Engineer may authorize no more than 15 percent of the contract unit price for each plant.

E Final Payment

The Department will make final payment after final inspection and acceptance of the completed project at the end of the PEP. The Engineer may authorize no more than 15 percent of the contract unit price for each plant as defined by the *Plant Establishment Year 2 Checklist* in the current edition of the ICAMMLP. The total final payment includes the Plant Establishment Year 2 payment, assessments and reduced payments, if any, and bonus payment, if eligible.

The Department will not pay for replacement plants, unless authorized by the Engineer.

The Department may continue to withhold any percentage of initial and interim payments from the final payment.

The Department will not reimburse any assessments charged during the contract period at the final payment. If the final voucher shows that the total of initial and interim payments made exceeds the total amount due the Contractor, promptly refund the Department for the overpayment.

F Bonus Payment

When 90 percent or more of all plants installed within the initial plant installation period (PIP) and related contract operations have been continuously acceptable throughout the contract period, the Department will make a bonus payment of 10 percent of the total final contract unit price for plant installation and establishment.

The Department considers replacement plants, replaced during the initial PIP, to be initially installed plants. Replacement plants made during the PEP are not eligible for bonuses.

G Payment Schedule

The Department will pay for plant installation and establishment on the basis of the following schedule:

Item No.	Item	Unit
2571.501	Coniferous tree (size & root category)	tree
2571.502	Deciduous tree (size & root category)	tree
2571.503	Ornamental tree (size & root category)	tree
2571.504	Coniferous shrub (size & root category)	shrub
2571.505	Deciduous shrub (size & root category)	shrub
2571.506	Vine (age or size & root category)	vine
2571.507	Perennial (age or size & root category)	plant
2571.541	Transplant tree (spade size*)	tree
2571.544	Transplant shrub	shrub
2571.546	Transplant vine	vine
2571.547	Transplant perennial	plant

NOTE: State Root Category: Seedling, Bare Root, Machine Moved, Container Grown, Balled and Burlapped

* Spade size: 42 in [1.1 m], 60 in [1.5 m], 78 in [1.9 m], 85 in [2.1 m], 90 in [2.3 m].

SCHEDULE OF MATERIALS CONTROL

See also website: http://www.mrr.dot.state.mn.us/materials/materials.asp for March 15, 2013.
http://www.dot.state.mn.us/materials/labdocs/2013SMCFinal.pdf

Minnesota Department of Transportation Schedule of Materials Control (SMC) – Introduction Page

(Federal Aid, State Funds, County/Municipal Federal Aid Projects and State Aid Projects)

This schedule outlines the minimum sampling and testing required for most materials used in highway construction. Some items that are rarely used or materials of recent development are often covered by special provisions and may not be shown on the schedule. For more information regarding contract requirements for testing, please reference the "Standard Specifications for Construction", Specification 1603 Materials: Specifications, Samples, Tests, and Acceptance.

Laboratories performing acceptance tests for payment shall be accredited by the AASHTO Materials Reference Laboratory (AMRL) or a comparable accreditation program approved by MnDOT and the FHWA for all test procedures performed. Grading and Base materials are exempt from the accreditation requirement.

When sample sizes required for testing exceed 35 pounds, please submit multiple containers of the material with no individual container weighing more than 35 pounds.

Small quantities of materials may be accepted without sampling and testing. A small quantity is defined as any total quantity, for the whole project, of one material, which is smaller than the minimum quantity required for testing unless modified by the individual material items. These materials shall be from known, reliable sources, perform satisfactorily and meet the requirements for purpose intended. The inspection report (Form 02415) should include a statement to this effect and show the source. Form 2403 may be used to report small quantities of diverse materials from different sources. Form 02415 and Form 2403 (or approved revisions) are referenced in the Schedule of Materials Control for project record documentation and are required to be maintained in the project file.

Previously approved materials transferred from another project should be reported on Form 02415. The report should include: type of material, quantities involved, source, and supplier of materials. Whenever possible, include the project number for which the material was originally approved.

If Forms 02415 and 2403 are referenced by form number within the Materials Control Schedule for materials or products received from pre-approved sources, where the field responsibility for acceptance is visual inspection and all information required to complete these forms is contained in other documents in the project file, the use of these forms becomes optional. If these forms are completed and sent to the Project Engineer by off-site inspection personnel from the district or the Office of Materials, they must be retained in the project file.

A Telephone Index is included with the Schedule giving contact information for the specialty areas if further information is required regarding the various materials. A form index is also included.

The Department maintains the Approved/Qualified Products List and the Certified Products and Services List, as well as, the Schedule of Materials Control. All are available electronically on the Office of Materials and Road Research website. www.dot.state.mn.us/materials.html

Products manufactured offsite may be pre-approved; however, final acceptance will be made at the point of incorporation, based upon review of documentation and inspection for shipping or other damage.

Contact the MnDOT District Independent Assurance Inspector when project starts to provide the proper servicing of your project.

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Certifications List

Material	SMC Section	Sub Section	Page	Certification Needed
All Base, Surface, and Granular Materials	I. Grading & Base	Many	7-13	Form G&B-104 (24346) include gradation, crushing, bitumen content, and quality test results
Plant Mixed Asphalt (PMA)	II. Bituminous	Many	14-20	All PMA from certified supplier www.dot.state.mn.us/materials/bituminous.html
Shingles	II. Bituminous		15	Contractor shall provide documentation that of all RAS /TOSS (Tear Off Shingle) material is from a MPCA certified supplier.
Bituminous Material	II. Bituminous		19	Only Bituminous Materials from certified asphalt binder sources are allowed for use. The most current list of Certified Sources can at http://www.dot.state.mn.us/products
Emulsified Asphalt	II. Bituminous		19	Use Emulsion for seal coat from a certified emulsified asphalt source.
Certified Ready Mix	IV. Concrete	Many	28-29	Contact Report from Ready-Mix Plant. All concrete from certified plant including a computerized certificate of compliance with each load.
Portland Cement Fly Ash Ground Granulated Blast Furnace Slag Cement Admixtures	IV. Concrete		27	Concrete Plant Batching Materials: All materials must come from certified approved, or qualified sources. All certified sources must state so on the Bill of Lading Delivery invoice including MnDOT standardized certification statement for cement, flyash, and slag. The most current list of certified/approved sources can be found at www.dot.state.mn.us/products.
Plastic for Curing	IV. Concrete		35	A Certificate of Compliance shall be submitted to the Project Engineer from the Manufacturer certifying that the plastic complies with AASHTO M171.
Aggregate for Low Slump Overlays	IV. Concrete		39	Aggregate pit numbers and 1 passing gradation result per fraction per source

Certifications List (cont.)

Material	SMC Section	Sub Section	Page	Certification Needed
Profiler	IV. Concrete		38	Contractor provides MnDOT certified Inertial Profiler Results for bumps/dips and/or Areas of Localized Roughness for the entire project.
Aggregate for Concrete Pavement Repair	IV. Concrete		40	Aggregate pit numbers and 1 passing gradation result per fraction per source
Aggregate for Dowel Bar Retrofits	IV. Concrete		42	Aggregate pit numbers and 1 passing gradation result per fraction per source
Plant Stock & Landscape Materials	V: Landscaping etc.	2	43	Several certifications
Silt Fence	V: Landscaping etc.	5	44	Certificate of Compliance with MARV values
Flotation Silt Curtain	V: Landscaping etc.	6	44	Manufacturers' certification of compliance
Mulch Type 3	V: Landscaping etc.	12	44	Certified Vendor by Minnesota Crop Improvement Association must be tagged grain straw only on label.
Mulch Type 6 Wood Chips	V: Landscaping etc.	13	45	Emerald Ash Borer Compliance Agreement with the MDA
Seeds	V: Landscaping etc.	14	45	Certified Vendor by Minnesota Crop Improvement Association must be tagged.
Seeds - Native	V: Landscaping etc.	14	45	Certified Vendor by Minnesota Crop Improvement Association must be tagged.
Sod	V: Landscaping etc.	15	45	A certified tag by Minnesota Crop Improvement Association for Salt tolerant sod. A certificate of Compliance for all other types of sod listing grass varieties.
Compost	V: Landscaping etc.	16	45	A/QPL with certified test reports.
Waterproofing material membrane waterproof system	VI: Chemical Items		46	Certificate and test results
Waterborne latex traffic marking paint	VI: Chemical Items		47	Certificate of Compliance
Epoxy traffic paint	VI: Chemical Items		47	Certificate of Compliance
Traffic marking paint	VI: Chemical Items		47	Certificate of Compliance
Non-traffic marking paint	VI: Chemical Items		47	Certificate of Compliance
Bridge structural steel paint	VI: Chemical Items		48	Certificate of Compliance
Exterior masonry paint	VI: Chemical Items		48	Certificate of Compliance
Noise wall stain	VI: Chemical Items		48	Certificate of Compliance
Drop-on glass beads	VI: Chemical Items		48	Certificate of Compliance
Pavement marking tape	VI: Chemical Items		48	Certificate of Compliance
Steel sign posts	VII: Metallic	2	50	Certification of domestic source if applicable under 1601
Posts for traffic or fence	VII: Metallic	3A	50	Certification of domestic source if applicable under 1601 For fence: Fence certification form (Optional)
Fence components	VII: Metallic	3B	50	Fence certification form (Optional)
Fence gates	VII: Metallic	3C	50	Fence certification form (Optional)
Fence barbed wire fabric	VII: Metallic	3D	50	Fence certification form (Optional)
Fence woven wire fabric	VII: Metallic	3E	51	Fence certification form (Optional)
Fence chain link wire fabric	VII: Metallic	3F	51	Fence certification form (Optional)
Reinforcing steel uncoated bars	VII: Metallic	5A	51	Certificate of Compliance & certified mill analysis
Reinforcing steel epoxy bars	VII: Metallic	5B	52	Inspected tag or Certificate of Compliance & certified mill analysis
Steel Fabric	VII: Metallic	5E	52	Certificate of Compliance

Certifications List (cont.)

Material	SMC Section	Sub Section	Page	Certification Needed
Dowel Bars	VII: Metallic	5F	52	Certificate of Compliance
Pre or post tensioning strand	VII: Metallic	5G	53	Mill analysis
Anchor rods & Structural Fasteners	VII: Metallic	7, 8	53	Yearly MnDOT passing test report
Timber & lumber	VIII: Miscellaneous	1	57	Certified on invoice
Bearing pads	VIII: Miscellaneous	4	57	Certificate of Compliance
Corrugated metal pipe	IX: Geosynthetics & Pipe	1A	58	Certified on invoice
Corrugated metal structural plate	IX: Geosynthetics & Pipe	1B	58	Certified on invoice
Corrugated metal aluminum plate	IX: Geosynthetics & Pipe	1C	58	Fabricator's Certificate and guarantee
Concrete pipe & manholes reinforced	IX: Geosynthetics & Pipe	3A	58	Certified stamp and certification document
Precast box culverts	IX: Geosynthetics & Pipe	4A	59	Stamped & field inspection report
Prestressed beams & posts, etc	IX: Geosynthetics & Pipe	4B	59	Stamped & field inspection report
Manholes & catch basins	IX: Geosynthetics & Pipe	5	60	Certification document or stamped
Thermoplastic pipe ABS & PVC	IX: Geosynthetics & Pipe	7	60	Certificate of Compliance
Corrugated PE Pipe: Single wall – edge drains	IX: Geosynthetics & Pipe	8	60	Certificate of Compliance
Corrugated PE Pipe: dual wall – 12"-48"	IX: Geosynthetics & Pipe	13	61	Certificate of Compliance
Geotextile fabric	IX: Geosynthetics & Pipe	14	62	Manufacturers' Certification of compliance
Brick sewer concrete	X: Brick, Stone, Masonry	1B	63	Air content statement
Concrete masonry units	X: Brick, Stone, Masonry	2A	63	Air content statement
Light standards	XI: Electrical & Signal	1	64	Certificate of Compliance
Cable & Conductors	XI: Electrical & Signal	7	65	Usually inspected at the distributor. Documentation showing project number, reel number(s), & MnDOT test number(s) will be included with each project shipment. If not received from Contractor, submit sample for testing along with manufacturers' material certification.
Electrical systems	XI: Electrical & Signal	10	66	Electrical Systems are to be reported as a "System" using the Lighting, Signal, and Traffic Recorder Inspection Report.
Traffic signal systems	XI: Electrical & Signal	11	66	Traffic Signal Systems are to be reported as a "System" using the Lighting, Signal, and Traffic Recorder Inspection Report.

Telephone Index for Schedule of Materials Control

Section	Page	Section Name	Contact	Phone
Part I	Page 7	Grading & Base – Specifications 2105, 2106, 2118, 2211, 2212, 2215, and 2221	Terry Beaudry Cary Efta Rebecca Embacher	(651) 366-5456 (651) 366-5421 (651) 366-5525
Website: www.dot.state.mn.us/materials/gradingandbase.html				
Part II Part II C	Page 14 Page 19	Bituminous - Spec. 2360 Asphalt Binder	John Garrity Jim McGraw Jason Szondy	(651) 366-5577 (651) 366-5548 (651) 366-5549
Website: www.dot.state.mn.us/materials/bituminous.html				
Part III	Page 21	Bituminous Specialty Items	Terry Beaudry Greg Schneider Tom Wood	(651) 366-5456 (651) 366-5403 (651) 366-5573
Part IV	Page 26	Concrete – Aggregates and Mix Design Concrete – Certified Ready Mix Concrete Concrete Paving Concrete – Bridges Concrete – Pavement Rehabilitation	Wendy Garr Wendy Garr Rob Golish Ron Mulvaney Gordy Bruhn	(651) 366-5423 (651) 366-5423 (651) 366-5576 (651) 366-5575 (651) 366-5523
Website: www.dot.state.mn.us/materials/concrete.html				
Part V	Page 43	Landscaping and Erosion Control Items Erosion Control Landscaping Wood Chips	 Lori Belz Scott Bradley Tina Markeson	 (651) 366-3607 (651) 366-4612 (651) 366-3619
Part VI	Page 46	Chemical Items	Jim McGraw Dave Iverson	(651) 366-5548 (651) 366-5550
Part VII	Page 49	Metallic Materials and Metal Products Sampling Test Results Bridge Structural Metals	 Steve Grover Laboratory Todd Niemann Barry Glassman	 (651) 366-5540 (651) 366-5560 (651) 366-4567 (651) 366-4568
Part VIII	Page 57	Miscellaneous Materials Sections 1thru 3 Section 4 Test Results	 Steve Grover Todd Niemann Barry Glassman Laboratory	 (651) 366-5540 (651) 366-4567 (651) 366-4568 (651) 366-5560
Part IX	Page 58	Geosynthetics, Pipe, Tile, and Precast/Prestressed Concrete Sections 1 thru 11, & 13 Section 12 Section 14 Test Results	 Steve Grover Rich Lamb Randy Tilseth Laboratory	 (651) 366-5540 (651) 366-5595 (651) 366-5451 (651) 366-5560
Part X	Page 63	Brick, Stone and Masonry Units/Modular Retaining Wall Blocks Sections 1, 2A,3, & 4 Section 2B Test Results	 Steve Grover Blake Nelson Laboratory	 (651) 366-5540 (651) 366-5599 (651) 366-5561
Part XI	Page 64	Electrical & Signal Sections 1, 8-11 Section 2, 4- 7 Section 3 Test Results	 Susan Zarling Steve Grover Wendy Garr Laboratory	 (651) 234-7052 (651) 366-5540 (651) 366-5423 (651) 366-5560

Form Index

Grading and Base	
Form No.	**Form Name**
G&B – 001 (02115-03)	Grading & Base Report
G&B – 002 (02154-02)	Random Sampling Acceptance
G&B – 101 (02402-03)	Sieve Analysis
G&B – 103 (02463)	Percent Crushing Report
G&B – 104 (24346)	Certificate of Aggregates & Granular Materials
G&B – 105 (21850)	Moisture Test
G&B – 203	(Table 2105-6, 2106-6) DCP Penetration Index Method
G&B – 204	(Table 2211-3) DCP Penetration Index Method
G&B – 205	2215 DCP Penetration Index Form – Full Depth Reclamation
G&B – 303 (24587-01)	Moisture - Density (Proctor) Test
G&B – 304 (02140-03)	Relative Density Test

Concrete	
Form No.	**Form Name**
2152	Concrete Batching Report
2162	Concrete Test Beam Data
2409	ID Card Concrete Test Cylinder
2448	Weekly Concrete Report
2449	Weekly Concrete Aggregate Report (QC/QA)
21412	Weekly Report of "Low Slump Concrete"
21763	Concrete Aggregate Worksheet
21764	Concrete Aggregate Worksheet JMF - Paving
21765	Concrete Aggregate Worksheet JMF
24143	Weekly Certified Ready-Mix Plant Report (Verification)
24300	ID Card Cement Samples
24308	ID Card Fly Ash Samples
24327	Field Core Report
	Concrete W/C Ratio Calculation Worksheet
	Incentive/Disincentive Smoothness Worksheet

Bituminous	
Form No.	**Form Name**
2413	Asphalt Sample Identification Card

Miscellaneous	
Form No.	**Form Name**
2410	Sample ID Card
02415	Inspection Report on …….. (May be used for documentation or use another method to capture required documentation)
2403	Inspection Report for Small Quantities (May be used for documentation or use another method to capture required documentation)
	Certification Form for Type of Fence used, see on right side of page, www.dot.state.mn.us/materials/lab.html

I. Grading and Base Construction Items 2005 and 2013 Spec Book (www.dot.state.mn.us/materials/gradingandbase.html)

Pay Item Number	Material	Spec. No.	Minimum Contractor Quality Control Testing Rate	Minimum Agency Verification (Acceptance) Testing (See Note 1)		Minimum Companion (Split Lab) Sample (See Notes 2 & 3)		Form No. (See Note 5)
				Rate	**Size**	**Rate**	**Size**	
(a) 2118 (b) 2211 (c) 2221 or 2118 (d) Spec. Prov. or 2212	**1. Gradation** (a) Aggregate Surfacing (b) Aggregate Base (c) Aggregate Shoulders (d) Drainable Aggregate Base (OGAB & DSB)	3136, 3138, & Special Provisions	Production: 1/550 yd^3 (CV)	**<u>Random Sampling</u>** • < 280 yd^3 (CV) No tests Required • ≥ 280 yd^3 (CV) to < 1,100 yd^3 (CV) 1. Lot Size = Total Quantity 2. Divide lot into two equal sublots 3. Collect one random sample from each sublot 4. Average results to determine compliance • ≥ 1,100 yd^3 (CV) to < 5,500 yd^3 (CV) 1. Lot Size = Total Quantity 2. Divide Lot into four equal sublots 3. Collect one random sample from each sublot. 4. Average results to determine compliance • ≥ 5,500 yd^3 (CV) 1. #Lots = $\frac{\text{Total Bid Quantity}}{5{,}500}$ 2. Round # Lots up to next whole number 3. Lot Size = $\frac{\text{Total Bid Quantity}}{\text{\#Lots}}$ 4. Divide each Lot into four equal sublots. 5. Collect one random sample from each sublot. 6. Average results for each Lot to determine compliance.	60 lb	1 per project in this category. Obtain split sample from the 1st verification sample.	30 lb.	**G&B-001** (02115-03) **G&B-002** (02154-02) **G&B-101** (02402) **G&B-104** (24346-02)

I. Grading and Base Construction Items 2005 and 2013 Spec Book (www.dot.state.mn.us/materials/gradingandbase.html)

Pay Item Number	Material	Spec. No.	Minimum Contractor Quality Control Testing Rate	Minimum Agency Verification (Acceptance) Testing (See note 1)		Minimum Companion (Split Lab) Sample (See Notes 2 & 3)		Form No. (See Note 5)
				Rate	Size	Rate	Size	
(e) 2105 2106	**1. Gradation**(Continued) (e) Granular Borrow Select Granular Borrow Modified Granular Borrow Stabilizing Aggregate	3149 & Special Provisions	1/10,000 yd^3 (CV)	1/20,000 yd^3 (CV)	30 lb.	1 per project in this category. Obtain split sample from the 1st verification sample	30 lb.	**G&B-001** (02115-03), **G&B-101** (02402-03) **G&B-104** (24346-02)
(f) Special Provisions & 2215	(f) Full Depth Reclamation (FDR)	Special Provisions & 3135	1/6,000 yd^2 (See Note 10)	1/12,000 yd^2	60 lb	NA		**G&B-001** (02115-03) **G&B-101** (02402-03)
(g) 2511	(g) Granular Filter	3601 & Special Provisions	1 per source before delivery on project	1 per source	300 lb	NA		**G&B-001** (02115-03) **G&B-101** (02402-03) **G&B-104** (24346-02)
(h) 2451 (i) 2451 (j) 2451 (k) 2451 (l) 2451 (m) 2502	(h) Granular Backfill (i) Aggregate Backfill (j) Granular Bedding (k) Aggregate Bedding (l) Coarse Filter Aggregate (m) Fine Filter Aggregate	3149 & Special Provisions	Two per source before delivery on project	1 per source	60 lb	NA		**G&B-001** (02115-03) **G&B-101** (02402-03) **G&B-104** (24346-02)

