PROPOSAL PACKAGE

Arrowhead Kenwood Signal and Roadway Improvements
SAP 118-151-012
SAP 118-160-023

City Project # 1468

City of Duluth, Minnesota
411 West 1st Street
Duluth, MN  55802

Bid # 2016-0438

Opening Date: MONDAY, JULY 11, 2016
Time: 2:00 PM
Place (Submit Bids): Room 100
CERTIFICATION

I HEREBY CERTIFY THAT THIS plan, SPECIFICATION or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Signature: [Signature]
Name: Cynthia J. Voigt
Date: 6/17/16
License No.: 24081

I HEREBY CERTIFY THAT THIS plan, SPECIFICATION or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Signature: [Signature]
Name: Nicholas J. Erpelding
Date: 6/17/2016
License No.: 44582

I HEREBY CERTIFY THAT THIS plan, SPECIFICATION or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Signature: [Signature]
Name: Daniel G. Shaw
Date: 6/17/16
License No.: 41423
PROPOSAL PACKAGE
INDEX OF DOCUMENTS

- Invitation to Bid
- Instructions to Bidders
- Bid Form (with Schedule of Prices exhibits)
- Responsible Contractor Certification forms
- Notice to Bidders - Suspension/Debarments
- Data for Labor Cost Bidding cover
- Prevailing Wage Rates (rates may be revised by addenda)
- Affidavit of Non-Collusion form
- EEO Compliance form
- Performance Bond form
- Payment Bond form
- Insurance Requirements
- Contract – sample
- Supplemental General Conditions – Part 2
- Project Labor Agreement – sample (with current union wages)
- Special Provisions – project specific
CITY OF DULUTH
INVITATION TO BID

PROJECT NAME/DESCRIPTION: Arrowhead/Kenwood Signal and Roadway Improvements

BID NUMBER: 2016-0438 BID OPENING: MONDAY, JULY 11, 2016, AT 2:00 PM

PROJECT DESCRIPTION: Arrowhead/Kenwood and Kenwood signal improvements, mill and overlay of Kenwood Avenue, concrete pavement repairs, reconditioning of Arrowhead Road, Cleveland Street reconstruction, water main replacement, pavement marking, traffic control and turn establishment.

PRE-BID/WALK-THROUGH: A pre-bid walk-through will be conducted on Wednesday, June 29th, at 3:00 P.M., at the Kenwood Shopping Center on the West End Parking Lot behind Arby’s. All interested bidders are encouraged to attend.

QUESTIONS: Please submit any questions regarding this project via e-mail to Nick Erpelding, SRF Consulting Group, Inc, nerpelding@srfconsulting.com Responses will be provided to all interested bidders as an addendum to this solicitation.

Each bidder must review the 2016 Edition of the City of Duluth Public Works & Utilities Department/Engineering Division “Construction Standards” available on the city website (www.duluthmn.gov) as these Specifications are incorporated by reference and are deemed to be a part hereof this project as if fully incorporated and set forth herein.

The selected contractor will be issued a construction contract (draft attached). Notice to Proceed will be issued once the agreement is fully executed.

Plans and specifications may be obtained at no cost from the City’s Purchasing Division website at http://www.duluthmn.gov/purchasing/bids-request-for-proposals/ Hard copies of the plans and specifications may be obtained from the City Engineering Office, Room 211 City Hall, 411 West 1st Street, Duluth, MN 55802 for a nominal fee, payable by check or money order.

Plans and specifications are on file for inspection at the City Engineering Office, Duluth Builders Exchange, Minnesota Builder’s Exchange, Wisconsin Builder’s Exchange, Blue Book Construction Network, and Meda Construction Connection.
INSTRUCTIONS TO BIDDERS

All bids must be complete, signed, and transmitted in a sealed envelope plainly marked with the bid number, subject matter, and opening date. The City of Duluth reserves the right to split the award where there is a substantial savings to the City, to waive informalities and to reject any and all bids. Price may not be the only consideration for bid award. Bids must be firm for a minimum of 60 days.

Sealed bids must be received in Purchasing, Room 100 City Hall, 411 West 1st Street, Duluth, MN 55802 before 2:00 PM local time on the bid opening date specified on the Invitation for Bids. The City Purchasing Agent or her designee will conduct a public bid opening in Room 100 immediately following receipt of the bids. Bid results will be posted online at http://www.duluthmn.gov/purchasing/bids-request-for-proposals/ once all bids have been reviewed.

No alternatives to the specification will be considered unless specifically requested. Erasures or other changes to the bid must be initialed and dated.

The following documents must be submitted with your bid:

1. **Bid Bond** - A certified check or bank draft, payable to the order of the City of Duluth, negotiable U.S. Government Bonds (at par value), or a satisfactory bid bond executed by the bidder and acceptable surety, in an amount equal to five per cent (5%) of the total bid. Bids may be withdrawn without forfeiture of surety if the request is submitted by the Bidder and received at the Purchasing Office in writing or by telephone prior to the scheduled bid opening.

2. **Acknowledgment of Addendum** (if applicable) – any changes to this solicitation will be announced via Addendum. All such Addenda shall become part of the resulting purchase order and/or contract and all bidders shall be bound by such Addenda, whether or not received by the bidders. Acknowledgement of Addenda should be indicated on your bid form by initialing and dating where indicated.

3. **Responsible Contractor** - No construction contract in excess of $50,000 will be awarded unless the Bidder is a “responsible contractor” as defined in Minnesota Statute §16C.285, subdivision 3. All Bidders submitting a proposal for this project must verify that they meet the minimum criteria specified in the statute by submitting a Responsible Contractor Verification and Certification of Compliance form (attached). The owner or officer of the company must sign the form under oath verifying compliance with each of the minimum criteria. Making a false statement under oath will render the Bidder or subcontractor that makes the false statement ineligible to be awarded a construction project and may result in termination of a contract awarded to a Bidder or subcontractor that submits a false statement. Bidders must obtain verification of compliance from all subcontractors. Bidders must submit signed copies of verifications and certifications of compliance from subcontractors at the City’s request.

Please note that the following requirements also apply to this project, and any additional required documents must be submitted prior to award/contract execution. Submitting these documents with your bid will assist in expediting the process.

1. **Insurance** – Contractor must provide proof of Public Liability and Automobile Liability Insurance with limits not less than $1,500,000 Single Limit prior to the commencement of work. The City of Duluth must be named as an additional insured. Please refer to the draft Contract, Section 7.

2. **Affidavit of Non-Collusion** – The successful bidder shall be required to execute the attached affidavit stating that he/she has not entered into a collusive agreement with any other person, firm, or corporation in regard to any bid submitted.

3. **Performance & Payment Bonds** – The successful bidder will be required to submit performance and payments bonds in the full amount of the project cost prior to award.

4. **Affirmative Action/EEO** - The contractor must take affirmative action to ensure that the employees and applicants for employment are not discriminated against because of their race, color, creed, sex or national origin, and must meet the affirmative action goals. Contractors are encouraged to subcontract with Disadvantaged Business Enterprises (DBEs) when possible. A current list of certified DBEs is available on the Minnesota Unified Certification website at http://mnucp.metc.state.mn.us. Contractor will

5. **Project Labor Agreement (PLA)** - A PLA will be required for any bid that is over or could virtually go over $150,000. A copy of the City standard PLA is included in this package.

6. **Out of State Contractor** - Unless a State of Minnesota Certificate of Exemption is provided, any out-of-state bidder receiving a bid award will have 8% retained from invoice payments on any contracts over $50,000. Contractors must submit a signed copy of the exemption form when submitting Payment and Performance Bonds. This form may be found at the following web address: [http://www.revenue.state.mn.us/Forms_and_Instructions/sde.pdf](http://www.revenue.state.mn.us/Forms_and_Instructions/sde.pdf)

7. **Prevailing Wage** - Not less than the minimum salaries and prevailing wages as set forth in the contract documents must be paid on this project.