I. Grading and Base Construction Items 2005 and 2013 Spec Book (www.dot.state.mn.us/materials/gradingandbase.html)

Pay Item Number	Material	Spec. No.	Minimum Contractor Quality Control Testing Rate	Minimum Agency Verification (Acceptance) Testing (See Note 1)		Minimum Companion (Split Lab) Sample (See Notes 2 & 3)		Form No. (See Note 5)
				Rate	Size	Rate	Size	
(a) 2211 (b) 2221	**2. Proctor Test** (a) Aggregate Base (b) Aggregate Shoulder	2211, 2221, & Special Provisions		(See Note 8) **2005 Spec Book**: 1 per source **2013 Spec Book** 1 per source	50 lbs.	1 per project in this category. Obtain split sample from the 1st verification sample	25 lb.	**G&B-303** (24587-01)
(c) 2105 2106	(c) Embankment Soil, Granular Borrow, Select Granular Borrow, & Modified Granular Borrow	2105 & 2106	**2005 Spec Book**: **2013 Spec Book**: 1major soil type (See Notes 7 & 11)	**2005 & 2013 Spec Book :** For Specified Density: 1/major soil type. **2013 Spec Book:** For all other compaction requirements: One Contractor Companion/project				
(a) 2211 (b) 2221	**3. Specified Density Test (Sand Cone or other)** (a) Aggregate Base (b) Aggregate Shoulder	2211, 2221 & Special Provisions		(See Note 8) 1/1,000 yd^3 (CV)		NA	NA	**G&B-001** (02115-03) **G&B-304** (02140-03)
(c) 2105 2106	(c) Embankment Soil, Granular Borrow, Select Granular Borrow & Modified Granular Borrow	2105, 2106 & Special Provisions		1/4,000 yd^3 (CV)				

I. Grading and Base Construction Items 2005 and 2013 Spec Book (www.dot.state.mn.us/materials/gradingandbase.html)

Pay Item Number	Material	Spec. No.	Minimum Contractor Quality Control Testing Rate	Minimum Agency Verification (Acceptance) Testing Rate (See Note 1)	Form No. (See Note 5)
(a) 2211 (b) 2221	**4. Dynamic Cone Penetration (DCP) Index Method** (a) Aggregate Base (b) Aggregate Shoulder	2211, 2221, & Special Provisions		1 DCP test/500 yd^3(CV)	**G&B-001** (02115-03) **G&B-204** (02170-02)
(c) 2215	(c) Full Depth Reclamation (FDR)	3135 & Special Provisions		1 DCP test/3,000 yd^2	**G&B-001** (02115-03) **G&B-205**
(d) 2105 2106	(d) Granular Borrow Select Granular Borrow & Modified Granular Borrow and all other granular materials.	2105, 2106, 3149 & Special Provisions		**Roadway Embankment:** One DCP test/2,000 yd^3 (CV). **Structure Trenches:** One DCP test/2,000 yd^3 (CV), with a minimum of one DCP test per 250 feet of each structure length. Test entire layer.	**G&B-001** (02115-03) **G&B-203** (02170-02)
(a) 2118 (b) 2211 (c) 2212 (d) 2221	**5. Moisture Content Test During Compaction** (See Note 9) (a) Aggregate Surfacing (b) Aggregate Base (c) Drainable Aggregate Base (d) Shoulder Base Aggregate	2211, 2221, & Special Provisions	**2005 Spec Book** — **2013 Spec Book** 1/1,000 yd^3	**2005 Spec book:** 1/1,000 yd^3 or 10 tests whichever is less **2013 Spec Book:** One Contractor Companion/project	**G&B-001** (02115-03) **G&B-105** (21850-02)
(e) 2215	(e) Full Depth Reclamation (See Note 9)	2215 or Special Provisions	**2005 Spec Book** — **2013 Spec Book** 1/6,000 yd^2	**2005 Spec book:** 1/6,000 yd^2 **2013 Spec Book:** —	
(f) 2105 2106	(f) All embankment materials (See Note 9)	2105, 2106 & Special Provisions	**2005 Spec Book** — **2013 Spec Book** 1/10,000 yd^3	**2005 Spec Book** 1/10,000 yd^3 **2013 Spec Book** One Contractor Companion/project	

I. Grading and Base Construction Items 2005 and 2013 Spec Book (www.dot.state.mn.us/materials/gradingandbase.html)

Pay Item Number	Material	Spec. No.	Minimum Contractor Quality Control Testing Rate	Minimum Agency Verification (Acceptance) Testing (See Note 4)		Form No. (See Note 5)
				Rate	Size	
2105 2106 2118 2211 2212 2221	**6. Percent Crushing**	3136, 3138, 3149 & Special Provisions	1/Day	2 per source	30 lb.	**G&B-103** (02463) **G&B-104** (24346-02)
2105 2106 2118 2206 2211 2212 2221 2451 2502	**7. Aggregate Quality** (LAR, Insoluble Residue, Lithological Exam & Bitumen Content)		1/source (See Note 6)			**G&B-104** (24346-02)
2215	**8. Depth Check** Full Depth Reclamation (FDR)	3135 or Special Provisions	1/1000 feet	1/3000 feet		

I. Grading and Base Construction Items 2005 and 2013 Spec Book (www.dot.state.mn.us/materials/gradingandbase.html)

General Notes: Sampling and Testing Procedures are found in the Grading and Base Manual in Section 5-692.200. Obtain all gradation, quality and crushing samples after spreading and before compaction.

Modify testing and sampling protocol for increases in Plan quantities as follows:

Time Plan Quantity Increased	Testing and Sampling
Before Collection of first sample.	Reorder sampling to account for additional quantity.
After Collection of first sample, but before sampling is complete.	Complete testing of current lot, and then reorder the sampling using the remaining quantity.
After collection of all original Plan quantity samples.	Order sampling for additional quantity.

I. Grading and Base Construction Items 2005 and 2013 Spec Book (www.dot.state.mn.us/materials/gradingandbase.html**)**

Note 1: Verification gradation samples are not required for 280 yd^3 (CV) (500 tons) or less. Report small quantities on Form 02415 or 2403. http://www.dot.state.mn.us/const/tools/forms.html.

Note 2: Perform Companion testing using different equipment and personnel from the Verification sample. Obtain the Companion sample as a split sample from the first Agency Verification sample, and include the gradation results on the sample card. Laboratories with AMRL accreditation that are performing the Agency Verification testing are not required to submit companion samples.

Note 3: Companion gradation and proctor, and Verification crushing and aggregate quality samples are not required for 550 yd^3 (CV) (1,000 tons) or less.

Note 4:

- Carbonate aggregates require 50 lb. samples for lab testing.
- Submit the initial aggregate quality and crushing sample from the first day's production.
- The crushing test will not be required when the material is crushed from a quarry.
- A second test is required, when the first test fails. Average both tests to determined compliance, when two tests are performed.
- Not all quality and crushing tests are required for each material, see specifications
- Use the table below as a **guideline**, **determination of specific required tests is through the Specifications and/or the Special Provisions.**

Note 5: Tests may be reported on Grading and Base forms or on MnDOT LIMs Reports. Forms are available on the Grading & Base website at: http://www.dot.state.mn.us/materials/gradingandbase.html

Note 6: Use the Centrifuge Method (MnDOT Lab. Manual Method 1852) to determine bitumen content.

Note 7: Major soil types are defined in the Triaxial Chart located in the Grading and Base Manual.

Note 8: Required only for specified density.

Note 9: Required during Compaction. For Quality Compaction of Shoulder Surfacing Aggregate (2118 or 2221), the Engineer may replace the moisture testing requirement with time stamped photo documentation of water being applied.

Note 10: Provide gradation test results to the Engineer within the first 500 feet (150 m) of production and within 500 feet (150 m) after a failing gradation.

Note 11: The Contractor may use a one point Proctor, or the estimated optimum moisture content formula (Form G&B- 305) to determine the optimum moisture.

I. Grading and Base Construction Items 2005 and 2013 Spec Book (www.dot.state.mn.us/materials/gradingandbase.html)

	Table: Guidelines for Required Crushing and Aggregate Quality Tests				
Material	**Crushing**	**Bitumen Content**	**LAR**	**Insoluble Residue**	**Lithological Exam & Shale Float Test**
3136 Drainable Bases	Yes. Not required for quarried sources.	Not applicable	Yes	Yes, if source from a carbonate quarry	Yes, when not from quarried source.
3138 Aggregate for Surface and Base	Yes for Class 5, 5Q and 6. Test waived if material contains recycled at twice the minimum crushing requirement. Not required for quarried sources.	Yes, if it contains Bitumen.	Yes, if source is carbonate quarry and does not contain bitumen.	Yes, if source from a carbonate quarry, and does not contain bitumen.	Yes for Class 3, 4, 5, 5Q and 6, when not from quarried rock, and does not contain bitumen.
3149 Granular Material *	Yes for Stabilizing Aggregate, Fine Aggregate Bedding and Medium Filter Aggregate. Test waived if material contains recycled at twice the minimum crushing requirement. Not required for quarried sources.	Yes, if it contains Bitumen	Not applicable	Yes, if source from a carbonate quarry, and does not contain bitumen	Yes for Medium Filter Aggregate
* Note for 3149.2D.2 Granular Materials - Structural Backfill, perform all tests required of 3137.2B3, shear angle test (AASHTO T236) and Proctor.					

Grading and Base Conversion from Volume (CV) to Weight

If possible, always perform a proctor for the material in question to obtain a conversion factor.

Only use the following conversion factor for materials meeting specifications 3138 or 3149 Stabilizing Aggregate. Material may be composed of crushed limestone, granite, gneiss, quartzite, recycled materials or natural gravel. **Do not** use the conversion factor for crushed basalt, taconite, or other heavy or light-weight aggregates. For other materials or gradations contact the Grading and Base Unit.

To convert from volume to weight use the following: **1 yd^3 (CV) = 1.8 tons.**

See the Grading and Base Manual section .430 for further explanation.

II. Bituminous Construction Items for Specification 2360

Note: Projects with bituminous tonnage less than or equal to 300 tons (272 metric tons) per day may be accepted on a small quantity basis at the discretion of the Engineer. Retain Form 02415 or Form 2403 in Project File.

(All plant mixed asphalt from Certified Plants)

DEFINITIONS

SAMPLE TYPE	DESCRIPTION	SAMPLE LOCATION DETERMINED BY	SAMPLE TAKEN BY	SAMPLE TESTED BY
QC	Quality Control Testing performed by Contractor. Also known as Process Control Testing.	Contractor	Contractor	Contractor
QA	Quality Assurance Testing performed by the Agency. This test is performed on a companion sample to the Contractor's QC sample.	Contractor Contractor (mixture) Agency (density cores)	Contractor	Agency
Verification	A sample to assure compliance of the Contractor's Quality Control program. The results shall be included as part of the QA Testing Program.	Agency	Agency	Agency
Verification Companion	A companion sample to the Agency's Verification sample provided to the Contractor. The Contractor is required to test this sample. The results shall be used as part of the QC program.	Agency	Agency	Contractor
IAST	The Independent Assurance Sampling and Testing assures testers are sampling and testing properly and that equipment is calibrated correctly.	Agency	Contractor or Agency	Contractor or Agency

II. Bituminous Construction Items for Specification 2360 (cont.)

A. Pre-Production Sampling and Testing for Specification 2360 Plant Mixed Asphalt

Minimum Sample Sizes:

Quality Sample Size for Lab Submittal:

Plus #4 aggregate sample for quality testing and Percent Crushing	80 lb. (35 kg)
Minus #4 aggregate for quality testing	35 lb. (15 kg)
Bituminous mixture plus 2 Gyratory specimens for volumetric testing	80 lb. (35 kg)
Bituminous mixture for TSR testing (option A)	80 lb. (35 kg)
Bituminous mixture for TSR testing plus 6 Gyratory specimens (option B)	20 lb. (10 kg)
Mineral filler.	2 lb (1 kg)
RAP for Quality Testing	80 lb (35 kg)
RAS (shingles) for Gradation and Quality Testing	10 lb (5 kg)
Asphalt Binder	1 qt (1L)

Pay Item No.	Test Type	Spec. No.	Producer/Contractor Testing	Agency Testing	Form No.
2360	Bituminous Mix Design (QC/QA)	2360	**Contractor submits Mix Design Option 1 or Option 2**	Option 1- Laboratory Mix Design: In addition to reviewing the Trial Mix data (JMF), test Contractor's mixture (at optimum asphalt content). Also, evaluate TSR per 2360.2E5a(3). Option 2- Laboratory Mix Design: Review submitted Mix data only.	Approved Mix Design Report
2360	Aggregate Quality Testing (QA only)	2360	Provide 24 hour notice of intent to sample aggregates for quality testing. Agency has the option to monitor sampling. Submits to the Bituminous Engineer or the District Materials Engineer one (1) sample of each non-asphaltic aggregate type or class per source per year. Also submit the asphaltic aggregate material when the mixture contains RAP or RAS. Provide documentation that of all RAS /TOSS (Tear Off Shingle) material is from a MPCA certified supplier.	Test as directed by the Bituminous Engineer or the District Materials Engineer..	Test Report
2360	Mineral Filler (QA only)	2360	One (1) sample per shipment of 50 tons (45 metric tons) or less, unless previously inspected.	Testing as directed by the Engineer or the District Materials Engineer.	Test Report
2360	Additives (QA Only)	2360	Sample blended asphalt binder and additive, 1 qt. (1 L). Sample first shipment of each type of material, then submit one sample per 250,000 gal. (1,000 m3) (approximately 1,000 ton).	Testing as directed by the Engineer or the Chemical Laboratory Director.	Test report

II. Bituminous Construction Items for Specification 2360 (cont.)

B. BITUMINOUS PRODUCTION for Specification 2360

*Verification Testing

Verification Companion testing from Agency split sample is required to be performed and used as the next QC sample that day.

SAMPLE SIZE:		
	Aggregate for Gradation (QC/QA)	35 lb. (15 kg)
	Plus #4 Aggregate Type for Quality Testing	80 lb. (35 kg)for each source
	Minus #4 Aggregate Type for Quality Testing	35 lb. (15 kg) for each source
	RAP material for Quality Testing	80 lb. (35 kg) for each source
	RAS (Shingles) for Processed Gradation and Quality Testing	10 lb. (5 kg)
	Mixture Properties (QC/QA) 3 full 6" by 12" cylinder molds for QA	65 lb. (30 kg)
	TSR (QC/QA) 4 full 6” by 12” cylinder molds for QA	90 lb. (40 kg)
	Aggregate Specific Gravity (QC/QA)	90 lb. (40 kg)
	Asphalt Binder (QA)	1 qt (1 L)
	Emulsified Asphalt (QA)	½ gal (2 L)

Pay Item No.	Test Type	Spec. No.	Producer/Contractor Testing	Agency Testing	Form No.
2360	Aggregate Quality Testing Including aggregate specific gravity (QA Only)	2360		Take additional samples when aggregate qualities approach specification limits or when material variation is observed, take additional field samples as requested by Project Engineer. Take additional samples when material variation is observed in RAP or RAS take additional field samples as requested by Project Engineer.	Lab report
2360	Moisture Content in Mixture (QC/QA) Lab Manual 1855	2360	Sample and test as directed by the Engineer.		Test Summary Sheet (TSS)

II. Bituminous Construction Items for Specification 2360 (cont.)

Pay Item No.	Test Type	Spec. No.	Producer/Contractor Testing	Agency Testing	Form No.
2360	Asphalt Binder Content, % AC, ADD AC, AC/Total AC ratio (QC/QA, Verification*) Lab Manual 1851, 1852, 1853	2360	(a) Incinerator Oven MnDOT Lab Manual 1853 (b) Chemical Extraction MnDOT Lab Manual 1851 or 1852 REMARKS: Contractor selects one method at the beginning of the project (when material is submitted for Trial Mix Review) and use that method for the entire project. The Contractor and Engineer may agree to change test procedures during the construction of the Project. See Note #1, Note #2 & Note #4. A computer file of the plant's control settings is required every 20 minutes of production.	The inspector will witness all QC mixture sampling and take possession of their QA-Verification split of this sample immediately after the sample is split. At the end of the day randomly submit one of the QA-Verification splits to the District Lab for testing. Additional verification samples can be taken at any time or location. When additional verification samples are taken the contractor must test the Verification companion split of this sample and include the results in the QC program (Test Summary Sheet). The Agency reviews the computer files of the plant's control settings. REMARKS: See Note # 3 & Note #7	TSS
2360	Mixture Properties (QC/QA, Verification*) Maximum Specific Gravity Lab Manual 1807	2360	Contractor performs test 1807 REMARKS: See Note #1, Note #2, & Note #4.	The inspector will witness all QC mixture sampling and take possession of their QA-Verification split of this sample immediately after the sample is split. At the end of the day randomly submit one of the QA-Verification splits to the District Lab for testing. Additional verification samples can be taken at any time or location. When additional verification samples are taken the contractor must test the Verification companion split of this sample and include the results in the QC program (Test Summary Sheet). REMARKS: Note # 3 & Note #7	TSS
2360	Mixture Properties (QC/QA, Verification*) Gyratory Bulk Specific Gravity - 2 Specimen Average, Lab Manual 1806, 1820	2360	Contractor performs test 1806 REMARKS: See Note #1, Note #2, & Note #6.	The inspector will witness all QC mixture sampling and take possession of their QA-Verification split of this sample immediately after the sample is split. At the end of the day randomly submit one of the QA-Verification splits to the District Lab for testing. Additional verification samples can be taken at any time or location. When additional verification samples are taken the contractor must test the Verification companion split of this sample and include the results in the QC program (Test Summary Sheet). REMARKS: See Note #3 & Note #7.	TSS

II. Bituminous Construction Items for Specification 2360 (cont.)

Pay Item No.	Test Type	Spec. No.	Producer/Contractor Testing	Agency Testing	Form No.
2360	Mixture Properties (QC/QA, Verification*) Adjusted Asphalt Film Thickness (AFT), Air Voids, Fines to effective, CAA, FAA and Gradation. Lab Manual 1203, 1206, 1214, 1808, 1854	2360	Verification Companion testing from Agency split sample is required and used as a QC sample once per day. Bituminous mixes composed entirely of Class A and/or Class B aggregates are not required to be tested for CAA (Coarse Aggregate Angularity). REMARKS: See Note #1, Note #2, Note #4, Note #5, & Note #6. The production start-up testing rates for the CAA and FAA is 1 per 1000 tons for the first 2000 tons. After 2000 tons , 2 test per day for at least two days. Then CAA and FAA at a rate of 1 test per week, if the CAA and FAA exceed the requirements by 8% and 5% respectively, otherwise test daily.	The inspector will witness all QC mixture sampling and take possession of their QA-Verification split of this sample immediately after the sample is split. At the end of the day randomly submit one of the QA-Verification splits to the District Lab for testing. Additional verification samples can be taken at any time or location. When additional verification samples are taken the contractor must test the Verification companion split of this sample and include the results in the QC program (Test Summary Sheet). REMARKS: See Note # 3 & Note #7.	TSS
2360	Core Density and Thickness Lab manual 1810	2360	Contractor cuts two cores at each location. In the laboratory, measure, and saw cores into separate lifts. Sawing of cores into separate lifts is required. Schedule the approximate time of testing during normal project work hours so the Agency may observe and record the saturated surface dry and immersed weight of the cores. A completed Core Density Incentive/Disincentive worksheet is to be submitted to the Laboratory (Agency field or District/Division).	Complete core stationing spreadsheet to determine core locations and then mark all coring locations on the pavement. Once the Contractor has measured and sawed the Agency companion cores transport them to the Agency field lab or District Lab for testing. Transport the cores as soon as possible to the testing lab taking care to prevent damage due to improper handling or exposure to heat. Selects at least one of the two companion cores per lot to test for verification. REMARKS: Note #3 & Note #6.	Core Density Worksheet Core Density Incentive/ Disincentive worksheet.
2360	Tensile Strength Ratio (T.S.R.) (QC/QA) Lab Manual 1813	2360	Sample as directed by the Engineer. When testing is required, complete testing within 72 hours after the sample is taken.	Test as directed by the Engineer. When testing is required, complete testing within 72 hours after the sample is taken.	TSR Worksheet

II. Bituminous Construction Items for Specification 2360 (cont.)

C. BITUMINOUS MATERIALS for Specification 2360

Only Bituminous Materials from Certified Sources are allowed for use. The most current list of Certified Sources: http://www.dot.state.mn.us/products/index.html