The City of Duluth is an Equal Opportunity Employer. Contractor shall comply with all applicable Equal Employment Opportunity laws and regulations.

CITY OF DULUTH

[Signature]

Amanda Ashbach
Purchasing Agent
# BID FORM

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**TOTAL PRICE IN WRITING**

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**ACKNOWLEDGMENT OF ADDENDA**

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Signature ____________________________ Date __________

Name/Title ____________________________

Company Name ____________________________

Address ____________________________

City, State, Zip ____________________________

Tel. ____________________________ E-Mail ____________________________

If your organization is certified as a disadvantaged business enterprise, please check here - ☐
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ATTACHMENT A
PRIME CONTRACTOR RESPONSE

RESPONSIBLE CONTRACTOR VERIFICATION AND CERTIFICATION OF COMPLIANCE

STATE PROJECT NUMBER: ____________________________________________________

This form includes changes by statutory references from the Laws of Minnesota 2015, chapter 64, sections 1-9. This form must be submitted with the response to this solicitation. A response received without this form, will be rejected.

Minn. Stat. § 16C.285, Subd. 7. IMPLEMENTATION. … any prime contractor or subcontractor or motor carrier that does not meet the minimum criteria in subdivision 3 or fails to verify that it meets those criteria is not a responsible contractor and is not eligible to be awarded a construction contract for the project or to perform work on the project…

Minn. Stat. § 16C.285, Subd. 3. RESPONSIBLE CONTRACTOR, MINIMUM CRITERIA. “Responsible contractor” means a contractor that conforms to the responsibility requirements in the solicitation document for its portion of the work on the project and verifies that it meets the following minimum criteria:

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<td>(ii) is in compliance with Department of Revenue and Department of Employment and Economic Development registration requirements if it has employees;</td>
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<tr>
<td></td>
<td>(iii) has a valid federal tax identification number or a valid Social Security number if an individual; and</td>
</tr>
<tr>
<td></td>
<td>(iv) has filed a certificate of authority to transact business in Minnesota with the Secretary of State if a foreign corporation or cooperative.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>The contractor or related entity is in compliance with and, during the three-year period before submitting the verification, has not violated section 177.24, 177.25, 177.41 to 177.44, 181.13, 181.14, or 181.722, and has not violated United States Code, title 29, sections 201 to 219, or United States Code, title 40, sections 3141 to 3148. For purposes of this clause, a violation occurs when a contractor or related entity:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(i) repeatedly fails to pay statutorily required wages or penalties on one or more separate projects for a total underpayment of $25,000 or more within the three-year period, provided that a failure to pay is “repeated” only if it involves two or more separate and distinct occurrences of underpayment during the three-year period;</td>
</tr>
<tr>
<td></td>
<td>(ii) has been issued an order to comply by the commissioner of Labor and Industry that has become final;</td>
</tr>
<tr>
<td></td>
<td>(iii) has been issued at least two determination letters within the three-year period by the Department of Transportation finding an underpayment by the contractor or related entity to its own employees;</td>
</tr>
<tr>
<td></td>
<td>(iv) has been found by the commissioner of Labor and Industry to have repeatedly or willfully violated any of the sections referenced in this clause pursuant to section 177.27;</td>
</tr>
<tr>
<td></td>
<td>(v) has been issued a ruling or findings of underpayment by the administrator of the Wage and Hour Division of the United States Department of Labor that have become final or have been upheld by an administrative law judge or the Administrative Review Board; or</td>
</tr>
<tr>
<td></td>
<td>(vi) has been found liable for underpayment of wages or penalties or misrepresenting a construction worker as an independent contractor in an action brought in a court having jurisdiction. Provided that, if the contractor or related entity contests a determination of underpayment by the Department of Transportation in a contested case proceeding, a violation does not occur until the contested case proceeding has concluded with a determination that the contractor or related entity underpaid wages or penalties;*</td>
</tr>
<tr>
<td>Clause</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>(3)</td>
<td>The contractor or related entity is in compliance with and, during the three-year period before submitting the verification, has not violated section 181.723 or chapter 326B. For purposes of this clause, a violation occurs when a contractor or related entity has been issued a final administrative or licensing order;*</td>
</tr>
<tr>
<td>(4)</td>
<td>The contractor or related entity has not, more than twice during the three-year period before submitting the verification, had a certificate of compliance under section 363A.36 revoked or suspended based on the provisions of section 363A.36, with the revocation or suspension becoming final because it was upheld by the Office of Administrative Hearings or was not appealed to the office;*</td>
</tr>
<tr>
<td>(5)</td>
<td>The contractor or related entity has not received a final determination assessing a monetary sanction from the Department of Administration or Transportation for failure to meet targeted group business, disadvantaged business enterprise, or veteran-owned business goals, due to a lack of good faith effort, more than once during the three-year period before submitting the verification;*</td>
</tr>
<tr>
<td>(6)</td>
<td>Any violations, suspensions, revocations, or sanctions, as defined in clauses (2) to (5), occurring prior to July 1, 2014, shall not be considered in determining whether a contractor or related entity meets the minimum criteria.</td>
</tr>
<tr>
<td>(7)</td>
<td>The contractor or related entity is not currently suspended or debarred by the federal government or the state of Minnesota or any of its departments, commissions, agencies, or political subdivisions that have authority to debar a contractor; and</td>
</tr>
<tr>
<td></td>
<td>All subcontractors and motor carriers that the contractor intends to use to perform project work have verified to the contractor through a signed statement under oath by an owner or officer that they meet the minimum criteria listed in clauses (1) to (6).</td>
</tr>
</tbody>
</table>

**Minn. Stat. § 16C.285, Subd. 5. SUBCONTRACTOR VERIFICATION.**

A prime contractor or subcontractor shall include in its verification of compliance under subdivision 4 a list of all of its first-tier subcontractors that it intends to retain for work on the project. Prior to execution of a construction contract, and as a condition precedent to the execution of a construction contract, the apparent successful prime contractor shall submit to the contracting authority a supplemental verification under oath confirming compliance with subdivision 3, clause (7). Each contractor or subcontractor shall obtain from all subcontractors with which it will have a direct contractual relationship a signed statement under oath by an owner or officer verifying that they meet all of the minimum criteria in subdivision 3 prior to execution of a construction contract with each subcontractor.

If a prime contractor or any subcontractor retains additional subcontractors on the project after submitting its verification of compliance, the prime contractor or subcontractor shall obtain verifications of compliance from each additional subcontractor with which it has a direct contractual relationship and shall submit a supplemental verification confirming compliance with subdivision 3, clause (7), within 14 days of retaining the additional subcontractors.

A prime contractor shall submit to the contracting authority upon request copies of the signed verifications of compliance from all subcontractors of any tier pursuant to subdivision 3, clause (7). A prime contractor and subcontractors shall not be responsible for the false statements of any subcontractor with which they do not have a direct contractual relationship. A prime contractor and subcontractors shall be responsible for false statements by their first-tier subcontractors with which they have a direct contractual relationship only if they accept the verification of compliance with actual knowledge that it contains a false statement.

Subd. 5a. **Motor carrier verification.** A prime contractor or subcontractor shall obtain annually from all motor carriers with which it will have a direct contractual relationship a signed statement under oath by an owner or officer verifying that they meet all of the minimum criteria in subdivision 3 prior to execution of a construction contract with each motor carrier. A prime contractor or subcontractor shall require each such motor carrier to provide it with immediate written notification in the event that the motor carrier no longer meets one or more of the minimum criteria in subdivision 3 after submitting its annual verification. A motor carrier shall be ineligible to perform work on a project covered by this section if it does not meet all the minimum criteria in subdivision 3. Upon request, a prime contractor or subcontractor shall submit to the contracting authority the signed verifications of compliance from all motor carriers providing for-hire transportation of materials, equipment, or supplies for a project.
**VERIFICATION OF COMPLIANCE.**

A contractor responding to a solicitation document of a contracting authority shall submit to the contracting authority a signed statement under oath by an owner or officer verifying compliance with each of the minimum criteria in subdivision 3, with the exception of clause (7), at the time that it responds to the solicitation document.