Minimum Sample Sizes:

Quality Sample Size for Lab Submittal:

Asphalt Binder (QA)/Cutback Asphalt (QA)	1qt (1 L) Metal can with pressure fit lid
Emulsified Asphalt (QA)	½ gal (2 L) plastic

Pay Item No.	Test Type	Spec. No.	Producer/Contractor Testing	Agency Testing	Form No.
2360	Asphalt Binder (QA only)	3151.2	Asphalt Supplier QC testing is the responsibility of the bituminous material supplier as part of the Combined State Binder Certification program. During Asphalt Mixture Production 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 asphalt binder sample in clean one L (1 qt) steel container. The Inspector will monitor the sampling the Contractor performs.	Asphalt Supplier Random sampling of bituminous material at the asphalt supplier is discussed in the Combined State Binder Certification program arranged by the MnDOT Chemical Laboratory. During Asphalt Mixture Production Observe contractor personnel taking sample from sampling valve and submit to MnDOT Chem ical Lab	2413 Asphalt Sample Identification Card
2201 2355 2356 2357 2514	Emulsified Asphalt (QA only)	3151.2	QC testing is the responsibility of the bituminous material supplier as part of the Combined State Binder Certification program. Tack Coat During mixture production the Contractor will sample first shipment, then submit one sample per 50,000 gal (200,000 L). Sample emulsified asphalt in clean ½ gal (2 L) plastic container with wide screw top and send to MnDOT Chemical Lab within 7 days of sampling.. Sample all emulsified asphalt from the distributor.	Asphalt Supplier Random sampling of bituminous material at the asphalt supplier is discussed in the Combined State Binder Certification program arranged by the MnDOT Chemical Laboratory. Tack Coat Observe contractor personnel taking sample from the distributor and submit to MnDOT Chemical Lab.	2413 Asphalt Sample Identification Card

II. Bituminous Construction Items for Specification 2360 (cont.)

Pay Item No.	Test Type	Spec. No.	Producer/Contractor Testing	Agency Testing	Form No.
2357 2358 2514	Cutback Asphalt (QA only)	3151.2	QC testing is the responsibility of the bituminous material supplier as part of the Combined State Binder Certification program. <u>Tack Coat</u> During mixture production the Contractor will sample first shipment, then submit one sample per 50,000 gal (200,000 L). Sample emulsified asphalt in clean ½ gal (2 L) plastic container with wide screw top and send to MnDOT Chemical Lab within 7 days of sampling.. Sample all emulsified asphalt from the distributor.	<u>Asphalt Supplier</u> Random sampling of bituminous material at the asphalt supplier is discussed in the Combined State Binder Certification program arranged by the MnDOT Chemical Laboratory. <u>Tack Coat</u> Observe contractor personnel taking sample from the distributor. Cutback Asphalt should only be used in cold temperature applications with the Engineer's approval. Contact Bituminous Engineering Unit for cold temperature application guidelines.	2413 Asphalt Sample Identification Card

Note #1 All QA test samples shall be from split samples.
If a member of the monitoring team observes the Contractor Test, note and sign under remarks.
The Project Engineer is responsible for:
1.) Reviewing control charts & Test summary sheets for accuracy and completeness,
2.) Checking sampling and testing procedures,
3.) Discussing QC problems with the Contractor,
4.) Obtaining Verification Samples

Note #2 For Mixture Quality Management, acceptance will be based on Contractor's test results as verified by MnDOT test results.

Note #3 When a member of a monitoring team observes the Contractor test, note and sign under remarks.

Note #4

How to calculate the number of tests per day	Production Start-up testing rates (first 2000 tons of production)	Production testing rates (after 2,000 tons of mixture produced)
Divide daily tonnage by 500 and round up to next whole number	1 test/ 500 tons	
Divide daily tonnage by 1000 and round up to next whole number		1 test/ 1000 tons

Note #5 MnDOT projects will require the calculated Adjusted Asphalt Film Thickness (AFT). VMA will still be calculated for informational purposes, but will not be used for acceptance criteria. The adjusted AFT will be calculated each time a gradation test is required.

Note #6 Random number generation and determination of random sample location shall be consistent with the MnDOT Bituminous Manual Section 5-693.7 Table A or Section 5 of ASTM D3665. The Engineer may approve alternate methods of random number generation.

Note #7 QA samples retained for 10 calendar days and tested, if needed.

III. Construction Items for Bituminous Specialty Items include the following:

- **2350 Permeable Asphalt Stabilized Stress Relief Course (PASSRC) and Permeable Asphalt Stabilized Base (PASB)**
- **2354 Micro-Surfacing**
- **2355 Bituminous Fog Seal**
- **2356 Bituminous Seal Coat**
- **2356 Otta Seal**
- **2356 Ultra-Thin Bonded Wearing Course (UTBWC)**
- **2357 Bituminous Tack Coat**
- **2360 Stone Matrix Asphalt (SMA)**

Only Bituminous Materials from Certified Sources are allowed for use. The most current list of Certified Sources:
http://www.dot.state.mn.us/products/index.html

SAMPLE TYPE	DESCRIPTION	SAMPLE LOCATION DETERMINED BY	SAMPLE TAKEN BY	SAMPLE TESTED BY
QC	Quality Control Testing performed by Contractor. Also known as Process Control Testing.	Contractor	Contractor	Contractor
QA	Quality Assurance Testing performed by the Agency. This test is performed on a companion sample to the Contractor's QC sample.	Contractor Contractor (mixture) Agency (density cores)	Contractor	Agency
Verification	A sample to assure compliance of the Contractor's Quality Control program. The results shall be included as part of the QA Testing Program.	Agency	Agency	Agency
Verification Companion	A companion sample to the Agency's Verification sample provided to the Contractor. The Contractor is required to test this sample. The results shall be used as part of the QC program.	Agency	Agency	Contractor
IAST	The Independent Assurance Sampling and Testing assures testers are sampling and testing properly and that equipment is calibrated correctly.	Agency	Contractor or Agency	Contractor or Agency

III. Construction Items for Bituminous Specialty Items (cont.)

Pay Item Number	Test Type	Material Spec. No.	Minimum Contractor Quality Control Testing Rate Minimum Sample Size	Minimum Agency QA/Verification (Acceptance)	Form No.
(a) 2350 (b) 2350	**1. Mix Design (Pre-Production)** (a) PASSRC (b) PASB	2350	Complete 1 Job Mix Formula (gradation blend only) per mix Submit to agency:100 lbs each coarse agg., 35 lbs each fine agg. & 4 qt. asphalt binder	Agency Performs Mix Design	Approved Mix Design Report
(c) 2354	(c) Micro-Surfacing	2354	Complete 1 mix design per aggregate source. See specification or special provision. Submit to Agency: 150 lbs aggregate	Review Submitted Mix Design (See Note 1)	Approved Mix Design Report
(d) 2356	(d) Bituminous Seal Coat	2356	At least two weeks before beginning construction complete 1 design per mix and provide information to Engineer. See specification or special provision. Submit to Agency: 150 lbs aggregate	Review Submitted Mix Design (See Note 1)	
(e) 2356	(e) UTBWC	2356 UTBWC	Complete and submit 1design per mix	Review Submitted Mix Design	Approved Mix Design Report
(f) 2360	(f) SMA	2360 SMA	Complete 1 design per mix Submit to Agency: 80 lb. (35 kg) - bituminous mixture plus 6 Gyratory specimens for TSR testing. 150lbs +4 aggregate from JMF blend for VCA 80 lbs each coarse agg. & 30 lbs each fine agg for quality testing	Review & verify Submitted Mix Design Test as directed by the Engineer	Approved Mix Design Report
(a) 2350 (b) 2350	**2.Production Gradation** (a) PASSRC (b) PASB Lab manual 1202, 1203	2350	One per 1,000 ton with a minimum of one per day Submit to Agency: 35 lbs Note # 2	1/day	Test Report
(c) 2354	(c) Micro-Surfacing Lab manual 1202, 1203	2354	Stockpile: 1/1,500 tons (min. 1/ day) Machine Hopper: 1/500 tons (min. 1/day) Submit to Agency: 30 lbs	1/1500Ton or min 1 per project whichever is greater.	Test Report

III. Construction Items for Bituminous Specialty Items (cont.)

Pay Item Number	Test Type	Material Spec. No.	Minimum Contractor Quality Control Testing Rate Minimum Sample Size	Minimum Agency QA/Verification (Acceptance)	Form No.
(d) 2356 (e) 2356	(d) Bituminous Seal Coat (e) Otta Seal Lab manual 1202, 1203	2356	Stockpile: 1/1,500 tons (min. 1/ day) Chip Spreader Hopper: 1/day Submit to Agency : 30 lbs from Hopper	1/day	Test Report
(a) 2350 (b) 2350	**3. Production % Crushing (CAA)** (a) PASSRC (b) PASB Lab manual 1214	2350	One per 1,000 with a minimum one per day Submit to Agency: 35 lbs from Belt	1/day	Test Report
(a) 2354	**4. Moisture (In Aggregate)** (a)Micro-Surfacing Grading & Base manual, 5-692.245.B	2354	Machine Hopper: 1/500 tons (min. 3/day) Submit to Agency: 2 lbs	1/day	Test Report
(a) 2354	**5. Sand Equivalence** (a) Micro-Surfacing AASHTO T 176	2354	Stockpile or Machine Hopper: 1/500 tons (min. 1/day) Submit to Agency: 25 lbs	1/day	Test Report
(a)2356	**6. Flakiness Index** (a) Bituminous Seal Coat Lab Manual 1223	2356	Sample taken from first load on fist day Submit to Agency: 30 lbs	See Note 1	Test Report
(a) 2356	**7. Bituminous Mixture Tests** (a) UTBWC Lab Manual 1203, 1807, 1852, 1853, 1854	2356 UTBWC	Tests: % AC, Gradation, Max Gravity, Adjusted AFT Rate: (1/300 tons, min. 1 per day) Note #3: Submit to Agency:20 lbs (1 cylinder from truck box)	1 per day	TSS

III. Construction Items for Bituminous Specialty Items (cont.)

Pay Item Number	Test type	Spec. No.	Minimum Contractor Quality Control Testing Rate Minimum Sample Size	Minimum Agency QA/Verification (Acceptance)	Form
(b) 2350	(b) PASSRC, PASB Bit Manual	3151	Test: Asphalt spot check Rate: minimum one per day		Test Report
c) 2360	(c) SMA Lab M 1203,1204, 1205, 1211, 1214, 1806, 1807, 1808, 1813, 1853, 1854, 1855, AI SP-2 AASHTO T305	2360 SMA	**Tests:** % AC, Gradation, Max Gravity, Bulk Gravity, Voids, VMA, CAA, Draindown, , voids in coarse aggregate (VCA) fines/effective asphalt. **Rate:** (1/1000 tons, min. 1 per day) Aggregate sp gravity, mix moisture content to be tested as directed by the Engineer See Note: #3 Submit companion 1 per day to agency: 65 lb. (30 kg) 3 full 6" by 12" cylinder molds	**Tests:** % AC, Gradation, Max Gravity, Bulk Gravity, Voids, VMA, CAA, voids in coarse aggregate (VCA) fines/effective asphalt. See Note # 3 & Note #4	TSS
(b) 2356	**8. Asphalt Binder** (b) UTBWC	2356 UTBWC 3151	QC testing is the responsibility of the bituminous material supplier. Random sampling is arranged by the MnDOT Chemical Laboratory. Asphalt Binder: First load, then 1/250,000 gal. 1 qt Emulsified Asphalt: First load, then 1/50,000 gal. ½ gal*	Observe contractor personnel taking sample from sampling valve and submit to MnDOT Chemical Lab.	Test Report
(c) 2354 (d) 2356 (e) 2356 (f) 2357	(c) Micro-Surfacing (d) Bituminous Seal Coat (e) Otta Seal (f) Bituminous Tack Coat	2354, 2356, 3151	QC testing is the responsibility of the bituminous material supplier. Random sampling is arranged by the MnDOT Chemical Laboratory.	First load, then 1 / 50,000 gal. ½ gal*	Test Report
(g) 2360	(g) PASSRC, PASB (h) SMA	3151, 2360 SMA	QC testing is the responsibility of the bituminous material supplier. Random sampling is arranged by the MnDOT Chemical Laboratory. Asphalt Binder (1 qt): First load, then 1/250,000 gal. Note: SMA to be test as in Section C. BITUMINOUS MATERIALS for Specification 2360	Observe contractor personnel taking sample and submit to MnDOT Chemical Lab. Note: SMA to be test as in Section C. BITUMINOUS MATERIALS for Specification 2360.	Test Report

III. Construction Items for Bituminous Specialty Items (Cont.)

Pay Item Number	Test type	Spec. No.	Minimum Contractor Quality Control Testing Rate Minimum Sample Size	Minimum Agency QA/Verification (Acceptance)	Form
(a) 2354	**9. Asphalt Binder Application Rate** (a) Micro-Surfacing	2354	Verify Application rate 3/day	Verify Application rate 1/day	
(b) 2355 (c) 2356 (d) 2356 (e) 2357	(b) Fog Seal (c) Bituminous Seal Coat (d) Otta Seal (e) Bit Tack Coat	2355, 2356, 2357	Verify Application rate 1/day	Verify Application rate 1/day	
2399	**10. Inertial Profiler**	2399	Pass Annual Certification at MNROAD	Perform a side by side comparison with the MnDOT IP once a year.	Profile Summary

***Use plastic containers for Emulsified Asphalt Samples. Send to MnDOT Chemical Lab within 7 days of sampling.**
Note 1: Contractor submits samples to Agency. Agency will test at their discretion, based upon prior experience with submitted aggregate.
Note 2: Run test on gradation sample taken from aggregate belt
Note 3: TSR testing on production mixture is at the discretion of the Engineer.
Note 4: Agency is not required to run draindown testing on QA/Verification samples.

IV. Concrete Construction Items (www.dot.state.mn.us/materials/concrete.html)

The testing rates shown in this Schedule of Materials Control are minimums. All samples shall be taken in a random manner using an appropriate number generator. Take as many tests as necessary to ensure quality concrete. **All field samples shall be taken at the point of placement unless otherwise allowed by the Engineer.**

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 the 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.

The first load of concrete for any pour must have passing air content and slump results, prior to placing.

Material not meeting requirements shall not knowingly be placed in the work. If failing concrete inadvertently gets placed in the work, review either the MnDOT Standard Specifications for Construction or contact the Concrete Engineering Unit for monetary deductions recommendations.

It is recommended that the Agency representative continually monitor the progress of all concrete pours in the field and review Certificates of Compliances. It is not a recommended practice to only perform minimum testing requirements and leave the pour.

Should circumstances arise on a project which makes the testing rate impractical, contact the Concrete Engineering Unit.

DEFINITIONS				
	Description	**Sample Location Determined By**	**Sample Taken By**	**Sample Tested By**
QC	Quality Control Testing performed by Contractor. Also known as Process Control Testing.	Contractor	Contractor	Contractor
QA	Quality Assurance Testing performed by the Agency. This test is performed on a companion sample to the Contractor's QC sample.	Contractor	Contractor	Agency
Verification	A sample to assure compliance of the Contractor's Quality Control program. The results shall be included as part of the QA Testing Program.	Agency	Agency	Agency
Verification Companion	A companion sample to the Agency's Verification sample provided to the Contractor. The Contractor is required to test this sample. The results shall be used as part of the QC program.	Agency	Agency	Contractor
IAST	The Independent Assurance Sampling and Testing assures testers are sampling and testing properly and that equipment is calibrated correctly.	Agency	Contractor or Agency	Contractor or Agency

IV. Concrete Construction Items (cont.) (www.dot.state.mn.us/materials/concrete.html)

Concrete Plant Batching Materials

Remarks:

(1) All materials must come from certified or qualified sources. All certified sources must state so on the delivery invoice.

(2) The most current list of certified/approved sources can be found at www.dot.state.mn.us/products.

Sample Sizes:

Cementitious: 5 lb (2 kg)

Admixture: 1/2 pt. (0.25 L) Producer obtains samples from dispensing tubes. Store samples in plastic container.

Water: 1 gal (3.5 L) Store sample in a clean glass or plastic container.

Pay Item No.	Material	Spec. No.	Minimum Required Sampling Rate for Laboratory Testing	Form No.
2301 2302 2401 2405 2411 2412 2422 2452 2461 2506 2511 2514 2519 2521 2531 2533 2545 2550 2554 2557 2564 2565	Portland Cement Slag Blended Cement	3101 3102 3103	For certified ready-mix and concrete paving: 1 sample when the plant is certified. Take an additional sample: 1) At 6 months, if producing Agency concrete, 2) If the plant changes sources, or 3) As the Contract requires. For precast concrete: 1 sample every 3 months during Agency production The Producer obtains and stores the sample in a sealed container provided by the Agency, and includes the supplier's delivery invoice from which the sample is obtained. Take additional samples as directed by the Concrete Engineer	24300 ID Card Cement Samples
	Fly Ash	3115		24308 ID Card Fly Ash Samples
	Admixtures (Accelerating, Retarding, Water-Reducing, Air-Entraining, etc.)	3113	For all concrete: 1 sample when the plant is certified. Take additional samples: 1) At 3 month intervals during Agency production, 2) If the plant changes sources, or 3) As the Contract requires. The Producer obtains and stores the sample in a sealed container provided by the Agency. Take additional samples as directed by the Concrete Engineer	2410 Sample ID Card
	Water	3906	1 sample from any questionable source	2410 Sample ID Card

IV. Concrete Construction Items (cont.) (www.dot.state.mn.us/materials/concrete.html)

Certified Ready-Mix - Concrete Plant Production

Remarks:

(1) Mix design is provided by MnDOT unless otherwise specified in the Contract.
(2) All gradation and quality tests require companion samples. Samples taken at location identified on Contact Report located at plant.
(3) Perform Quality testing as directed by the Concrete Engineer.
(4) Record all gradation weights in metric.

Minimum Sample Sizes:

Gradation Test:

3/4" Plus (+19 mm)	25 lb. (12 kg)
3/4" Minus (–19 mm)	10 lb. (5 kg)
CA-70	6 lb. (2.5 kg)
CA-80, Sand	1.1 lb. (500 g)

Moisture Test:

Coarse Aggregate	2000 g
Fine Aggregate	500 g

Quality Sample Size for Lab Submittal:

3/4" Plus (+19 mm)	50 lb. (24 kg)
3/4" Minus (–19 mm)	30 lb. (15 kg)
Fine Aggregate	30 lb. (15 kg)

Pay Item No.	Test Type	Spec. No.	Producer/Contractor Testing	Agency Testing	Form No.
2302 2401 2405 2411 2412 2422 2452 2461 2506 2511 2514 2519 2521 2531 2533 2545 2550 2554 2557 2564 2565	Gradation Testing (QC/QA) (5-694.145 and 5-694.148)	2461 3126 3137	When over 20 yd^3 (m^3) of Agency concrete produced per day: **Coarse:** 1 per 200 yd^3 (m^3) **Fine:** 1 per 200 yd^3 (m^3) Passing aggregate gradations are required prior to the start of concrete production each day. Performing testing on representative material at the end of the most recent day of production is allowed. Washing the fine aggregate gradation (QC) sample is not required when the result on the -75µm (#200) sieve of the unwashed sample is less than 1.0%, Hold QA (QC companion) samples until they are picked up by the Agency monitor. Discard after 14 calendar days if not picked up. **For Contractor Mix Designs utilizing an approved JMF:** 1 per 400 yd^3 (m^3) or completed every 4 hours, whichever results in the higher sampling rate.	None	21763 Concrete Aggregate Worksheet (QC/QA) 2449 Weekly Concrete Aggregate Report 21765 Concrete Aggregate Worksheet JMF (QC/QA)

IV. Concrete Construction Items (cont.) (www.dot.state.mn.us/materials/concrete.html)

Certified Ready-Mix - Concrete Plant Production (cont.)