A contracting authority may accept a signed statement under oath as sufficient to demonstrate that a contractor is a responsible contractor and shall not be held liable for awarding a contract in reasonable reliance on that statement. A prime contractor, subcontractor, or motor carrier that fails to verify compliance with any one of the required minimum criteria or makes a false statement under oath in a verification of compliance shall be ineligible to be awarded a construction contract on the project for which the verification was submitted.

A false statement under oath verifying compliance with any of the minimum criteria may result in termination of a construction contract that has already been awarded to a prime contractor or subcontractor or motor carrier that submits a false statement. A contracting authority shall not be liable for declining to award a contract or terminating a contract based on a reasonable determination that the contractor failed to verify compliance with the minimum criteria or falsely stated that it meets the minimum criteria. A verification of compliance need not be notarized. An electronic verification of compliance made and submitted as part of an electronic bid shall be an acceptable verification of compliance under this section provided that it contains an electronic signature as defined in section 325L.02, paragraph (h).

---

**CERTIFICATION**

By signing this document I certify that I am an owner or officer of the company, and I swear under oath that:

1) My company meets each of the Minimum Criteria to be a responsible contractor as defined herein and is in compliance with Minn. Stat. § 16C.285, and

2) if my company is awarded a contract, I will submit Attachment A-1 prior to contract execution, and

3) if my company is awarded a contract, I will also submit Attachment A-2 as required.

<table>
<thead>
<tr>
<th>Authorized Signature of Owner or Officer:</th>
<th>Printed Name:</th>
</tr>
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<tbody>
<tr>
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<table>
<thead>
<tr>
<th>Title:</th>
<th>Date:</th>
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</table>

<table>
<thead>
<tr>
<th>Company Name:</th>
</tr>
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</tbody>
</table>

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**NOTE:** Minn. Stat. § 16C.285, Subd. 2, (c) If only one prime contractor responds to a solicitation document, a contracting authority may award a construction contract to the responding prime contractor even if the minimum criteria in subdivision 3 are not met.
ATTACHMENT A-1

FIRST-TIER SUBCONTRACTORS LIST

SUBMIT PRIOR TO EXECUTION OF A CONSTRUCTION CONTRACT

STATE PROJECT NUMBER: ________________________________

Minn. Stat. § 16C.285, Subd. 5. A prime contractor or subcontractor shall include in its verification of compliance under subdivision 4 a list of all of its first-tier subcontractors that it intends to retain for work on the project. Prior to execution of a construction contract, and as a condition precedent to the execution of a construction contract, the apparent successful prime contractor shall submit to the contracting authority a supplemental verification under oath confirming compliance with subdivision 3, clause (7). Each contractor or subcontractor shall obtain from all subcontractors with which it will have a direct contractual relationship a signed statement under oath by an owner or officer verifying that they meet all of the minimum criteria in subdivision 3 prior to execution of a construction contract with each subcontractor.

<table>
<thead>
<tr>
<th>FIRST TIER SUBCONTRACTOR NAMES* (Legal name of company as registered with the Secretary of State)</th>
<th>Name of city where company home office is located</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

*Attach additional sheets as needed for submission of all first-tier subcontractors.

SUPPLEMENTAL CERTIFICATION FOR ATTACHMENT A-1

By signing this document I certify that I am an owner or officer of the company, and I swear under oath that:

All first-tier subcontractors listed on attachment A-1 have verified through a signed statement under oath by an owner or officer that they meet the minimum criteria to be a responsible contractor as defined in Minn. Stat. § 16C.285.