Pay Item No.	Test Type	Spec. No.	Producer/Contractor Testing	Agency Testing	Form No.
2302 2401 2405 2411 2412 2422 2452 2461 2506 2511 2514 2519 2521 2531 2533 2545 2550 2554 2557 2564 2565	Gradation Testing (Verification/ Verification Companion) (5-694.145 and 5-694.148)	2461 3126 3137	Test the Verification Companion sample. Complete on the day the sample was taken. Wash all fine aggregate Verification Companion samples.	**Coarse and Fine:** 1 Verification sample per week when Agency production is 1 or 2 days per week. 2 Verification samples per week when Agency production is 3 or more days per week. **For small quantities:** When less than **25 yd^3 (m^3)** of Agency concrete is produced **per week,** Verification samples are not required Include verification companion results on Sample ID Card.	2449 Weekly Concrete Aggregate Report 24143 Weekly Certified Ready-Mix Plant Report (Verification)
	Quality Testing including Coarse Aggregate Testing on - #200 (-75µm) (5-694.146)	3126 3137	Test at Contractor's Discretion	1 test each fraction per month Identify quality samples with a "Q" on the Sample ID Card and the Quality companion sample.	2410 Sample ID Card
	Aggregate Moisture Testing (QC) (5-694.142)	2461	**When over 20 yd^3 (m^3) of Agency concrete produced per day:** **Coarse and Fine:** 1 per 200 yd^3 (m^3) or completed every 4 hours, whichever results in the higher sampling rate. - Complete the initial moisture content and adjust the batch water prior to the start of concrete production each day. - If weather conditions allow, performing moisture testing on representative material at the end of production the prior evening is allowed. In this event, the four-hour rate will commence with the first pour of the day, regardless if it is placed in Agency or private work.	None	2152 Concrete Batching Report

IV. Concrete Construction Items (cont.) (www.dot.state.mn.us/materials/concrete.html)

Concrete Pavement - Concrete Plant Production

Remarks:

(1) Mix Design is Contractor's responsibility with review by MnDOT unless otherwise specified in the Contract.

(2) Use Certified Ready-Mix - Concrete Plant Production testing rates schedule when:

a) The entire concrete paving project is < 3,500 cu. yd (2,900 m^3)

b) When a secondary plant is used to provide minor work.

(3) When w/c incentives apply according to 2301:

a) Contractor QC Technician and Agency Plant Monitor are required to be present during the entire pour. **If w/c incentives do not apply, the Agency Plant Monitor shall monitor as necessary to ensure compliance with the requirements of the Contract.**

b) A certified ready-mix plant shall be **dedicated (provides concrete only to the concrete paving project)**.

(4) All gradation samples shall be taken in the presence of the Agency, unless otherwise authorized by the Engineer. All samples shall be taken off the belt leading to the weigh hopper unless otherwise approved by the Engineer. All gradation and quality tests require companion samples.

(5) Perform Quality testing as directed by the Concrete Engineer.

Minimum Sample Sizes:

Gradation Test:		**Moisture Test:**		**Quality Sample Size for Lab Submittal:**		**75µm (#200) Coarse Aggregate Sample Size**	
3/4" Plus (+19 mm)	25 lb. (12 kg)	Coarse Aggregate	2000 g	3/4" Plus (+19 mm)	50 lb. (24 kg)	3/4" Plus (+19 mm)	10 lb. (5000 g)
3/4" Minus (–19 mm)	10 lb. (5 kg)	Fine Aggregate	500 g	3/4" Minus (–19 mm)	30 lb. (15 kg)	3/4" Minus (–19 mm)	6 lb. (2500 g)
CA-70	6 lb. (2.5 kg)			Fine Aggregate	30 lb. (15 kg)		
CA-80, Sand	1.1 lb. (500 g)						

Pay Item No.	Test Type	Spec. No.	Producer/Contractor Testing		Agency Testing		Form No.
2301	Gradation Testing (QC/QA) (5-694.145 and 5-694.148)	3126 3137	**For a concrete paving batch plant:** **When over 250 yd^3 (m^3) is produced per day:** 1 per 1500 yd^3 (m^3) or completed 1 per ½ day, whichever results in the higher sampling rate.	**For a certified ready-mix plant:** **When over 20 yd^3 (m^3) is produced per day:** 1 per 400 yd^3 (m^3) or completed every 4 hours, whichever results in the higher sampling rate.	Test the first 4 QA samples of production each time the Contractor mobilizes the plant or changes aggregate sources. **For a concrete paving batch plant:** 1 per day on randomly selected samples thereafter.	**For a certified ready-mix plant:** 1 per 1000 yd^3 (m^3) or 1 per week, whichever results in higher sampling rate on randomly selected samples thereafter.	21764 Concrete Aggregate Worksheet JMF Well-graded Concrete Aggregate Worksheet
			Performing testing on representative material at the end of the most recent day of production is allowed. **If well-graded aggregate incentives apply:** Use the Contractor's gradation results for well-graded aggregate incentive calculations as verified by Agency testing		Identify the gradation samples with "QA Gradation" on the Sample ID Card and include the JMF Number and the QC Gradation results. **If Coarse Aggregate Quality Incentive/Disincentives apply:** The Agency may also use the QA gradation sample for the Coarse Aggregate Quality incentive/disincentive testing. In this case, notify the Producer/Contractor to double the QC/QA gradation sample size.		

IV. Concrete Construction Items (cont.) (www.dot.state.mn.us/materials/concrete.html)

Concrete Pavement - Concrete Plant Production (cont.)

Pay Item No.	Test Type	Spec. No.	Producer/Contractor Testing		Agency Testing		Form No.
2301	Coarse Aggregate Testing on - #200 (-75µm) (QC/QA) (5-694.146)	3137	Test the first sample and then at least 1 of the next 3 samples on the first day of production and each time the Contractor mobilizes the plant, changes aggregate sources, or the cleanliness of the coarse aggregate is in question. 1 test per day thereafter **Test these samples at the plant**.		**For a concrete paving batch plant:** 1 randomly selected sample on the first day of production and each time the Contractor mobilizes the plant, changes aggregate sources, or the cleanliness of the coarse aggregate is in question. 1 test per week thereafter **Test these samples at the plant.**	**For a certified ready-mix plant:** 1 randomly selected sample on the first day of production and each time the Contractor mobilizes the plant, changes aggregate sources, or the cleanliness of the coarse aggregate is in question. 1 per 1000 yd^3 (m^3) or 1 per week, whichever results in the higher sampling rate on randomly selected samples thereafter.	21764 Concrete Aggregate Worksheet JMF - Paving
	Aggregate Moisture Testing (QC/Verification) **(5-694.142)**		**For a concrete paving batch plant:** **If w/c incentives do not apply:** 1 per 1000 yd^3 (m^3) or completed every 4 hours, whichever results in the higher sampling rate**.**	**For a certified ready-mix plant:** **If w/c incentives do not apply:** 1 per 200 yd^3 (m^3) or completed every 4 hours, whichever results in the higher sampling rate	**For a concrete paving batch plant:** **If w/c incentives apply:** 1 per 1000 yd^3 (m^3) or completed every 4 hours, whichever results in the higher sampling rate. Take initial samples for aggregate moisture testing within the first 250 yd^3 (m^3).	**For a certified ready-mix plant:** **If w/c incentives apply:** 1 per 200 yd^3 (m^3) or completed every 4 hours, whichever results in the higher sampling rate. Take initial samples for aggregate moisture testing within the first 100 yd^3 (m^3).	Concrete W/C Ratio Calculation Worksheet
			Complete the initial moisture content and adjust the batch water prior to the start of concrete production each day. If weather conditions allow, performing moisture testing on representative material at the end of production the prior evening is allowed.		**If w/c incentives apply:** Use aggregate moisture results for determining the water content to calculate the w/c ratio incentive/disincentive. **Do not leave samples unattended.**		

IV. Concrete Construction Items (cont.) (www.dot.state.mn.us/materials/concrete.html)

Concrete Pavement - Concrete Plant Production (cont.)						
Pay Item No.	**Test Type**	**Spec. No.**	**Producer/Contractor Testing**	**Agency Testing**		**Form No.**
2301	Water Content Verification Testing **(Microwave Oven Verification) (5-694.532)**	2301	Obtain the plastic concrete sample at the plant.	**If w/c incentives apply:** Microwave oven verification testing to verify the w/c ratio is completed in conjunction with Agency aggregate moisture testing. **Do not leave samples unattended.**		Concrete W/C Ratio Calculation Worksheet
				<u>For a concrete paving batch plant:</u> Take initial sample for microwave oven verification testing within the first 250 yd^3 (m^3). At least one additional verification test should be taken if more than 1,000 yd^3 (m^3) is produced in a day.	**<u>For a certified ready-mix plant:</u>** Take initial sample for microwave oven verification testing within the first 100 yd^3 (m^3). At least one additional verification test should be taken if more than 400 yd^3 (m^3) is produced in a day.	
	Unit Weight (QC) (5-694.542)		Test one load of concrete per day at the plant.	None		
	Air Content for Type 3 Concrete (QC) (5-694.541)	2461	Test the first load of concrete at the plant.	None		

IV. Concrete Construction Items (cont.) (www.dot.state.mn.us/materials/concrete.html)

Concrete Pavement - Concrete Plant Production (cont.)					
Pay Item No.	**Test Type**	**Spec. No.**	**Producer/Contractor Testing**	**Agency Testing**	**Form No.**
2301	Quality Testing including Coarse Aggregate Testing on - #200 (-75µm)	3126 3137	**Prior to concrete production:** Test the Agency's pre-production sample at the Contractor's discretion **During concrete production:** Test the -#200 (-75µm) on the Quality companion sample the day it was sampled. All other testing is at the Contractor's discretion	**Prior to concrete production for the primary concrete plant:** Obtain pre-production samples for quality testing at least 16 hours prior to concrete production. Samples may be taken from the stockpile and the -#200 (-75µm) test may be performed at the lab instead of at the plant at the discretion of the Engineer. **If the Entire Project is < 3,500 cu. yd (2,900 m^3), pre-production sampling is not required.** **During concrete production:** 1 randomly selected test each fraction every 20,000 yd^3 (m^3) of production. Split the Quality sample 4 ways: 1) Provide 2 quarters of the sample to the Producer/Contractor. 2) Test the -#200 (-75µm) on the quality sample <u>at the plant</u> the day it was sampled. 3) Submit the remaining sample to the lab for quality testing including testing on the -#200 (-75µm) sieve. Identify quality samples with a "Q" and record the QC and QA -#200 (-75µm) test results on the Sample ID Card. Identify the Quality Companion samples with a "Q". **See additional requirements for first sand quality sample under ASR Testing.**	2410 Sample ID Card
2301	Alkali Silica Reactivity (ASR) Testing	2301	None	1 per paving project per sand source Provide one 5 lb sample of: 1) cement, and 2) supplementary cementitious material (fly ash or slag), 3) with the first sand quality. Write "Project Specific ASR Testing" on all 3 Sample ID cards. **If the Entire Project is < 3,500 cu. yd (2,900 m^3), ASR testing is not required.**	2410 Sample ID Card 24300 ID Card Cement Samples 24308 ID Card Fly Ash Samples

IV. Concrete Construction Items (cont.) (www.dot.state.mn.us/materials/concrete.html)

Concrete Pavement - Concrete Plant Production (cont.)

Pay Item No.	Test Type	Spec. No.	Producer/Contractor Testing	Agency Testing	Form No.
2301	Coarse Aggregate Quality Testing for Incentive/ Disincentive	3137	Test at Contractor's discretion	**If coarse aggregate quality incentives apply:** Test the Class B aggregates for % absorption and Class C aggregates for % carbonate including any other tests necessary to make those determinations. Sample the 2 largest fractions in accordance with the following table and 2301:	2410 Sample ID Card Coarse Aggregate Quality Incentive/ Disincentive Worksheet

Coarse Aggregate Quality Incentive/Disincentive Sampling Rates	
Plan Concrete cu. yd [cu. m]	Samples per fraction (n)
3,500 – 7,500 [2,900 – 6,250]	3
7,501 – 10,000 [6,251 – 8,500]	5
10,001 – 25,000 [8,501 – 21,000]	10
25,001 – 50,000 [21,001 – 42,000]	15
> 50,000 [42,000]	20

Identify incentive samples on the Sample ID Card with "I/D"

IV. Concrete Construction Items (cont.) (www.dot.state.mn.us/materials/concrete.html)

Concrete Field Materials (Refer to Metallic Materials and Metal Products for sampling requirements for concrete reinforcement.)

Sample Sizes:

Joint Materials:

Hot Poured Elastomeric: 5 lb. (2.26 kg) Take samples from application wand, store in steel (1 gal) container.

Silicone Joint Sealer: 1 pt. (0.5 L) Store sample in steel container.

Preformed Elastomeric: 6 ft (2 m)

Preformed: 2 ft^2(0.25 m^2)

Curing Materials:

Burlap: 1 yd^2 (m^2)

Paper and Plastic: 2 ft^2(0.25 m^2)

Membrane Compound 1 qt. (1 L) If sampling is required, materials must be thoroughly stirred or agitated immediately prior to taking sample. Store sample in steel container and cover immediately.

Pay Item No.	Material	Spec. No.	Minimum Required Field Sampling Rate	Form No.
2301 2302 2401 2411 2514 2521 2531	Preformed	3702	Visual Inspection	2410 Sample ID Card
2301 2302 2401	Preformed Elastomeric Type	3721	1 per lot Only joint materials from qualified sources are allowed. The most current lists can be found at www.dot.state.mn.us/products	
	Silicone Joint Sealer	3722		
	Hot Poured Elastomeric Type	3723 3725		
2301 2302 2401 2411 2514 2520 2521 2531 2533	Burlap	3751	Visual Inspection	
	Paper	3752	Visual Inspection - Must be white opaque	
	Membrane Curing Compound	3754 3754AMS 3755	Visual Inspection – Use only Pre-Approved Curing Compounds. Refer to the approved products list of curing compounds for **pre-approved** lots at http://www.mrrapps.dot.state.mn.us/CuringCompoundProducts/curingcompounds.aspx	
	Plastic	3756	Visual Inspection -Must be white opaque and free from holes. A Certificate of Compliance shall be submitted to the Project Engineer from the Manufacturer certifying that the plastic complies with AASHTO M171.	

IV. Concrete Construction Items (cont.) (www.dot.state.mn.us/materials/concrete.html)

Concrete Field Testing – Bridges and General Concrete

Pay Item No.	Test Type	Spec. No.	Agency Testing	Form No.
2302 2401 2405 2411 2412 2422 2452 2461 2506 2511 2514 2520 2521 2531 2533 2545 2550 2554 2557 2564 2565	Air Content for Type 3 Concrete (Verification) (5-694.541)	2461	1 per 100 yd^3 (m^3) Test first load each day per mix Test when adjustments are made to the mix.	2448 Weekly Concrete Report If concrete quantities on the entire project total < 100 yd^3 (m^3), document the test results Weekly Concrete Report or on Form 02415 or Form 2403 Inspection Report for Small Quantities.
	Slump (Verification) (5-694.531)	2461	1 per 100 yd^3 (m^3) Test first load each day per mix Test as necessary to verify passing slump No slump testing required for slipform placement	
	Concrete Temperature (Verification) (5-694.550)	2461	Record temperature each time air content, slump, or strength test specimen is performed/fabricated.	
	Compressive Strength (Verification) (5-694.511)	2461	1 cylinder (28-day) per 100 yd^3 (m^3) 1 cylinder (28-day) per day for sidewalk and curb and gutter Cast up to three (3) control cylinders. Any additional control cylinders are the responsibility of the Contractor. MnDOT standard cylinder mold size is 4 x 8 inch (100 x 200 mm). If aggregate has a maximum size greater than 1-1/4 inch (31.5 mm), use 6 x 12 inch (150 x 300 mm) molds.	2409 ID Card Concrete Test Cylinder

Concrete Field Testing – Cellular Concrete

Pay Item No.	Test Type	Spec. No.	Agency Testing	Form No.
2519	Compressive Strength (Verification) **(5-694.511)**	2461 2519	1 set of 4 cylinders (28-day) per day 4 x 8 inch (100 x 200 mm) cylinders shall be filled in two equal lifts, do not rod the concrete, lightly tap the sides, cover and move to area with minimal or no vibration. Do not disturb for 24 hours.	2409 ID Card Concrete Test Cylinder

IV. Concrete Construction Items (cont.) (www.dot.state.mn.us/materials/concrete.html)

Concrete Field Testing – Concrete Pavement

Pay Item No.	Test Type	Spec. No.	Contractor Testing	Agency Testing	Form No.
2301	Air Content Before Consolidation for Type 3 Concrete (QC/QA) (5-694.541)	2461	1 per 300 yd^3 (m^3) or 1 per hour, whichever is less Test first load each day per mix	1 correlation air test per day	2448 Weekly Concrete Report
	Air Content After Consolidation for Type 3 Concrete (QC/QA) (5-694.541)	2461	Test 1 air content per ½ day of slip form paving to establish an air loss correction factor (ACF). See Special Provisions for additional information.	1 air test per day	
	Slump (QC/QA) (5-694.531)	2461	**For fixed form placement:** 1 per 300 yd^3 (m^3) and as directed by the Engineer Test first load each day per mix **For slipform placement:** No slump testing is required	**For fixed form placement:** 1 slump test per day **For slipform placement:** No slump testing is required	
	Concrete Temperature (QC/QA) (5-694.550)	2461	Record temperature each time air content, slump or strength test specimen is performed/fabricated by the Contractor.	Record temperature each time air content, slump or strength test specimen is performed/fabricated by the Agency.	
	Flexural Strength (QC) (5-694.521)	2301	1 beam (28-day) per day - Make additional control beams as necessary. - Control beams shall be made within the last hour of concrete poured each day. Fabricate beams, deliver beams to curing site, and clean beam boxes. Cylinders may be substituted for beams at the discretion of the Engineer	Supply beam boxes, cure, and test beams. MnDOT standard beam box size is 6" x 6" x 20" unless other sizes or types are approved by the Concrete Engineer.	2162 Concrete Test Beam Data
	Concrete Pavement Texture (QC)	2301	1 per 1000 linear feet per lane of concrete pavement at locations determined by the Agency. All adjoining lanes shall be tested at the same location if paved at the same time. The Contractor supplies all materials necessary to perform the required testing.	Determine texture testing locations using random numbers.	Concrete Texture Worksheet

IV. Concrete Construction Items (cont.) (www.dot.state.mn.us/materials/concrete.html)

Concrete Field Testing – Concrete Pavement (cont.)					
Pay Item No.	**Test Type**	**Spec. No.**	**Contractor Testing**	**Agency Testing**	**Form No.**
2301	Thickness (QC/Verification)	2301	The Contractor drills concrete cores at locations determined by the Agency. The Contractor probes the plastic concrete at locations determined by the Agency.	Determine probing and coring locations using random numbers. Initial pavement at core locations and re-initial the sides of specimens after coring to clearly verify their authenticity.	24327 Field Core Report Probing and Coring Report
2301	Surface Smoothness	2301	Contractor provides MnDOT certified inertial profiler results for the entire project as required by the Contract.	None	Concrete Profile Summary Worksheet

IV. Concrete Construction Items (cont.) (www.dot.state.mn.us/materials/concrete.html)

Concrete Field Testing - Low Slump Concrete for Bridge Deck Overlays

Remarks:

(1) Mix design is provided by MnDOT on the back of the Form 21412 Weekly Report of "Low Slump Concrete" unless otherwise specified in the Contract.
(2) All field gradation samples shall be taken by the Agency. All gradation and quality tests require companion samples.
(3) Perform Quality testing as directed by the Concrete Engineer.

Minimum Sample Sizes:

Gradation Test:

CA-70 6 lb. (2.5 kg)
Sand 1.1 lb. (500 g)

Quality Sample Size for Lab Submittal:

Coarse Aggregate 50 lb. (24 kg)
Fine Aggregate 30 lb. (15 kg)

Pay Item No.	Test Type	Spec. No.	Contractor Testing	Agency Testing	Form No.
2404	Gradation and Quality Testing including Coarse Aggregate Testing on - #200 (-75µm) (QC/Verification) (5-694.145, 5-694.146) and 5-694.148))	3126 3137	Prior to concrete production, the Contractor shall provide the Agency with: • Aggregate pit numbers • 1 passing gradation result per aggregate fraction per source No quality test results are required. Test companion samples at Contractor's discretion.	1 per aggregate fraction prior to concrete production and each time aggregate is delivered to the site. Identify quality samples with a "Q" on the Sample ID Card and the Quality companion sample.	2410 Sample ID Card 21412 Weekly Report of "Low Slump Concrete"
	Air Content for Type 3 Concrete (Verification) (5-694.541)	2461	None	1 per 15 yd^3 (m^3) Test at beginning of pour each day	
	Slump (Verification) (5-694.531)	2461	None	1 per 15 yd^3 (m^3) Test at beginning of pour each day For concrete from a concrete-mobile, allow mix to hydrate 4 to 5 minutes before slump test to assure all cement is saturated.	
	Compressive Strength (Verification) (5-694.511)	2461	None	1 cylinder (28-day) per 30 yd^3 (m^3)	2409 ID Card Concrete Test Cylinder

IV. Concrete Construction Items (cont.) (www.dot.state.mn.us/materials/concrete.html)

Concrete Field Testing – Concrete Pavement Repair (CPR) for 3U18

Remarks:

(1) Mix design is provided in accordance with MnDOT Spec 3105 unless otherwise specified in the Contract.
(2) Testing rates apply to concrete that is produced on site.
(3) All field gradation samples shall be taken by the Agency. All gradation and quality tests require companion samples.
(4) Perform Quality testing as directed by the Concrete Engineer.

Minimum Sample Sizes:

Gradation Test:

3/4" Minus (–19 mm)	10 lb. (5 kg)
CA-70	6 lb. (2.5 kg)
CA-80, Sand	1.1 lb. (500 g)

Quality Sample Size for Lab Submittal:

Fine Aggregate	30 lb. (15 kg)

Pay Item No.	Test Type	Spec. No.	Contractor Testing	Agency Testing	Form No.
2302	Gradation and (QC/Verification) (5-694.145 and 5-694.148)	3126 3137	Prior to concrete production, the Contractor shall provide the Agency with: • Aggregate pit numbers • 1 passing gradation result per aggregate fraction per source. Test companion samples at Contractor's discretion.	1 per aggregate fraction prior to concrete production and each time aggregate is delivered to the site.	2410 Sample ID Card
	Quality Testing <u>including</u> Coarse Aggregate Testing on - #200 (-75µm) (5-694.146)	3126 3137	No quality test results are required.	1 test each aggregate fraction per source The Agency may use the gradation results for the Quality Samples as a substitute for 1 required field gradation. Identify quality samples with a "Q" on the Sample ID Card and the Quality companion sample.	2410 Sample ID Card
	Air Content for Type 3 Concrete (Verification) (5-694.541)	2461	None	1 per 15 yd^3 (m^3) Test at beginning of pour each day.	2448 Weekly Concrete Report

IV. Concrete Construction Items (cont.) (www.dot.state.mn.us/materials/concrete.html)

Concrete Field Testing – Concrete Pavement Repair (CPR) for 3U18 (cont.)

Remarks:

(4) Mix design is provided in accordance with MnDOT Spec 3105 unless otherwise specified in the Contract.
(5) Testing rates apply to concrete that is produced on site.
(6) All field gradation samples shall be taken by the Agency. All gradation and quality tests require companion samples.
(5) Perform Quality testing as directed by the Concrete Engineer.

Minimum Sample Sizes:

Gradation Test:

3/4" Minus (–19 mm)	10 lb. (5 kg)
CA-70	6 lb. (2.5 kg)
CA-80, Sand	1.1 lb. (500 g)

Quality Sample Size for Lab Submittal:

Fine Aggregate	30 lb. (15 kg)

Pay Item No.	Test Type	Spec. No.	Contractor Testing	Agency Testing	Form No.
2302	Slump (Verification) (5-694.531)	2461	None	1 per 15 yd^3 (m^3) Test at beginning of pour each day. Allow mix to hydrate 5 minutes before slump test to assure all cement is saturated.	
	Compressive Strength (Verification) (5-694.511)	2461	None	1 cylinder (28-day) per 30 yd^3 (m^3)	2409 ID Card Concrete Test Cylinder

Concrete Field Testing –Dowel Bar Retrofit (DBR)

Remarks:

(1) Mix Design is Contractor's responsibility with review by MnDOT unless otherwise specified in the Contract.
(2) Testing rates apply to concrete that is produced on site. (Not from a certified ready-mix plant.)
(3) All field gradation samples shall be taken by the Agency. All gradation and quality tests require companion samples.
(4) Perform Quality testing as directed by the Concrete Engineer.

Minimum Sample Sizes:

Gradation Test:
CA-80, Sand 1.1 lb. (500 g)

Quality Sample Size for Lab Submittal:
Coarse Aggregate 50 lb. (24 kg)
Fine Aggregate 30 lb. (15 kg)

Pay Item No.	Test Type	Spec. No.	Contractor Testing	Agency Testing	Form No.
2302	Gradation and Quality Testing including Coarse Aggregate Testing on - #200 (-75µm) (QC/Verification) (5-694.145, 5-694.146) and 5-694.148)	3126 3137	Prior to concrete production, the Contractor shall provide the Agency with: • Aggregate pit numbers • 1 passing gradation result per aggregate fraction per source. No quality test results are required. Test companion samples at Contractor's discretion.	1 per aggregate fraction prior to concrete production and each time aggregate is delivered to the site. Identify quality samples with a "Q" on the Sample ID Card and the Quality companion sample.	2410 Sample ID Card
	Dowel Bar Retrofit Material Compressive Strength (Verification) (5-694.511)	2301 2302	None	During the pre-production test operations: 1 set of 3 cylinders tested at a rate as directed by the Engineer. Testing may need to be repeated if any problems with the dowel bar retrofit material are encountered. First day of production: 1 set of 3 cylinders tested at a rate as directed by the Concrete Engineer. After the first day of production: 1 cylinder per day during production tested at rate determined by Engineer to determine opening to traffic strength.	2409 ID Card Concrete Test Cylinder

V. Landscaping and Erosion Control Items

Pay Item No	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2105 2571 2575	1. Manufactured Topsoil borrow [a] Salvaged Topsoil (stockpiled)	3877.2	None	From each source: One composite sample for the first 765 m^3 (1,000 Cu yd). One composite sample for each additional 2,300 m^3 (3,000 Cu yd). Small quantities under 75 m^3 (100 Cu yd.), no sample required. One composite sample for each stockpiled topsoil, test for fertility.	10 kg (20 lb.)	[a] Test results showing meets specifications. Testing for all topsoil for fertility by Contractor at Certified Soils Lab. Sampling shall be done once source is identified or existing topsoil is stockpiled.
2571 2575 2577	2. Plant Stock & Landscape Materials [b]	3861 and 2571.2A1	Field Inspection at Job Site, submit itemized report for each shipment [c.]			[b] Preliminary inspection will not be done at the source. Material must be in accordance with the Inspection and Contract Administration Guidelines for MnDOT Landscape Projects. [c] Utilize "Inspection and Contract Administration Guidelines for MnDOT Landscape Projects" to determine and measure minimum and maximum criteria thresholds. The following documentation must be provided: 1. A MnDOT Certificate of Compliance for Plant Stock, Landscape Materials, and Equipment 2. A valid copy of a nursery stock (dealer or grower) certificate registered with the MN Dept. of Agric. And/or a current nursery certificate/license from a state or provincial Dept. of Agric. for each plant stock supplier. 3. A copy of the most recent Certificate of Nursery Inspection for each plant stock supplier. 4. Plant material shipped from out-of-state nursery vendors subject to pest quarantines must be accompanied by documentation certifying all plants shipped are free of regulated pests. 5. Bills of lading (shipping documents) for all materials delivered. 6. Invoices for all materials to be used. 7. Each bundle, bale, or individual plant must be legibly and securely labeled with the name and size of each species or variety.
2502 2573 2575 2577	3. Erosion Control Blanket [d]	3885	Visual Inspection	Random - See Footnote [d]		[d] Check Web site for list of approved products.. www.dot.state.mn.us/products

V. Landscaping and Erosion Control Items (cont.)

Pay Item No	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2573 2577	4. Erosion Control Netting [e]	3885	Visual Inspection			[e] Check Web site for list of approved products. www.dot.state.mn.us/products
2573	5. Silt Fence [f]	3886	Check Product Label. Obtain Certificate of Compliance with MARV values			[f] Check Approved/Qualified Products List (A/QPL) of accepted geotextiles www.dot.state.mn.us/products
2573	6. Flotation Silt Curtain [g]	3887	Visual Inspection			[g] Accepted, based on manufacturers' certification of compliance. Check weight of fabric.
2573 2575	7. Erosion Stabilization Mat [h]	3885	Visual Inspection			[h] Check Web site for list of approved products. www.dot.state.mn.us/products
2573	8. Filter Logs	3897	Visual Inspection	None		
2573	9. Flocculants [i]	3898	Visual Inspection	None		[i] Certificate of Compliance and MSDS to the Engineer.
2571 2575	10. Fertilizer [j]	3881	Visual Inspection			[j] Bagged: Inspected on the basis of guaranteed analysis. Rate based on fertility analysis of slope dressing/topsoil. Bulk: Inspector to obtain copy of invoice of blended material stating analysis. Check the type specified.
2571 2575	11. Agricultural Lime [k]	3879	One gradation test for each 180 Metric Ton (200 ton)			[k] Contractor must supply amount of ENP (Equivalent Neutralizing Power) for each shipment.
2575 2577	12. Mulch Material A. Type 3 Mulch - Certified Weed Free (Certified sources only) [l]	3882	Visual Inspection, Check if from Certified Vendor by Minnesota Crop Improvement Association. Must be tagged, grain straw only.			[l] Certified mulch will be indicated by label.

V. Landscaping and Erosion Control Items (cont.)

Pay Item No	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2571 2575 2577	13. Mulch Material B. Type 6 Mulch – Woodchips	3882	Visual Inspection, one gradation per supplier. Obtain Certificate of Compliance.	Gradation 1/10,000 yd^3 per supplier.		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.
2502 2575 2577	14. Seeds A. Seeds (Certified Vendors Only) (Mixes 22-000 and 25-000 series) [m]	3876	Check for Certified Vendor tag from Minnesota Crop improvement Association. If materials are on hand and past the twelve months, testing must be done.			[m] Periodic sampling taken by Office of Environmental Services. Any moldy or insect contaminated seed must be rejected.
2502 2575 2577	14. Seeds B. Native Seed (Mixes 30-000 series) certified seed only [n]	3876	Check if from Certified Vendor by Minnesota Crop Improvement Association, Must be tagged. If materials are on hand and past the twelve months, testing must be done.			[n] Certified seed will be indicated by label on containers. Reject all moldy or insect contaminated seed. Periodic sampling taken by Office of Environmental Services.
2575	15. Sod [o]	3878	A certified tag by Minnesota Crop Improvement Association for Salt tolerant sod. Final Visual Inspection at site.			[o] A Certificate of Compliance must be furnished by the producer to the Engineer for the type of sod supplied showing correct grass varieties.
2571 2575	16. Compost A. Compost Certified Source [p]	3890	Visual Inspection			[p] Check Approved/Qualified Products List (A/QPL), retain Certificate of Compliance.
2571 2575	17. Compost B. Compost Non-Certified Source [q]	3890	Inspection of source 6 weeks prior to delivery.			[q] Retain Certificate of Compliance, 6 weeks prior to delivery.
2575	18. Hydraulic Soil Stabilizer [r]	3884		None		[r] Check Approved/Qualified Products List (A/QPL). Installer needs to show certificate of training.

VI. Chemical Items

Pay Item No.	*Kind of Material*	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2401	Asphalt Plank	3204	Visual Inspection	1 per 1,000 plank or less of each thickness in each shipment	3 – 1 m (yd) pieces samples from different planks	
2131	Calcium Chloride	3911	Visual Inspection	Liquid: 1 per 40,000 L (1 per 10,000 gal) Dry: 1 per shipment	0.5 L (1 pint) or 0.5 kg (1 lb.) in Plastic Container	
2131	Magnesium Chloride	3912	Visual Inspection	1 per 40,000 L (1 per 10,000 gal.)	0.5 L (1 pint) in Plastic Container	
2331	Hot-Pour Crack Sealant for Crack Sealing/Filling	3719 3723 3725	Visual Inspection	1 per lot. Take samples from application wand. Use caution when handling hot containers	2.26 kg (5 lb.) in a 1gal steel container.	
2331	Pavement Joint Adhesive	Special Provisions	Visual Inspection	1 per lot. Take samples from application wand. Use caution when handling hot containers	2.26 kg (5 lb.) in a 1gal steel container	2410 Sample ID Card –including manufacturer and lot number
2481	Waterproofing Materials Membrane Waterproofing System	3757	Visual Inspection	1 per shipment (Membrane Only)	0.1 m^2 (1 Sq Ft)	Only waterproofing systems from qualified sources are allowed for use. The most current list can be found at www.dot.state.mn.us/products Membrane Waterproofing System: The manufacturer shall submit a one square foot sample of the membrane along with a letter of Certification and test results stating that the membranes meet the requirements of this specification. Other components of the waterproofing system do not need to be sampled for testing.

VI. Chemical Items (cont.)

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2481	Waterproofing Materials Three Ply System Asphalt Primer	3165	Visual Inspection	1 per shipment	0.5 L (1 pt.) in steel container	
2481	Waterproofing Materials Three Ply System Waterproofing Asphalt	3166	Visual Inspection	1 per shipment	0.5 L (1 pt.) in steel container	
2481	Waterproofing Materials Three Ply System Fabric	3201	Visual Inspection	1 per shipment	1 m^2 (1 Sq yd)	
2582	Waterborne Latex Traffic Marking Paint.	3591	Visual Inspection	1 per lot	0.5 L (1 pint)	**Form 02415** List batch numbers and retain Certificate of Compliance. Only traffic marking paints from Qualified Products List are allowed for use. The most current Qualified Products list can be found at www.dot.state.mn.us/products
2582	Epoxy Traffic Paint	3590	Visual Inspection	1 Part A per lot 1 Catalyst Part B per lot	0.5 L (1 pint)	**Form 02415** List batch numbers and retain Certificate of Compliance. Only traffic marking paints from Qualified Products List are allowed for use. The most current Qualified Products list can be found at www.dot.state.mn.us/products
2582	Traffic Marking Paint	Special Provisions	Visual Inspection	1 Part A per lot 1 Catalyst Part B per lot	0.5 L (1 pint)	**Form 02415** List batch numbers and retain Certificate of Compliance. Only traffic marking paints from Qualified Products List are allowed for use. The most current Qualified Products list can be found at www.dot.state.mn.us/products For traffic marking paints other than Waterborne Latex and Epoxy. See Special Provision for Qualified Products List.
2564	Non-Traffic Striping Paints	3500 Series Special Provisions	Visual Inspection		0.5 L (1 pint)	**Form 02415** List batch numbers and retain Certification of Compliance. For all others, see Special Provisions. Send color sample to Chemical Laboratory for color matching.

VI. Chemical Items (Cont.)

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2478	Bridge Structural Steel Paint	3520	Visual Inspection	Certificate of Compliance with each batch/lot for each component of the paint system to the Engineer. Provide a color "Draw Down" sample to the MnDOT Chemical Laboratory for verification of the finish coat color		**Form 02415** List batch numbers and retain Certificate of Compliance. Only paints from Approved Products List are allowed for use. The most current Approved Products List can be found at www.dot.state.mn.us/products
	Exterior Masonry Paint	3584	Visual Inspection	1 per lot Provide a color "Draw Down" sample to the MnDOT Chemical Laboratory for verification of the finish coat color.	0.5 L (1 pint)	**Form 02415** List batch numbers and retain Certificate of Compliance Only paints from Approved Products List are allowed for use. The most current Approved Products List can be found at www.dot.state.mn.us/products
	Noise Wall Stain	Special Provisions	Visual Inspection	Certificate of Compliance for each batch/lot of paint. Provide a color "Draw Down" sample to the MnDOT Chemical Laboratory for verification of the finish coat color.		**Form 02415** List batch numbers and retain Certificate of Compliance Only paints from Approved Products List are allowed for use. The most current Approved Products List can be found at www.dot.state.mn.us/
2582	Drop-on Glass Beads	3592	Visual Inspection	1 per lot	1 L (qt.)	**Form 02415** List batch numbers and retain Certificate of Compliance Only glass beads from Qualified Products List are allowed for use. The most current Qualified Products List can be found at www.dot.state.mn.us/products
2502 2581 2582	Pavement Marking Tape	3354 3355 Special Provisions	Visual Inspection	1 clean sample of each color per lot	3 m (3 yds.)	**Form 02415** List batch numbers and retain Certificate of Compliance. Only pavement marking tape from Qualified Products List are allowed for use. The most current Qualified Products List can be found at www.dot.state.mn.us/products

VI. Chemical Items (cont.)

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2540 2563 2564 2565 2582	Signs and Markers	3352	Visual Inspection	None unless material suspect		**Form 02415** Only Signs and Markers from Qualified Products List are allowed for use. The most current Qualified Products List can be found at www.dot.state.mn.us/products

VII. Metallic Materials and Metal Products

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2554	1. Guard Rail A. Fittings - Splicers, Bolts, etc.	3381	Visual Inspection	Bolts: 2 Post bolts and 4 splice bolts with nuts for each 1,000 units or less.		**Form 02415 or 2403** To be approved before use. Materials from H&R may be pre-sampled and tested. Call the MnDOT inspector at 218-846-3613 to see if material has been approved. For non-pre-tested, submit laboratory samples at required rate. For small quantities, lab samples are not required, but document on Form 02415 or 2403 and maintain in project file. Small Quantities: Rail Sections - 20 or less Terminals - 10 or less Post Bolts - 100 or less, Splice Bolts - 100 or less
2554	1.B.i. Non-High Tension Guard Rail Cable	3381	Visual Inspection	1 sample from each spool	1.2 m (4 ft)	**Form 02415 or 2403** See VII.1.A.
2554	1. B.ii. High Tension Guard Rail Cable	Special Provisions	Visual Inspection	None, unless material is suspect (see note)	1.2 m (4 ft)	Sample at the rate of 1/50,000 ft. if the strand appears damaged or suspect (Accepted as part of system)
2554	1. Guard Rail C. Structural Plate Beam	3382	Visual Inspection	One sample from one edge of each 200 rail sections or one sample of each 100 terminal sections	Full depth x 0.25 m (full depth x 10")	**Form 02415 or 2403** See VII.1.A.
2554	D. Plate Beam Guide Posts	3382	Visual Inspection	None, unless material is suspect		**Form 02415 or 2403**
2554	E. High Tension Guide Posts	Spec. Provisions	Visual Inspection	None, unless material is suspect		**Form 02415 or 2403** (Accepted as part of system)

VII. Metallic Materials and Metal Products (cont.)

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2545 2554 2564	2. Steel Sign Posts	3401	Visual Inspection & Certification from Contractor of compliance with Domestic source requirement under 1601, if applicable.	Two posts per shipment of each mass per unit length. Submit shortest full sized length of each weight, not a scrap piece.	See note	**Form 02415 or 2403** Check domestic steel requirement under 1601 No Samples for project quantities less than 20
2554 2557	3.Posts for Traffic & Fence A.Steel fence posts, brace bars, and rails	3403 3406	Visual Inspection	One sample per 500 pieces. Submit full length for posts used in the ground (line, terminal, "C" and anchor posts), and 5' length of top rail and brace bar.		**Form 02415 or 2403** Check domestic steel requirement under 1601 Special Provision. Retain Certificate of Compliance and certified mill analysis in project file. See link for certification form on right side of page, www.dot.state.mn.us/materials/lab.html
2557	3. Fence B. Components: includes cup, cap, nut, bolt, end clamp, tension band, truss rod tightener, hog ring, tie wire, tension stretcher bar, truss rod, clamp, & tension wire	3376	Visual Inspection	1 each of cup, cap, nut, bolt, end clamp, tension bands, truss rod tightener, 12 hog rings, 6 tie wires, 1 tension stretcher bar; 1 truss rod, cut to 2-foot min. with threaded section, 3 feet of tension wire.		**Form 02415 or 2403** Check domestic steel requirement under 1601 Special Provision. Retain Certificate of Compliance in the project file. See link for certification form on right side of page, www.dot.state.mn.us/materials/lab.html
2557	3. Fence C. Gates	3379	Visual Inspection	No sample required. See notes.		**Form 02415 or 2403** Check domestic steel requirement under 1601 Special Provision. Retain Certificate of Compliance in the project file. See link for certification form on right side of page, www.dot.state.mn.us/materials/lab.html
2557	3. Fence D. Barbed Wire	3376	Visual Inspection.	One sample per 50 rolls	1 m (3 ft)	**Form 02415 or 2403** Check domestic steel requirement under 1601 Special Provision. Retain Certificate of Compliance in the project file. See link for cert. form on right side of page, www.dot.state.mn.us/materials/lab.html

VII. Metallic Materials and Metal Products (cont.)

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2557	3. Fence E. Woven Wire Fabric	3376	Visual Inspection	One full height sample per 50 rolls	1 m (3 ft)	**Form 02415 or 2403** Check domestic steel requirement under 1601 Special Provision. Retain Certificate of Compliance in the project file. See link for cert. form right side of page, www.dot.state.mn.us/materials/lab.html
2557	3. Fence F. Chain Link Fabric	3376	Visual Inspection	One full height sample for each 5,000 ft of fencing.	0.3 m (1 ft)	**Form 02415 or 2403** Check domestic steel requirement under 1601 Special Provision. Retain Certificate of Compliance in the project file. See link for certification form on right side of page, www.dot.state.mn.us/materials/lab.html
2402	4. Water Pipe and other Piping Materials	3364, 3365, 3366 & Special Provisions				**Form 02415 or 2403** Check domestic steel requirement under 1601 Special Provision. To be identified & tested if necessary prior to use. See Special Provisions.
2201 2301 2401 2405 2411 2412 2433 2452 2472 2514 2531 2533 2545 2564	5. Reinforcing Steel A. Bars – Uncoated	3301	Visual Check for Size and Grade Marking	No Field Sample Necessary		**Form 02415 or 2403** For Uncoated bars - Retain Certificate of Compliance and Certified Mill Analysis in Project File.