<table>
<thead>
<tr>
<th>Authorized Signature of Owner or Officer:</th>
<th>Printed Name:</th>
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<th>Title:</th>
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</table>

<table>
<thead>
<tr>
<th>Company Name:</th>
<th></th>
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</thead>
</table>
ATTACHMENT A-2

ADDITIONAL SUBCONTRACTORS LIST

PRIME CONTRACTOR TO SUBMIT AS SUBCONTRACTORS ARE ADDED TO THE PROJECT

STATE PROJECT NUMBER: _____________________________________________________

This form must be submitted to the Project Manager or individual as identified in the solicitation document.

Minn. Stat. § 16C.285, Subd. 5. … If a prime contractor or any subcontractor retains additional subcontractors on the project after submitting its verification of compliance, the prime contractor or subcontractor shall obtain verifications of compliance from each additional subcontractor with which it has a direct contractual relationship and shall submit a supplemental verification confirming compliance with subdivision 3, clause (7), within 14 days of retaining the additional subcontractors. …

<table>
<thead>
<tr>
<th>ADDITIONAL SUBCONTRACTOR NAMES*</th>
<th>Name of city where company home office is located</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Legal name of company as registered with the Secretary of State)</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

*Attach additional sheets as needed for submission of all additional subcontractors.

SUPPLEMENTAL CERTIFICATION FOR ATTACHMENT A-2

By signing this document I certify that I am an owner or officer of the company, and I swear under oath that:

All additional subcontractors listed on Attachment A-2 have verified through a signed statement under oath by an owner or officer that they meet the minimum criteria to be a responsible contractor as defined in Minn. Stat. § 16C.285.

<table>
<thead>
<tr>
<th>Authorized Signature of Owner or Officer:</th>
<th>Printed Name:</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Title:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Company Name: | |
|---------------| |
NOTICE TO BIDDERS
SUSPENSIONS/DEBARMENTS

January 15, 2016
Page 1 of 3

DEPARTMENT OF TRANSPORTATION

NOTICE OF SUSPENSION

NOTICE IS HEREBY GIVEN that MnDOT has ordered that the following vendors be suspended for a period of six (6) months, effective January 14, 2016 until July 14, 2016:

- Jeffrey and Laurie Plzak doing business as Fibertech Incorporated\(^1\), and its affiliates, Loretto, MN

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 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 IS HEREBY GIVEN that MnDOT has ordered that the following vendors be debarred for a period of three (3) years, effective September 17, 2014 until September 17, 2017:

- Jeffrey Plzak and his affiliates, Loretto, MN
- Laurie Plzak and her affiliates, Loretto, MN
- Honda Electric Incorporated and its affiliates, Loretto, MN
- Jeffrey and Laurie Plzak doing business as Honda Electric Logistics, and its affiliates, Loretto, MN

NOTICE IS HEREBY GIVEN that MnDOT has ordered that the following vendors be debarred for a period of three (3) years, effective January 12, 2015 until January 12, 2018:

- Marlin Dahl, Granada, MN
- Dahl Trucking, Elmore, MN
- Elmore Truck and Trailer, Inc., Elmore, 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.

\(^1\) This notice refers only to Fibertech Incorporated of Loretto, Minnesota and is not to be confused with any other businesses not controlled by Jeffrey and Laurie Plzak, including: FiberTech of Parkers Prairie, Minnesota; Fiber Tech Productions of Nisswa, Minnesota; Fiber Technologies Solutions of Georgia; or Fiber-Tech Industries of Cadillac, Michigan.
DEPARTMENT OF ADMINISTRATION