VII. Metallic Materials and Metal Products (cont.)

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2201 2301 2401 2405 2411 2412 2433 2452 2472 2514 2531 2533 2545 2564	5. Reinforcing Steel B. Bars - Epoxy Coated	3301	Visual Check for Size and Grade Marking and "Inspected" tag	One sample (1 bar) of each size bar for each day's coating production	1 m (3 ft)	**Form 02415 or 2403** For Epoxy-Coated bars, steel will be tagged "Inspected" when it has been sampled and tested by MnDOT prior to shipment, and 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 with copies of the , Certificate of Compliance, and Certified Mill Analysis. Retain originals of the Certificate of Compliance and Certified Mill Analysis in the project file.
2401	5. Reinforcing Steel C. Bars Stainless Steel	Special Provisions		One sample (2 Bars) per heat per bar size	1 m (3 ft)	Submit copies of mill test reports with samples, retain originals in project file
2401 2411 2452 2472 2564	5. Reinforcing Steel D. Spirals	3305		One per shipment	1 m (3 ft)	**Same as 5.B**
2201 2301 2401 2411 2412 2472 2531	5. Reinforcing Steel E. Steel Fabric	3303	Visual Inspection	No Field Sample Necessary		Retain Certificate of Compliance in project file.
2201 2301 2401 2411	5. Reinforcing Steel F. Dowel Bars	3302		One Dowel Bar from each shipment	Full Size Dowel Bars	For all types of dowels – Each project shall have a Certificate of Compliance from the Manufacturer certifying that all materials used in fabrication of the dowel bars and baskets comply with all applicable specifications. The Manufacturer shall maintain all records necessary for certification by project. The Certificate of Compliance shall be submitted to the Project Engineer.

VII. Metallic Materials and Metal Products (cont.)

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2401 2405	5. Reinforcing Steel G. Prestressing or Post-Tensioning Strand	3348		One sample (2 strands) from each heat (see **Notes**)	1.8 m (6 ft)	Submit one copy of mill certificate and one copy of the stress-strain curve representative of the lot with the samples. For most manufacturers, a heat equals a production lot, and an individual lot, pack, or reel is a subset of a heat/production lot.
2402 2506 2565	6. Drainage and Electrical Castings	3321 2471 2565	Visual Inspection	All castings: Three tensile bars to be cast with each heat at Foundry and submitted to the lab by an approved Foundry*. See 3321.		**Form 02415 or 2403** Call Maplewood Laboratory at 651-366-5540 for list of approved foundries, or see website. Inspect in the field and retain Form 02415 or 2403 in project file, showing name of foundry and quantity
2401 2402 2411 2433 2545 2554 2564 2565	7. Anchor Rods (Cast in Place)	3385 3391 3392	Check Approved/Qualified Products list, mill certifications, and visual inspection at the project site.	Pre-approved (see notes) or one complete anchor rod assembly including nuts and washers from each lot supplied.		Pre-approved system requires supplier to submit a sample to the Department yearly for each anchor rod grade. Test results of sample must verify compliance to product specifications.
2401 2402 2411 2433 2545 2554 2564 2565	8. Structural Fasteners, both coated and uncoated	3385 3391 3392	Visual inspection and verify material is on APL/QPL, or submit sample for verification testing if not on APL/QPL	Pre-approved (see notes) or two complete assemblies for each size, length, diameter, grade and finish, per increment of 1000 or fraction thereof		Pre-approved system requires the supplier to submit a sample yearly for each fastener size, grade and finish. Test results must verify compliance to specifications. If not on the APL/QPL, submit two complete assemblies for each size, length, grade and finish per increment of 1000 or fraction thereof of fasteners supplied for the project, including nuts and washers from each lot supplied. Obtain passing test results before installation.
2401 2411 2433	9. Anchorages (Drilled In)	Special Provisions	Visual Inspection	No laboratory samples required		Note: Before installation, verify that anchorages are on the qualified products list www.dot.state.mn.us/products

VII. Metallic Materials and Metal Products (cont.)

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2402	10. Structural Steel A. For Steel Bridge – Beams, Girders, Diaphragms, etc.	2471	Structural Metals Inspection Tag and field inspection for damage/defects	None		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/
2402 2405	10. Structural Steel B. For Concrete Girders-Diaphragms and sole plates	2471	Structural Metals Inspection Tag and field inspection for damage/defects	None		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/
2402	10. Structural Steel C.. Expansion joints	2471	Structural Metals Inspection Tag and field inspection for damage/defects	None		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/
2402	10. Structural Steel D. Steel Bearings	2471	Structural Metals Inspection Tag and field inspection for damage/defects	None		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/

VII. Metallic Materials and Metal Products (cont.)

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2402	10. Structural Steel E. Railing-Structural tube and ornamental	2471	Structural Metals Inspection Tag and field inspection for damage/defects	None		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/
2402	10. Structural Steel F. Drainage Systems	2471	Structural Metals Inspection Tag and field inspection for damage/defects	None		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/
2402	10. Structural Steel G. Protection Angles	2471	Structural Metals Inspection Tag and field inspection for damage/defects	None		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/

VII. Metallic Materials and Metal Products (cont.)

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2564	11. Overhead Sign structures	2564 2471	Structural Metals Inspection Tag and field inspection for damage/defects	None		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/
2545	12. High Mast Lighting Structures	2545 2471	Structural Metals Inspection Tag and field inspection for damage/defects	None		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/
2565	13. Monotube Signal Structures	2565 2471	Structural Metals Inspection Tag and field inspection for damage/defects	None		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/

VIII. Miscellaneous Materials

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2403 2422 2452 2521 2540 2545 2554 2557 2564	1. Timber, Lumber Piling & Posts	3412 to 3471 & 3491	Visual Inspection			**Form 02415 or 2403** Untreated materials shall be inspected in the field and the results reported on Form 02415 or 2403. 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.
2402 2405 2557 Many	2. Miscellaneous pieces and Hardware (Galvanized)	3392 3394		3 samples of each item per shipment. Sample critical items only. (Critical items are load bearing, structurally necessary items.)	Three of each type.	**Form 02415 or 2403** Will carry "Inspected" tag if sampled and tested prior to shipment. No sample necessary if "Inspected".
2504	3. Insulation Board	3760	Visual Inspection	None		**Form 02415 or 2403**
2402	4. Laminated Elastomeric Bearing Pads	3741 and Special Provisions	Structural Metals Inspection Tag and field inspection for damage/defects	See Notes		See Project Special Provisions for Sampling, Testing, and Acceptance Requirements.
2402	4. Plain Elastomeric Bearing Pads	3741 and Special Provisions	Structural Metals Inspection Tag and field inspection for damage/defects	See Notes		See Project Special Provisions for Sampling, Testing, and Acceptance Requirements.
2402	4. Cotton Duck Bearing Pads	3741 and Special Provisions	Structural Metals Inspection Tag and field inspection for damage/defects	See Notes		See Project Special Provisions for Sampling, Testing, and Acceptance Requirements.

IX. Geosynthetics, Pipe, Tile, and Precast/Prestressed Concrete

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2402 2422 2501 2503 2506	1. Corrugated Metal Products A. Culvert Pipe Underdrains Erosion control Structures	3225 thru 3229, 3351 and 3399	Visual Inspection: Check for good construction, workmanship, finish requirements and shipping			**Form 02415 or 2403** Make certain pipe is Certified on Invoice, retain certificate of compliance and certified mill analysis in project file
2501	1. Corrugated Metal Products B. Structural Plate	3231	Visual Inspection: Invoice shall include notation that material described is in accordance with fabricator's Certificate and Guarantee			**Same as 1.A**
2501	1. Corrugated Metal Products C. Aluminum Structural Plate	3233				Retain certificate of compliance and certified mill analysis in project file
2503 2506	2. Clay Pipe	3251	No samples required for less than 100 pieces	1 sample per 200 pieces of each size.	Full Size Pipe	**Form 02415 or 2403**
2501 2503 2506	3. Concrete Pipe A. Reinforced Pipe and Arches, Precast Cattle Pass Units, and Sectional Manhole Units	3236	Field Inspection: Check for damage and defects. Check dimensions as required. Check for producer's "Certified" stamp and signature on the certification document.	1 "companion" cylinder per month per plant during production, or cylinder testing machine, whichever is greater. Call Precast Inspection Engineer at 651-366-5540 for additional information.		**Form 02415 or 2403** For Concrete Pipe Both A & B: Product will be certified by producer, only spot checks are done by plant inspector. Make certain the invoice or certification document is signed and the product has the required markings. Maintain Form 2403 or 02415 in project records, showing source of materials and type and quantity used
2501 2503 2506	3. Concrete Pipe Fine Aggregate	3126		1 quality test per month during production for A and B above.	10 kg. (25 lb.)	
2501 2503 2506	3. Concrete Pipe Coarse Aggregate	3137		1 quality test per month during production for A and B above.	10 kg. (25 lb.)	

IX. Geosynthetics, Pipe, Tile, and Precast/Prestressed Concrete (Cont.)

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2412	4. Precast/Prestressed Concrete Structures A. Reinforced Precast Box Culvert	3238	1 air test per pour (1st load), One set of cylinders per 25 cubic yards, with a minimum of two cylinders per set. Alternate cylinder acceptance systems may be allowed with the approval of the State Materials Engineer.	1 "companion" cylinder per month per plant during production, or cylinder testing machine, whichever is greater. Call Precast Inspection Engineer at 651-366-5540 for additional information.		Precast/prestressed Concrete Structure (beams, posts, etc.) will be inspected and stamped at plant. Field personnel are responsible for checking for plant inspector's stamp, for shipping/handling damage or defects, and dimensions. An inspection report will be completed by plant personnel and sent to the field personnel.
	Fine Aggregate	3126		1 quality test per month during production.	10 kg. (25 lb.)	
	Coarse Aggregate	3137		1 quality test per month during production.	10 kg. (25 lb.)	
2405	4. Precast/Prestressed Concrete Structures B. Precast/Prestressed Concrete Structure (beams, posts, etc.).	2405	1 air test per pour (1st load), One set of cylinders per 25 cubic yards, with a minimum of two cylinders per set, and one set per beam. Alternate cylinder acceptance systems may be allowed with the approval of the State Materials Engineer.	1 "companion" cylinder per month per plant during production, or cylinder testing machine, whichever is greater. Call Precast Inspection Engineer at 651-366-5540 for additional information.		Precast/prestressed Concrete Structure (beams, posts, etc.) will be inspected and stamped at plant. Field personnel are responsible for checking for plant inspector's stamp, for shipping/handling damage or defects, and dimensions. An inspection report will be completed by plant personnel and sent to the field personnel.
	Fine Aggregate	3126	Gradation: 1 per 150 m^3 (200 Cu. yd.) or fraction thereof. 1 per day of production or 3 per week, whichever is less.	1 gradation and 1 quality test per month during production from a split sample. Include producer's gradation results on sample card.	10 kg (25 lb.)	
	Coarse Aggregate	3137	Gradation: 1 per 75 m^3 (100 Cu yd) or fraction thereof. 1 per day of production or 3 per week, whichever is less.	1 gradation and 1 quality test per month during production from a split sample. Include producer's gradation results on sample card.	10 kg (25 lb.)	

IX. Geosynthetics, Pipe, Tile, and Precast/Prestressed Concrete (Cont.)

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2506	5. Manholes and Catch Basins (Construction)	2506 3622	Field Inspection: Check for damage and defects. Check dimensions as required. Check for Producer's "Certified" stamp and signature on the certification document.	1 "companion" cylinder per month per plant during production, or cylinder testing machine, whichever is greater. Call Precast Inspection Engineer at 651-366-5540 for additional information.		**Form 02415 or 2403** Product will be certified by producer or inspected, tested and stamped at source. Only spot checks are done by plant inspector. Make certain the invoice or certification document is signed and the product has the required markings. Maintain Form 2403 or 02415 in project records, showing source of materials and type and quantity used (bricks, blocks, precast, or combination).
2502	6. Drain Tile (Clay or Concrete)	3276	Visual Inspection	2 samples of each size from each source		
2502 2503	7. Thermoplastic (TP) Pipe ABS and PVC	3245	Obtain Certificate of compliance. Check for approved marking printed on pipe. Field Inspect for damage or defects.			**Form 02415 or 2403** See Spec. 3245 for specific AASHTO or ASTM Pipe types are approved under this specification. If perforated, holes should be 5mm - 10 mm (3/16 - 3/8 inch) diameter, two rows for 4", and four rows for 6" diameter; approximately 75 mm (3 inches) on center.
2502	8. Corrugated Polyethylene Pipe – Single wall for edge drains, etc.	3278	Check for markings (AASHTO M 252) Certificate of Compliance. Field Inspect for damage or defects.	No Laboratory tests required		**Form 02415 or 2403**
2503	9. Sewer Joint Sealing Compound	3724		One per shipment	0.5 liter (l pt.)	
2412 2501 2503	10. Preformed Plastic Sealer for Pipe	3726 Type b		One from each source	0.3 m (1 ft)	
2412 2501 2503	11. Bituminous Mastic Joint Sealer for Pipe	3728	Visual Inspection	Sample, if questionable		

IX. Geosynthetics, Pipe, Tile, and Precast/Prestressed Concrete (Cont.)

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2105	12. EPS Geofoam	Special Provisions	Visual Inspection Check for yellow aged material, uniformity and dimensions. Weigh 1'x1'x1' cut coupon to verify density every 200 m^3 (250 yd^3)			Form 02415 or 2403
2501 2503	13. Corrugated Polyethylene Pipe – Dual Wall, 12" – 48"	3247				For Specification 3247, Corrugated Polyethylene Pipe (HDPE) manufacturing facilities are required to be reviewed yearly and in compliance with AASHTO's National Transportation Product Evaluation Program (NTPEP) for producers of AASHTO M294 HDPE pipe. To determine if a pipe manufacturing plant is qualified, click on the following link for M294 pipe. http://data.ntpep.org/Module/PIPE/StatusReport.aspx If a plant has a compliant NTPEP audit for AASHTO M294 pipe at the time the pipe is manufactured, then the plant has met requirements. Note that a previous year's audit shall govern until NTPEP issues the next year's audit. A Certificate of Compliance shall be provided in accordance with Specification 1603.

IX. Geosynthetics, Pipe, Tile, and Precast/Prestressed Concrete (Cont.)

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes

2105
2411
2412
2501
2502
2511
2512
	14. Geotextile Fabric and Geogrid Reinforcement	3733 and Special Provisions	Inspect for damage and uniformity of texture. Rolls of both geotextile and geotextile wrapped PE Tubing must be wrapped in UV protective plastic. (Usually Black). Obtain Certificate of Compliance
			
			If using adhesive for seams, see Approved/Qualified Product List available at the Department's website
				(a) 1 per project for pipe wrap or trench lining for Permeable base designs.
				
				(b) 1 per 50,000 yd^2 (40,000 m^2) or fraction thereof of each type fabric or geogrid for all other uses.
				
				(c) Seam, if required, 1 per project minimum, additional as appropriate.
				
				Small Quantity Acceptance
				• For fabric totals less than 200 yd^2 (170 m^2)
				• For pipe wrap totals less than 1000 Lin. Ft
				• No sampling required
				• Use Inspection Report for Small Quantities (Form 2403)
				• Check:
				  o Certificate of Compliance
				  o Identifying label on product
				  o Geotextile Small Quantity Acceptance List at
				
				http://www.dot.state.mn.us/materials/aggregatedocs/gtxlist.pdf
					(a) 10 Lin. Ft. (3 m)
					
					(b) 4 yd^2 (3 m^2)*
					
					(c) 10 Lin. Ft. (3 m)**
						Certificate of Compliance shall state material identification (e.g. Propex 2002, Miragrid 8XT), and minimum average roll values (MARV) for all specified geotextile properties. MARV values must meet the Specification 3733 Types 1 through 7 requirements for the specific application. Submit copy of Certificate with material samples sent to the Materials Laboratory.
						
						Submit additional sample(s), if the manufacturer or model of geotextile or geogrid used changes during construction.
						
						Sampling shall be by random selection and no more than one sample shall be taken from an individual roll. For type 6 applications (including geogrids), submit pages of Special Provisions that list required material properties. (Type 6 requirements are job specific.) For Modular Block Walls or Reinforced Soil Slopes, submit page(s) of shop drawings that reference geogrid/geotextile to be used (product name) and/or required properties.
						
						* Do not sample first full turn of rolled product.
						** Seam sample to include approximately 3 ft (1 m) of geosynthetic material on each side of seam (in direction perpendicular to seam).

X. Brick, Stone, and Masonry Units

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2506	1. Brick A. Sewer (clay) and Building	3612 to 3615	Visual Inspection	One sample per 50,000 brick or fraction thereof	6 whole bricks	
2506	1. Brick B. Sewer (Concrete)*	3616	Visual Inspection	One sample per shipment.	6 whole bricks	* Air entrainment required. Obtain air content statement from supplier.
2506	2. Concrete Masonry Units A. For Sewer Construction	3621	Visual Inspection	One sample per shipment	6 whole units	Air entrainment required. Obtain air content statement from supplier.
2411	2. Concrete Masonry Units B. For Modular Block Retaining Walls	Special Provisions	Visual Inspection Check for cracks and broken corners	One sample per 10,000 units or fraction thereof, with a minimum of one sample per product (block) type per contract.*	5 whole units	All lots of block upon delivery shall have Manufacturer or Independent laboratory test results to verify passing both compression and freeze-thaw requirements. * Wall units and cap units are considered separate block types.
2422	3. Reinforced Concrete Cribbing	3661	Concrete control tests Air Tests Visual Inspection if previously tested	One cylinder per 100 units, but not less than 5 cylinders for a given contract. Other materials as required herein.	150 x 300mm (6 x 12 in) Cylinders	Form 02415 or 2403 Will be stamped when inspected prior to shipment.
2511 2512 2577	4. Stone for Masonry or Rip-Rap	3601 and Special Provisions	Visual Inspection Submit Form 02415 unless special testing is specified			Form 02415 or 2403 Each source shall be approved by Project Engineer or Supervisor for quality, prior to use. For questions on quality, contact District Materials or Geology Unit.

XI. Electrical and Signal Equipment Items

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2545	1. Lighting Standards (Aluminum or Steel)	3811	Visual Inspection			The Fabricator shall submit "Certificate of Compliance", on a per project basis, to the Project Engineer..
2545 2550 2565	2. Hand Holes (Precast, PVC, and LLDPE)	2545 2550 2565				Form 02415 or 2403 Traffic signals and street lighting projects require handholes and frames and covers to be listed on the MnDOT Approved/Qualified Products List (A/QPL) for signal. For cast iron frame and cover: see VII.6, Drainage Castings
2545 2565	3. Foundation	2545	Slump as needed	1 cylinder per 20 m^3 (25 Cu. yd.)		Rebar is required in concrete foundations as specified in the Contract documents for all traffic signal and street lighting projects.
2402 2545 2565	4. Conduit and Fittings A. Metallic	3801 3802	Visual Inspection	None		Form 02415 or 2403 Conduit shall be labeled as being listed by a National Recognized Testing Laboratory (NRTL). Retain Form 02415 or 2403 in Project File
2545 2565	4. Conduit and Fittings B. Non-Metallic (Rigid and HDPE)	3803 Special Provisions	Visual Inspection			Form 02415 or 2403 Conduit shall be labeled as being listed by a National Recognized Testing Laboratory (NRTL). Retain Form 02415 or 2403 in Project File. For traffic signal and street lighting projects, specific requirements are contained in the Special Provisions for each project.
2545 2565	5a. Anchor bolts (cast in place)	2545 2565				See section VII, 7.
2545	5b. Anchorages (Drilled In)	2545				See section VII, 8.