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

<table>
<thead>
<tr>
<th>NAME</th>
<th>DATE OF SUSPENSION</th>
<th>DATE OF DEBARMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devos, Ltd. d/b/a Guaranteed Returns</td>
<td>December 5, 2014 through December 31, 2009</td>
<td></td>
</tr>
<tr>
<td>Dean Volkes, Donna Fallon &amp; Ronald Carlino</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100 Colin Drive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Holbrook, NY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Best Electric</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thomas Clifton and Earl Standafer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9909 S. Shore Drive #155</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plymouth, MN 55441</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Best Used Trucks of Minnesota, Inc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jason W. Leas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>635 Marin Avenue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crookston, MN 56716</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C &amp; S Electric, Inc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thomas Clifton and Earl Standafer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9909 S. Shore Drive #155</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plymouth, MN 55441</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dahl Trucking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlin Dahl</td>
<td></td>
<td></td>
</tr>
<tr>
<td>305 Highway 169 South</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elmore, MN 56027</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elmore Truck and Trailer Repair, Inc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlin Dahl</td>
<td></td>
<td></td>
</tr>
<tr>
<td>305 Highway 169 South</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elmore, MN 56027</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Groundsorce Maintenance, Inc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rob Sievers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1160 County Road 83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maple Plain, MN 55359</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Honda Electric, Inc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jeffrey and Laurie Plzak</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5075 Nielsen Circle, P.O. Box 236</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loretto, MN 55357</td>
<td></td>
<td></td>
</tr>
<tr>
<td>McCaa, Webster &amp; Associates, Inc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sammie McCaa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2751 Hennepin Avenue South, #301</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minneapolis, MN 55408-1002</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MG Carlson Construction Company, Inc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Martin Gerald Carlson</td>
<td></td>
<td></td>
</tr>
<tr>
<td>701 East First Street</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fort Worth, TX 76102-3276</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ocuture, LLC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11930 Camby Park Drive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Houston, TX 77047</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ramco Heating and Air Conditioning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mark and Cheryl Ramquist</td>
<td></td>
<td></td>
</tr>
<tr>
<td>605 Ash Street</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Downing, WI 54734</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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.

This list does not include preclusion actions taken by cities, counties or local authorities. Consult local authorities to ensure that contractors, subcontractors and materials suppliers are not currently suspended or debarred.

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Suspension/Debarment Dates</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pat Murphy</td>
<td>10602 County Road 2 Brainerd, MN 56401</td>
<td></td>
</tr>
<tr>
<td>Christina Woods</td>
<td>31767 Deacons Way Pequot Lakes, MN 56472</td>
<td></td>
</tr>
<tr>
<td>Gary Francis Bauery</td>
<td>9695 Deerwood Rd. NE Rice, MN 56367</td>
<td></td>
</tr>
</tbody>
</table>
DATA FOR LABOR COST BIDDING

NOTE:
Wage Decisions are subject to change due to lock-in rules and revisions near the bid opening.

Project No.: 1468

Name: Arrowhead/Kenwood Signal and Roadway Improvements

City Project Manager: Cynthia Voigt

Bid Opening Date: July 11, 2016

This project is funded by:

State of Minnesota without federal funding
[With City of Duluth funding]

The base workweek:

Five 8-hour days AND OT after 40 hours per week

The project DOES contain a project labor agreement (PLA).
Should a project contain a project labor agreement:
1) Union scale may not be reflected in the prevailing wage schedule(s)
2) Note Article II Section 10 for trucking labor costs

OVERTIME REQUIREMENTS:
Overtime must be paid on hours worked in excess of eight hours per day. Contractors (including sub-contractors) are not allowed to pay overtime solely on hours in excess of forty per week.

The overtime rate must be paid at NO LESS than the rate of pay as established in the project's wage decision multiplied by one and one-half OR the base rate the employee is being paid if it is higher than the wage decision base rate.