XI. Electrical and Signal Equipment Items (cont.)

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2545 2565	6. Miscellaneous Hardware	2545 2565	Visual Inspection	Sample critical items only. One of each item per shipment. (Critical Items are load bearing, structurally necessary items.)		Will carry "Inspected" tag if sampled and tested prior to shipment. No sample necessary if "Inspected". Do not use if not tested. Field sample at sampling rate for laboratory testing. For traffic signal and street light lighting projects, various miscellaneous hardware is required to be listed on the MnDOT Signals and Lighting Approved/Qualified Products Lists (A/QPL). The Contract documents indicate which items must be on the Signals and/or Lighting APL.
2545 2550 2565	7. Cable and Conductors A. Power Conductors Loop Detector Conductors (No Tubing) Underground Service Entrance (USE) cables	3815.2B1 3815.2B2(a) Special Provisions	Visual Inspection	None		Form 02415 or 2403 Make certain the conductors are the type specified. Submit Field Inspection report showing type and quantities used. Shall be labeled as being listed by a National Recognized Testing Laboratory (NRTL) and type where applicable.
2545 2550 2565	7. Cable and Conductors B. Electrical Cables and Single Conductors with Jacket	3815.2B2(b) 3815.2B3 3815.2B5 3815.2C1 3815.2C3 3815.2C4 3815.2C5 3815.2C6 3815.2C7 3815.2C8 3815.2C14 Special Provisions	Visual Inspection	1 sample per size per lot	1.5m (5 ft)	**Form 02415 or 2403** Usually inspected at the distributor. Documentation showing project number, reel number(s), & MnDOT test number(s) will be included with each project shipment. If such documentation is not received from Contractor, submit sample for testing along with material certification from manufacturer. Do not use if not tested. Pre-inspected materials will not be tagged; an inspection report will be sent by the MnDOT inspector for each shipment. Project inspectors should verify that the shipping documents agree with this inspection report. Call Steve Grover at 651-366-5540 or Cindy Schellack at 651-366-5543 with questions. For traffic signal and street lighting projects, the Special Provisions for each project contain electrical cable and conductor specifications.
2545 2550 2565	7. Cable and Conductors C. Fiber Optic Cables	3815.2C13	Visual Inspection - verify make and model number as shown in Special Provisions	None		**Form 02415 or 2403** Fiber optic cables shall be listed on the MnDOT Approved/Qualified Products List (A/QPL) for Traffic Management Systems/ITS.

XI. Electrical and Signal Equipment Items (cont.)

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2545 2565	8. Ground Rods	2545 2565	Visual Inspection	None.		**Form 02415 or 2403** Retain Form 02415 or 2403 in project file. Shall be labeled as being listed by a National Recognized Testing Laboratory (NRTL).
2545	9. Luminaires and Lamps	3810				**Form 02415 or 2403** Traffic signal and street lighting projects require luminaries and lamps to be listed on the MnDOT Approved/Qualified Products List (A/QPL) for Lighting. The conductors shall be labeled as being listed by a National Recognized Testing Laboratory (NRTL) and type, where applicable.
2545	10. Electrical Systems					Electrical Systems are to be reported as a "System" using the Lighting, Signal, and Traffic Recorder Inspection Report. To be certified by the Project Engineer.
2565	11. Traffic Signal Systems	2565				Traffic Signal Systems are to be reported as a "System" using the Lighting, Signal, and Traffic Recorder Inspection Report. To be certified by the Project Engineer.

SECTION 01240 – VALUE ENGINEERING

PART 1 GENERAL

1.01 SUMMARY

A. This section applies to cost reduction proposals, hereinafter referred to as Value Engineering Cost Proposal (VECP), initiated and developed by Contractor to change requirements of the Contract for sole purpose of reducing total cost of construction. It is the intent that the VECP Construction Savings Amount, as defined herein, will be shared between Contractor and Owner.

B. VECP proposal shall be identified as such at the time of submission to Engineer.

C. VECP, if adopted, shall result in a savings to Owner by providing a decrease in cost for performing the Work without impairing any of the essential functions and characteristics such as service life, reliability, economy of operation, ease of maintenance, desired appearance, and safety features.

D. VECP shall not be based solely upon a change in specified quantities.

E. Contractor may withdraw the whole or part of a submitted VECP prior to acceptance by Engineer and Owner.

1.02 SUBCONTRACT FLOW DOWN

A. Contractor shall include these VECP provisions in subcontracts of $200,000 or greater. VECP provisions may be included in subcontracts of lesser value. Subcontracts shall state that benefits accruing to Contractor as a result of an accepted VECP initiated by a Subcontractor shall be shared by Contractor and Subcontractor, in a manner specified in the subcontract. Concurrent Savings on other Owner contracts where Subcontractor is participating are not allowed.

1.03 DEFINITIONS

A. Collateral Savings: Measurable net reductions in Owner's costs of operation that result from VECP including maintenance, logistics and Owner-furnished equipment.

B. Concurrent Savings: Savings from other Owner contracts where Contractor is participating.

C. Contractor Costs: Reasonable costs incurred by Contractor in preparing VECP and making the change, such as cancellation or restocking charges.

D. Future Contract Savings: Reductions in cost of performance of future contracts for essentially the same item resulting from VECP submitted by Contractor.

E. Gross Savings Amount: The gross savings amount to Contract, before deductions of Owner and Contractor Costs.

F. Owner Costs: Reasonable costs, including associated engineering costs, incurred by Owner for evaluating and implementing VECP, such as redesign, testing, and effect on other contracts, including easement acquisition costs.

G. VECP Construction Savings Amount: Net amount of Contract Price reduction to be realized by implementation of VECP; the Gross Savings Amount less Owner and Contractor Costs.

1.04 PREPROPOSAL SCREENING

A. Upon request of Contractor, and with approval of Engineer, a preproposal screening meeting will be scheduled for Contractor to present anticipated proposal.

B. Contractor, Engineer, Owner and, if applicable, Subcontractor or Vendor will be present at meeting.

C. Engineer and Owner will render a preliminary opinion as to relative merits of proposal during meeting. Contractor is not to assume acceptance of VECP based on Engineer or Owner concurrence with merits of preliminary proposal.

D. If proposal is found to have merit, Engineer will confirm minimum technical content requirements to be submitted by Contractor with the intent to minimize proposal resubmittals.

E. Any VECP received which have not been introduced in a pre-proposal screening may be rejected without review.

1.05 VECP PROPOSAL SUBMITTAL

A. VECP shall not be submitted if Gross Savings Amount will total less than $100,000.

B. Contractor shall prepare and submit three copies to Engineer.

C. Include, as a minimum, the following information with each VECP:
1. Description of the difference between existing Contract requirement and VECP.
2. Comparative advantages and disadvantages between Contract requirement and VECP.
3. Itemization of requirements of Contract which must be changed if VECP is adopted, and a recommendation as to how to make such change (e.g. drawing numbers and specifications).
4. Justification for change in function or characteristic of each affected item and effect of change on performance of end item.
5. Detailed cost estimate, with itemized breakdown containing quantities and unit prices for both original design and proposed change. Cost estimate shall include Contractor Costs, including amounts attributable to subcontracts. Basis for estimate shall also be included.
6. Prediction of effects VECP would have on Owner Costs, such as additional engineering costs, costs of related items, and costs of maintenance and operation.
7. Statement of time by which a Change Order adopting VECP must be issued, so as to obtain maximum cost reduction.
8. Proposed revisions to construction schedule, if any.

D. Engineer has right to reject, without review, any VECP that does not contain herein required documentation.

1.06 CONSTRUCTION SAVINGS SHARING

A. If VECP is accepted, resulting deductive Change Order to Contract will be in an amount equal to the total of the Owner and Engineer Costs plus 50 percent of VECP Construction Savings Amount, determined as follows, $V = G-(C+O+E)$, where:

V = VECP Construction Savings Amount
G = Gross Savings Amount
C = Contractor Costs
O = Owner Costs
E = Engineer Costs

1.07 EXECUTABLE VECP

A. If the VECP is accepted, a deductive Change Order will be prepared, in accordance with this section and “change” clause of these Contract Documents, adjusting Contract Price and other affected provisions.

B. Unless and until a VECP Change Order is executed by both parties, Contractor shall remain obligated to perform in accordance with terms of the Contract.

C. Acceptance of VECP and performance of the Work thereunder shall not extend Contract Times, unless specifically provided for in the Change Order authorizing VECP.

D. Contractor is not entitled to share in either Concurrent, Collateral, or Future Contract Savings.

E. Owner may accept, in whole or in part, submitted VECP. Owner may modify a VECP, with concurrence of Contractor, to make it acceptable.

F. Neither Owner nor Engineer shall be liable for delays in acting upon, or for failure to act upon, a submitted VECP.

G. Decisions of Owner as to acceptance of VECP under these Contract Documents shall be final.

H. Contractor may restrict Owner's right to use any portion of a VECP or its supporting data, submitted pursuant to this section, in accordance with the terms of the following if it is noted on such:

"These data are furnished pursuant to a value engineering change proposal and shall not be disclosed to an entity other than Owner and Engineer, or to be duplicated, used, or disclosed, in whole or in part, for any purpose other than to evaluate a value engineering change proposal. This restriction does not limit Owner's right to use information contained in these data if it is or has been obtained from another source, or is otherwise available without limitations. If such a proposal is accepted by Owner by issuance of a Change Order, Owner shall have the right to duplicate, use and disclose any data pertinent to the proposal as accepted, in any manner and for any purpose whatsoever."

I. In the event of acceptance of VECP, Contractor hereby grants to Owner all rights to use, duplicate or disclose in whole or part, in any manner and for purpose whatsoever, and to have or permit others to do so, any data reasonably necessary to fully utilize such proposal.

1.08 NONEXECUTABLE VECP

A. If VECP is not accepted, Engineer will notify Contractor in writing, explaining reasons. Owner's and Engineer's costs for evaluating the VECP will be deducted from Contract Price via a Change Order. Contractor's costs of development of VECP are nonrecoverable in such an event.

B. In the event Contractor withdraws from VECP that has been previously agreed upon by all parties, Owner's and Engineer's costs for evaluating VECP will be deducted from Contract Price via a Change Order.

C. If VECP requires a time extension that is not acceptable to the Owner, the VECP shall be considered nonexecutable.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

(2360) PLANT MIXED ASPHALT PAVEMENT (2013 VERSION)
January 23, 2013

(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 be 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) above. 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 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.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 each test point and connect individual points with a solid line. Plot the 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 the 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 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 (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 Shoulders* ‖	
	SP Wear Mixtures* ‖	SP Non-Wear Mixtures* ‖	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 by 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 Determination (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 has 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 be 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 by 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.

EEO SPECIAL PROVISIONS

Revised 07/12

38 sheets

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 be 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 forth in Required contract Provisions (Form PR-1273 or 1316, as appropriate) and these Special Provisions which 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 the 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 having 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

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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)
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
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22.							
23.							
24.							
25.							
26.							
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.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								
11.								
12.								
13.								
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16.								
17.								
18.								
19.								
20.								

8. Contract Goals	**9. Prepared by:** (Signature)	**10. Reviewed by:** (Signature)
MINNESOTA GOALS **%OBTAINED** _____ **%** Minority _____ %	Print Name:	Print Name:
	Title:	Title:
_____ **%** Women _____ %	Date:	Date:
	Phone: Fax:	Phone: Fax:

EEO-13 Rev. 05/09

INSTRUCTIONS FOR EEO-13

MONTHLY EMPLOYMENT COMPLIANCE REPORT

1.-5. Self-explanatory – **S**tate **P**roject #, 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

MINNESOTA DEPARTMENT OF TRANSPORTATION

ON-THE-JOB TRAINING PROGRAM
TRAINEE ASSIGNMENT

SP #: _____ Location: _____ District: _____

Project Engineer: _____ Phone: ( ) _____

Prime Contractor: _____ Phone: ( ) _____

Address: _____

City: _____ State: _____ Zip:_____

EEO Officer: _____ Project Manager: _____

Tel:_____

Training Contractor:_____ Phone: ( ) _____

Address: _____

City: _____ State: _____ Zip:_____

EEO Officer: _____Project Manager: _____

Tel: _____

TRAINEE

Job Title or
Trade Classification: _____ Number of Training
Hours on this Project: _____

Name: _____ S.S.#: _____

Address: _____ Phone: ( ) _____

City: _____State: _____ Zip: _____

EEO Officer: _____Project Manager: _____

Tel: _____

Approximate Start Date: _____

Approximate Completion Date: _____

Is the trainee a member of a certified apprenticeship program?

If YES, verify with Apprenticeship Form or Indenture Number: _____

1. Ethnic Background: **Hispanic** _____; **Black** _____; **Asian/Pacific Islander** _____; **White**_____;

   Am. Ind/Alaskan _____ (Verify with Tribal I.D. # or Affiliation _____).

2. **Male**; _____ **Female**; _____.

EEO-5 Rev. 05/09

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF CIVIL RIGHTS

CERTIFICATION OF ON-THE-JOB TRAINING HOURS
FEDERAL-AID-PROJECTS

Contractor: *submit original and one copy monthly to the project engineer*

CONTRACTOR	REPORTING PERIOD:
ADDRESS	S.P. NO. (LOW):
	F.P. NO.:

TRAINEE	HOURS WORKED PREVIOUSLY	HOURS WORKED THIS PERIOD	TOTAL HOURS TO DATE

AMOUNT OF CLAIM _____ HOURS @ _____ PER HOUR = $ _____

Progress of Trainee(s) ☐Excellent ☐Very Good ☐Good ☐Below Good

COMMENTS (Please detail any supplementary training offered):

_____
_____
_____
_____
_____

CONTRACTOR:

The undersigned contractor hereby certifies that the listed employees are bonafide trainees as required by the On-the-Job Training Special Provision and that they have worked the hours as reported above.

_____

Contractor Signature/Title *Date*

PROJECT ENGINEER:

I hereby certify that the On-the-Job training hours reported above have been reviewed and found correct.

_____

Engineer Signature/Title *Date*

On-the-Job Training (OJT) Program Approval Form

The Special Provisions of the contract clearly indicate that training and upgrading of minorities and women toward Journey worker status is the primary objective of the training provisions.

We,		, submit the following training program for (Trade) for approval.
	(Name of Contractor)	

I. Project Information

Contractor Name	S.P. #	County	Prime	Sub
Address	City	State	Zip	
Contact Person/ EEO Officer		Phone #	e-mail address	
Project Goals				
Trainees	Hours			

II. Project Training Plan Information

Trade	# of Trainees Projected	Hourly Assignment per Trainee	Estimated Start Date	Estimated End Date	Recruiting Resource

Planned Training Activities

III. Contractor Acknowledgment Statement.
I understand and will comply fully with the plans and specifications under which this training is being performed, and will report subsequent revisions to the training program as changes occur.

Contractor's Representative Signature	Title	Date

IV. Instruction for the Contractor.

The contractor's proposed training programs must be documented on this form and submitted as indicated in the Proposal. Your Company's compliance with this specification will factor into any and all employment related "Good Faith Effort" determinations.

On-the-Job Training Program
Trainee Termination Form

Contractor Name		County	Prime	Sub
Address	City	State	Zip	
EEO Officer		Phone #	e-mail address	
Trainee Name		Phone #	Social Security No.	
Address	City	State	Zip	

Race/Ethnicity		
☐ Hispanic	☐ White	☐ Asian
☐ Black	☐ American Indian	☐ Other

Gender		Classification/Trade		S.P. #
☐ Female	☐ Male			
Start Date	Termination Date	Hours Assigned	Hrs Completed	

Reason for Termination/Separation/Layoff:

☐ Construction phase completed
☐ Death
☐ Fired (please explain below)
☐ Illness/health problems
☐ Lack of transportation and /or travel distance
☐ Military duty
☐ Relocated
☐ Personal
☐ Quit to work for another company
☐ Other (please explain below)

Please provide comments:

Contractor's Representative Signature Title Date

MAIL or Fax THE ORIGINAL and MAINTAIN COPY:
395 John Ireland Boulevard
St. Paul, MN 55155-1899
Office of Civil Rights M.S. 170
On-The –Job Training Coordinator
Fax # 651/366-3129

REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS
Form-1273
(52 FR 36920, October 2, 1987, revised October 21, 1993, FHWA Electronic Version May 1, 2012)

I. General
II. Nondiscrimination
III. Nonsegregated Facilities
IV. Davis-Bacon and Related Act Provisions
V. Contract Work Hours and Safety Standards Act Provisions
VI. Subletting or Assigning the Contract
VII. Safety: Accident Prevention
VIII. False Statements Concerning Highway Projects
IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
X. Compliance with Governmentwide Suspension and Debarment Requirements
XI. Certification Regarding Use of Contract Funds for Lobbying

ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding $10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

REQUIRED CONTRACT PROVISIONS (cont.)

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.

b. The contractor will accept as its operating policy the following statement:

"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, national origin, age or disability. 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."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: 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 EEO 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:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO 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.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. 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 minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. 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, national origin, age or disability. 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.

REQUIRED CONTRACT PROVISIONS (cont.)

b. The contractor will periodically evaluate the spread of wages paid within each 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 its 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 of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

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. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

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 employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. 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 good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO 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, national origin, age or disability.

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 contracting agency 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 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, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurance Required by 49 CFR 26.13(b):

a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.

REQUIRED CONTRACT PROVISIONS (cont.)

b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours 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, when applicable, to increase employment opportunities for minorities and women; and
(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women;

b. The contractors and subcontractors will submit an annual report to the contracting 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 FHWA-1391. The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding $2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 “Contract provisions and related matters” with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages

a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of

REQUIRED CONTRACT PROVISIONS (cont.)

this section) and the Davis-Bacon poster (WH–1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b. (1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is utilized in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding

The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain

REQUIRED CONTRACT PROVISIONS (cont.)

written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b. (1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g. , the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency..

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH–347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees

a. Apprentices (programs of the USDOL).

Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

REQUIRED CONTRACT PROVISIONS (cont.)

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL).

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

d. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility.

a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

REQUIRED CONTRACT PROVISIONS (cont.)

c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The following clauses apply to any Federal-aid construction contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1.) of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1.) of this section.

3. Withholding for unpaid wages and liquidated damages. The FHWA or the contacting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.

4. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term “perform work with its own organization” refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
(2) the prime contractor remains responsible for the quality of the work of the leased employees;
(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and
(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its

REQUIRED CONTRACT PROVISIONS (cont.)

own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.

REQUIRED CONTRACT PROVISIONS (cont.)

2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost $25,000 or more – as defined in 2 CFR Parts 180 and 1200.

1**. Instructions for Certification – First Tier Participants:**

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. “First Tier Covered Transactions” refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). “Lower Tier Participant” refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

* * * * *

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;

REQUIRED CONTRACT PROVISIONS (cont.)

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. **Instructions for Certification - Lower Tier Participants:**

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost $25,000 or more - 2 CFR Parts 180 and 1200)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently

REQUIRED CONTRACT PROVISIONS (cont.)

debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000 (49 CFR 20).

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

ATTACHMENT A - EMPLOYMENT AND MATERIALS

PREFERENCE FOR APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS ROAD CONTRACTS

This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

MN REVENUE WITHHOLDING FORM IC 134

MINNESOTA • REVENUE **IC134**

Withholding Affidavit for Contractors

This affidavit must be approved by the Minnesota Department of Revenue before the state of Minnesota or any of its subdivisions can make final payment to contractors. For more detailed information, see the instructions on the back of this form.

Please type or print clearly. This will be your mailing label for returning the completed form.

Company name
Address
City | State | ZIP code

Daytime phone
Total contract amount $
Amount still due $

Minnesota tax ID number
Month/year work began
Month/year work ended

Project Information

Project number | Project location
Project owner | Address | City | State | ZIP code

Did you have employees work on this project? ☐ Yes ☐ No. If no, who did the work?

Contractor Type

Check the box that describes your involvement in the project and fill in all information requested.

☐ **Sole contractor**

☐ **Subcontractor**

Name of contractor who hired you

Address

☐ **Prime contractor**—If you subcontracted out any work on this project, all of your subcontractors must file their own IC134 affidavits and have them certified by the Department of Revenue *before* you can file your affidavit. For each subcontractor you had, fill in the information below and attach a copy of each subcontractor's certified IC134. If you need more space, attach a separate sheet.

Business name	Address	Owner/Officer

Sign Here

I declare that all information I have filled in on this form is true and complete to the best of my knowledge and belief. I authorize the Department of Revenue to disclose pertinent information relating to this project, including sending copies of this form, to the prime contractor if I am a subcontractor, and to any subcontractors if I am a prime contractor, and to the contracting agency.

Contractor's signature | Title | Date

Mail to: Minnesota Revenue, Mail Station 6610, St. Paul, MN 55146-6610
Phone: 651-282-9999 or 1-800-657-3594 (TTY: Call 711 for Minnesota Relay).

Certificate of Compliance

Based on records of the Minnesota Department of Revenue, I certify that the contractor who has signed this certificate has fulfilled all the requirements of Minnesota Statutes 290.92 and 270C.66 concerning the withholding of Minnesota income tax from wages paid to employees relating to contract services with the state of Minnesota and/or its subdivisions.

Department of Revenue approval | *Date*

(Rev. 6/12)

MINNESOTA • REVENUE

Form IC134 Instructions

Withholding Affidavit

No state agency or local unit of government can make final payment to a contractor until the Department of Revenue has certified that the contractor and any subcontractor have fulfilled the requirements of Minnesota withholding tax laws.

Who Must File

If you are a prime contractor, a contractor or a subcontractor who did work on a project for the state of Minnesota or any of its local government subdivisions — such as a county, city or school district — you must submit an affidavit to the Department of Revenue to receive a confirmation of compliance.

Use of Information

The Department of Revenue needs **all** the requested information to determine if you have met the state income tax withholding requirements. If all required information is not provided, Form IC134 will be returned to you for completion.

All information on this affidavit is private by state law. It cannot be given to others without your permission, except to the Internal Revenue Service, other states that guarantee the same privacy and certain government agencies as provided by law.

Minnesota Tax ID Number

You must have a Minnesota tax ID number if you have employees who work in Minnesota. You must enter your Minnesota tax ID number on Form IC134.

If you don't have a Minnesota tax ID number, apply online at www.revenue.state.mn.us or by calling our Business Registration Office at 651-282-5225 or 1-800-657-3605.

If you have no employees and did all the work yourself, you do not need a Minnesota tax ID number. Instead, enter your Social Security number in the space for Minnesota tax ID number and explain who did the work.

Submit Affidavit

Form IC134 cannot be processed by the Department of Revenue until you finish the work. If you submit the form before the project is completed, it will be returned to you unprocessed.

If any withholding payments are due to the state, Minnesota law requires certified payments before we approve your Form IC134.

If you are a subcontractor or sole contractor, submit the form when you have completed your part of the project.

If you are a prime contractor, submit the form when the entire project is completed and you have received certified affidavits from all of your subcontractors.

If you're a prime contractor and a subcontractor on the same project

If you were hired as a subcontractor to do work on a project, and you subcontracted all or a part of your portion of the project to another contractor, you are a prime contractor as well. Complete both the subcontractor and prime contractor areas on a single Form IC134.

You may submit your withholding affidavit either electronically **or** by mail. This affidavit must be certified and returned before the state or any of its subdivisions can make final payment for your work.

For an immediate response: Complete and submit your withholding affidavit electronically. Go to www.revenue.state.mn.us and choose Withholding Tax. Under the File and Pay tab, click on IC134 Affidavit for Contractors.

You may complete and mail Form IC134 to: Minnesota Revenue, Mail Station 6610, St. Paul, MN, 55146-6610. If you have fulfilled the requirements of Minnesota withholding tax laws, the department will sign your affidavit and return it to you.

To receive your final payment, submit the certified affidavit to the government unit for which the work was done. If you are a subcontractor, submit the certified affidavit to your prime contractor to receive your final payment.

Information and Assistance

Additional forms and information, including fact sheets and frequently asked questions, are available on our website.

Website: www.revenue.state.mn.us

Email: withholding.tax@state.mn.us

Phone: 651-282 9999 or 1-800-657-3594.

(TTY: Call 711 for Minnesota Relay)

We'll provide information in other formats upon request to persons with disabilities.

FORM OF PROPOSAL

To the City of Rochester Council Members:

According to the advertisement of the Rochester City Council 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 the City of Rochester:

(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 MnDOT 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 MnDOT 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 MnDOT 1904.

(I)(We) further propose to execute the form of Contract within 10 days after receiving written notice of award, as provided in MnDOT 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 MnDOT 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 the City of Rochester.

(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 the City of Rochester 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.

Department of Public Works
201 4th Street SE, Room 108
Rochester, MN 55904-3740
(507) 328-2400

ABBREVIATIONS OF SCHEDULE OF PRICES

NOTICE TO BIDDERS

Particular note should be made in regard to the clarity of numerals (figures) and to the procedure for alterations and the required certificate as directed by Section 1301.

The following abbreviations may be used in item description and unit of measure in the Schedule of Prices.

A	Arch
A-S	Antiseepage
AB	Asbestos Bonded
ACT	Actuated
AGG	Aggregate
ALUM	Aluminum
ASB	Asbestos
ASPH	Asphaltic
ASSY	Assemblies
B+B	Balled & Burlapped
BC	Bituminous Coated
BIT	Bituminous
BLDG	Building
BR	Bridge
CAL	Caliper
CB	Catch Basin
CEM	Cement
C and G	Curb and Gutter
CI	Cast Iron
C-I-P	Cast-in-Place
CL	Class
COMM	Commercial
CONC	Concrete
COND	Conductor
CONN	Connection
CONST	Construct
CONT	Continuously
CP	Cattle Pass
CTD	Coated
CU FT	Cubic Feet
CU YD	Cubic Yard
CULV	Culvert
CWT	Hundred Weight
DES	Design
DBL	Double
DI	Drop Inlet
DIAM	Diameter
DRWY	Driveway
EXC	Excavation
EXP	Expansion
FAB	Fabric
FE	Fence
FERT	Fertilizer
F+I	Furnish & Install
FOUND	Foundation
FT LG	Feet Long
FURN	Furnish
GA	Gauge
GRAN	Granular
HI	High
INP	In Place
INST	Install
JA	Jacked
LIN FT	Linear Feet
LG	Long
MAINT	Maintenance
MATL	Material
MGM	1000 Board Feet
MET	Metal
MOD	Modification
MPA	Metal Pipe Arch
MTD	Mounted
NON	MET Non Metallic
NON PERF	Non-Perforated
NON REINF	Non-Reinforced
OH	Overhead
P-A	Pipe-Arch
PAVT	Pavement
PERF	Perforated
PL	Plate
PNEUM	Pneumatic
PREC	Precast
PREST	Prestressed
PVC	Poly Vinyl Chloride
RCPA	Reinforced Concrete Pipe Arch
REINF	Reinforced
RELO	Relocation
RESTOR	Restoration
RMC	Rigid Metallic Conduit
RNMC	Rigid Non Metallic Conduit
RDWY	Roadway
S-G	Sand& Gravel
SIG	Signal
SPE	Special
SQ FT	Square Feet
SQ YD	Square Yard
STA	Station
STD	Standard
STL	Steel
STKPL	Stockpile
STR	Strength
STRUCT	Structural
SPPA	Structural Plate Pipe Arch
SYS	System
T	Traffic
TBR	Timber
TEMP	Temporary
THERMO	Thermoplastic
TRTD	Treated
UNDERGRD	Underground
UNTRTD	Untreated
VAR	Variable
VM	Vehicular Measure
WEAR	Wearing

ATTACHMENT CM 32-34

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 DECLARATION

The following Non-Collusion Declaration shall be executed by the bidder:

State Project No _____

Federal Project No _____

STATE OF MINNESOTA _____)
)ss
COUNTY OF _____)

I, _____, do state under penalty
(Name of person signing this declaration)

of perjury under 28 U.S.C. 1746 of the laws of the United States:

(1) that I am the authorized representative of _____

_____
(Name of individual, partnership or corporation submitting this proposal)

and that I have the authority to make this declaration 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 the 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 declaration.

Signed: _____
(Bidder or his/her authorized representative)

6/4/2013 **Contract No.: 9563**

City of Rochester

Schedule Of Prices By Category By Contract Projects

Project Number: SAP 159-130-004

Project Title or Road Number: Contract No.: 9563 - SAP 159-130-004 - J9563 Reconstruct TH52 East Frontage Rd from 41st St NW to Pennington Court NW

Work Type: SAP 159-130-004 - Street Reconstruction

BIDDER MUST FILL IN UNIT PRICES IN NUMERALS; MAKE EXTENSION FOR EACH ITEM AND TOTAL. FOR COMPLETE INFORMATION CONCERNING THESE ITEMS, SEE PLANS AND SPECIFICATIONS, INCLUDING SPECIAL PROVISIONS.

Item No.	Description	Units	Quantity	Unit Price	Total Price
Project SAP 159-130-004					
1 STREET (350)					
2021.501/00010	MOBILIZATION	LS	1.00		
2104.501/00022	REMOVE CURB AND GUTTER	L F	2,735.00		
2104.505/00108	REMOVE CONCRETE DRIVEWAY PAVEMENT	S Y	472.00		
2104.505/00119	REMOVE BITUMINOUS DRIVEWAY PAVEMENT	S Y	199.00		
2104.505/00120	REMOVE BITUMINOUS PAVEMENT	S Y	1,390.00		
2104.513/00011	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LIN FT	4,335.00		
2104.523/00539	SALVAGE SIGN	EACH	37.00		
2105.501/00010	COMMON EXCAVATION (P)	C Y	5,500.00		
2105.525/00010	TOPSOIL BORROW (LV)	C Y	768.00		
2211.503/00050	AGGREGATE BASE (CV) CLASS 5	C Y	3,470.00		
2232.501/00010	MILL BITUMINOUS SURFACE	S Y	13,688.00		
2360.501/13300	TYPE SP 9.5 WEARING COURSE MIX (3,C)	TON	2,504.00		
2360.501/23300	TYPE SP 12.5 WEARING COURSE MIX (3,C)	TON	895.00		
2360.502/23200	TYPE SP 12.5 NON WEAR COURSE MIX (3,B)	TON	895.00		
2360.505/20100	TYPE SP 12.5 BIT MIXTURE FOR PATCHING	TON	45.00		
2504.602/00032	ADJUST GATE VALVE & BOX	EACH	11.00		
2504.602/03008	ADJUST CURB BOX	EACH	3.00		
2531.501/02310	CONCRETE CURB & GUTTER DESIGN B612	L F	636.00		
2531.501/02320	CONCRETE CURB & GUTTER DESIGN B624	L F	5,872.00		
2531.501/02321	CONCRETE CURB & GUTTER DESIGN B624 (MOD)	L F	145.00		

BIDDER MUST FILL IN UNIT PRICES IN NUMERALS; MAKE EXTENSION FOR EACH ITEM AND TOTAL. FOR COMPLETE INFORMATION CONCERNING THESE ITEMS, SEE PLANS AND SPECIFICATIONS, INCLUDING SPECIAL PROVISIONS.

Item No.	Description	Units	Quantity	Unit Price	Total Price
2531.502/00706	CONCRETE CURB DESIGN V6	L F	72.00		
2531.507/00070	7" CONCRETE DRIVEWAY PAVEMENT	S Y	293.00		
2563.601/00010	TRAFFIC CONTROL	LS	1.00		
2564.531/00130	SIGN PANELS TYPE C	S F	194.33		
2564.531/00140	SIGN PANELS TYPE D	S F	14.25		
2564.602/00450	FURNISH SIGN POSTS	EACH	3.00		
2571.541/00060	TRANSPLANT TREE (SPADE SIZE 60")	TREE	4.00		
2573.502/00010	SILT FENCE, TYPE HEAVY DUTY	L F	3,361.00		
2573.520/00010	SEDIMENT REMOVAL BACKHOE	HOUR	10.00		
2573.530/00010	STORM DRAIN INLET PROTECTION	EACH	24.00		
2573.540/00010	FILTER LOG TYPE STRAW BIOROLL	L F	47.00		
2573.550/00010	EROSION CONTROL SUPERVISOR	LS	1.00		
2573.602/00020	TEMPORARY ROCK CONSTRUCTION ENTRANCE	EACH	2.00		
2575.501/00010	SEEDING	ACRE	0.80		
2575.502/00260	SEED MIXTURE 260	LB	80.00		
2575.505/00060	SODDING TYPE MINERAL	S Y	1,496.00		
2575.523/00013	EROSION CONTROL BLANKETS CATEGORY 3	S Y	3,656.00		
2575.523/00015	EROSION CONTROL BLANKETS CATEGORY 5	S Y	212.00		
2575.532/00030	FERTILIZER TYPE 3	LB	302.00		
2582.501/03107	PAVEMENT MESSAGE (RIGHT-THRU ARROW) EPOXY-GROUND IN	EACH	1.00		
2582.501/03116	PAVEMENT MESSAGE (BIKE SYMBOL) EPOXY-GROUND IN	EACH	6.00		
2582.501/04001	PAVEMENT MESSAGE (LT ARROW) EPOXY-GR IN	EACH	13.00		

BIDDER MUST FILL IN UNIT PRICES IN NUMERALS; MAKE EXTENSION FOR EACH ITEM AND TOTAL. FOR COMPLETE INFORMATION CONCERNING THESE ITEMS, SEE PLANS AND SPECIFICATIONS, INCLUDING SPECIAL PROVISIONS.

Item No.	Description	Units	Quantity	Unit Price	Total Price
2582.501/04002	PAVEMENT MESSAGE (RT ARROW) EPOXY-GR IN	EACH	3.00		
2582.502/51104	4" SOLID LINE WHITE-EPOXY (GROUND IN)	L F	8,369.00		
2582.502/51106	6" SOLID LINE WHITE-EPOXY (GROUND IN)	L F	306.00		
2582.502/51112	12" SOLID LINE WHITE-EPOXY (GROUND IN)	L F	237.00		
2582.502/52104	4" SOLID LINE YELLOW-EPOXY (GROUND IN)	L F	2,540.00		
2582.502/52112	12" SOLID LINE YELLOW-EPOXY (GROUND IN)	L F	331.00		
2582.502/52204	4" BROKEN LINE YELLOW-EPOXY (GROUND IN)	L F	640.00		
2582.502/52404	4" DBLE SOLID LINE YELLOW-EPOXY (GR IN)	L F	2,518.00		
Total 1 STREET (350)					
2 PED FACILITIES (550)					
2104.503/00020	REMOVE CONCRETE SIDEWALK	S F	5,218.00		
2401.511/03634	STRUCTURAL CONCRETE (3Y33A)	S F	91.00		
2521.501/00050	5" CONCRETE WALK	S F	4,112.00		
2521.501/00060	6" CONCRETE WALK	S F	899.00		
2521.501/00063	6" CONCRETE WALK SPECIAL	S F	1,618.00		
2521.501/00070	7" CONCRETE WALK	S F	134.00		
2531.618/00010	TRUNCATED DOMES	S F	155.00		
2540.601/00008	RELOCATE BUS SHELTER	LS	1.00		
Total 2 PED FACILITIES (550)					
3 STORM SEWER (450)					
2104.501/00016	REMOVE SEWER PIPE (STORM)	L F	236.00		
2104.509/00011	REMOVE CONCRETE APRON	EACH	2.00		
2104.509/00100	REMOVE MANHOLE OR CATCH BASIN	EACH	7.00		
2104.523/00100	SALVAGE CONCRETE APRON	EACH	4.00		
2401.501/01143	STRUCTURAL CONCRETE (1A43)	C Y	5.00		

BIDDER MUST FILL IN UNIT PRICES IN NUMERALS; MAKE EXTENSION FOR EACH ITEM AND TOTAL. FOR COMPLETE INFORMATION CONCERNING THESE ITEMS, SEE PLANS AND SPECIFICATIONS, INCLUDING SPECIAL PROVISIONS.

Item No.	Description	Units	Quantity	Unit Price	Total Price
2401.501/03645	STRUCTURAL CONCRETE (3Y43A)	C Y	15.00		
2401.541/00010	REINFORCEMENT BARS	LB	200.00		
2401.541/00011	REINFORCEMENT BARS (EPOXY COATED)	LB	1,710.00		
2501.515/90120	12" RC PIPE APRON	EACH	2.00		
2501.515/90300	30" RC PIPE APRON	EACH	1.00		
2501.573/00012	INSTALL CONCRETE APRON	EACH	4.00		
2503.511/13120	12" PVC PIPE SEWER	L F	8.00		
2503.541/90125	12" RC PIPE SEWER DES 3006 CL V	L F	92.00		
2503.541/90155	15" RC PIPE SEWER DES 3006 CL V	L F	100.00		
2503.541/90183	18" RC PIPE SEWER DES 3006 CL III	L F	80.00		
2503.541/90243	24" RC PIPE SEWER DES 3006 CL III	L F	16.00		
2503.541/90273	27" RC PIPE SEWER DES 3006 CL III	L F	8.00		
2503.541/90303	30" RC PIPE SEWER DES 3006 CL III	L F	36.00		
2503.602/00042	CONNECT TO EXISTING STORM SEWER	EACH	15.00		
2503.602/00046	CONNECT INTO EXISTING DRAINAGE STRUCTURE	EACH	1.00		
2506.502/00301	CONST DRAINAGE STRUCTURE DESIGN SPEC 1	EACH	10.00		
2506.502/00304	CONST DRAINAGE STRUCTURE DESIGN SPEC 4	EACH	10.00		
2506.602/00009	ADJUST FRAME & RING CASTING	EACH	4.00		
2511.501/00013	RANDOM RIPRAP CLASS III	C Y	55.00		
2557.603/00045	CHAIN LINK SAFETY FENCE	L F	57.00		
Total 3 STORM SEWER (450)					
4 SANITARY SEWER (250)					
2104.501/00017	REMOVE SEWER PIPE (SANITARY)	L F	58.00		
2451.609/00040	GRANULAR FOUNDATION AND/OR BEDDING	TON	19.00		

BIDDER MUST FILL IN UNIT PRICES IN NUMERALS; MAKE EXTENSION FOR EACH ITEM AND TOTAL. FOR COMPLETE INFORMATION CONCERNING THESE ITEMS, SEE PLANS AND SPECIFICATIONS, INCLUDING SPECIAL PROVISIONS.					
Item No.	Description	Units	Quantity	Unit Price	Total Price
2503.511/13150	15" PVC PIPE SEWER	L F	58.00		
2503.601/00050	MAINTENANCE OF SAN SEWER SERVICE	LS	1.00		
2503.602/00040	CONNECT TO EXISTING SANITARY SEWER	EACH	2.00		
2503.603/00007	SANITARY SEWER INSPECTION	L F	58.00		
2506.602/00009	ADJUST FRAME & RING CASTING	EACH	7.00		
2506.602/09010	FURNISH & INSTALL MANHOLE WATERPROOFING-INTERIOR	EACH	7.00		
Total 4 SANITARY SEWER (250)					
5 TRAFFIC (650)					
2565.616/00100	REVISE SIGNAL SYSTEM	SYS	1.00		
Total 5 TRAFFIC (650)					
Grand Total					

SURETY DEPOSITS

New Law requires surety deposits for many out-of-state Contractors

A portion of payments made to out-of-state Contractors must be deposited with the state of Minnesota in many instances under a new law passed by the 1989 Legislature.

The law requires that 8 percent of each payment paid to out-of-state Contractors for work done in Minnesota must be withheld as a surety deposit on any contract that can reasonably be expected to exceed $100,000.

This requirement may be waived, however, if certain conditions are met.

Following are some guidelines to use with the new law.

Once an out-of-state Contractor enters into a contract that is for more than or can be expected to be more than $100,000, the Contractor will have to file form SD-E (Exemption from Surety Deposits for Out-of-State Contractors) with the Department of Revenue. The department will use the form to determine if the Contractor is exempt from the 8 percent surety deposit requirements.

The department will grant an exemption if:

The Contractor gives the department a cash surety or bond, secured by an insurance company licensed in Minnesota, which guarantees the Contractor will comply with all provisions of Minnesota withholding, sales, and corporate income tax laws, or

The Contractor has done construction work in Minnesota at any time during the three calendar years before entering into the contract and has fully complied with Minnesota withholding, sales, and corporate income tax laws.

If the Contractor is exempt, the department will certify the form and return a copy to the Contractor, who will then be responsible to provide a copy to whoever hired them.

If the Contractor is not exempt, the department will notify whoever hired the Contractor to withhold the 8 percent surety deposit from each payment made to the Contractor. The person or company hiring the Contractor will use form SD-D to make the surety deposits.

The Department of Revenue will retain the surety deposits until the Contractor's state tax obligations are considered fulfilled. The department will then refund, with interest, any amounts held as surety.

Out-of-state Contractors working for Minnesota subdivisions will still have to file the Withholding Affidavit for Contractors (form IC-134) in addition to complying with the new provisions.

If you need more forms of information, please call (612) 296-6181 from the Twin Cities area and (toll-free) 1-800-657-3777 from elsewhere.

You may also write to: Minnesota Department of Revenue
Taxpayer Information Division
Mail Station 4450
St. Paul, MN 55146-4450

Department of Public Works
201 4th Street SE, Room 108
Rochester, MN 55904-3740
(507) 328-2400

TO WHOM IT MAY CONCERN:

A new Minnesota Law effective January 1, 1990, now governs contracts over $100,000.00 for non-Minnesota Contractors.

We have been informed by the Minnesota Department of Revenue that certain requirements have not been met. Therefore, we are withholding an 8% surety deposit from your payment.

You are eligible to have these funds returned when the state tax obligations are met.

Gross Amount

8% Surety Deposit _____

Net Amount Paid

If you have any questions, contact Mr. Dan Weber at (507) 328-2409.

FORM 21126D (FF REV. 4-00)

Project No. **(SAP159-130-004 J9563)**

GRAND TOTAL $ _____

PROPOSAL GUARANTY as required by 1208 of the Specifications: "A (certified check) (bond), prepared as required by 1208 of the Specifications and payable to the City of Rochester, Minnesota, in an amount equal to at least (5%) percent of the total amount of the bid is submitted herewith as a proposal guaranty.

NON-COLLUSION AFFIDAVIT: If a Non-Collusion affidavit is found in this Proposal it 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 _____

RECEIPT OF PLAN:
The undersigned hereby acknowledges receipt of and has considered: **Reconstruct TH52 East Frontage Rd from 41st St NW to Pennington Court NW (SAP159-130-004 J9563), 93** Total Sheets.
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 _____
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.)