Project Prevailing Wage Decisions: U S DOL [Federal Highway MN160001 04/01/2016]
U S DOL [Federal Heavy MN160105 06/17/2016]
State of Minnesota Region 1 Highway-Heavy [04/25/2016]
State of Minnesota Truck Rental Rates [05/01/2016]
HEAVY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.15 for calendar year 2016 applies to all contracts subject to the Davis-Bacon Act for which the solicitation was issued on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.15 (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2016. The EO minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

<table>
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<th>Modification Number</th>
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<td>2</td>
<td>04/15/2016</td>
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<td>3</td>
<td>06/17/2016</td>
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BOIL0647-004 01/01/2013

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<tbody>
<tr>
<td>BOILERMAKER...</td>
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CARP0361-020 05/01/2015

ST LOUIS COUNTY (Southern 1/3 including Cotton, Floodwood, Fond Du Lac, and Proctor)

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<tbody>
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CARP0361-021 05/01/2015

ST LOUIS (Duluth)

<table>
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<th>Fringes</th>
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<tbody>
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</tr>
<tr>
<td>(Including Form Work)</td>
<td>17.08</td>
</tr>
</tbody>
</table>
CARP0606-010 05/01/2015

ST LOUIS COUNTY (Northeast 2/3 including Cook, Cusson, Ely; and Western part including Chisholm, Greaney, and Orr)

<table>
<thead>
<tr>
<th>Rates</th>
<th>Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CARPENTER (Including Form Work)</td>
<td>$ 34.11</td>
</tr>
</tbody>
</table>

ELEC0242-012 05/31/2015

ST. LOUIS (South part bounded on the north by the north line of Kelsey Township extended east & west)

<table>
<thead>
<tr>
<th>Rates</th>
<th>Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELECTRICIAN</td>
<td>$ 33.90</td>
</tr>
</tbody>
</table>

* ELEC0294-006 05/29/2016

ST. LOUIS (North part bounded on the south by the south line of Ellsburg Township, extended east & west)

<table>
<thead>
<tr>
<th>Rates</th>
<th>Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELECTRICIAN</td>
<td>$ 35.60</td>
</tr>
</tbody>
</table>

* ENGI0049-064 05/01/2016

OPERATOR: Power Equipment

<table>
<thead>
<tr>
<th>Group</th>
<th>Rates</th>
<th>Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>$ 34.39</td>
<td>18.90</td>
</tr>
<tr>
<td>3</td>
<td>$ 33.84</td>
<td>18.90</td>
</tr>
<tr>
<td>4</td>
<td>$ 33.54</td>
<td>18.90</td>
</tr>
<tr>
<td>5</td>
<td>$ 30.50</td>
<td>18.90</td>
</tr>
<tr>
<td>6</td>
<td>$ 29.29</td>
<td>18.90</td>
</tr>
</tbody>
</table>

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 2: Crane with over 135' Boom, excluding jib; Dragline & Hydraulic Backhoe with shovel-type controls, 3 cubic yards and over; Grader/Blade finishing earthwork and bituminous.

GROUP 3: Dragline & Hydraulic Backhoe with shovel-type controls up to 3 cubic yards; Loader 5 cu yd and over; Mechanic; Tandem Scraper; Truck Crane; Crawler Crane

GROUP 4: Bituminous Roller 8 tons & over; Crusher/ Crushing Plant; Drill Rig; Elevating Grader; Loader over 1 cu yd; Grader; Pump; Scraper up; to 32 cu yd; Farm Tractor with Backhoe attachment; Skid Steer Loader over 1 cu yd with Backhoe attachment; Bulldozer over 50 hp.
GROUP 5: Bituminous Roller under 8 tons; Bituminous Rubber Tire Roller; Loader up to 1 cu yd; Bulldozer 50 hp or less.

GROUP 6: Oiler; Self-Propelled Vibrating Packer 35 hp and over.

CRANE OVER 135' BOOM, EXCLUDING JIB - $ .25 PREMIUM;
CRANE OVER 200' BOOM, EXCLUDING JIB - $ .50 PREMIUM

UNDERGROUND WORK:
UNNEELS, SHAFTS, ETC. - $ .25 PREMIUM
UNDER AIR PRESSURE - $ .50 PREMIUM

HAZARDOUS WASTE PROJECTS (PPE Required):
LEVEL A - $1.25 PREMIUM
LEVEL B - $ .90 PREMIUM
LEVEL C - $ .60 PREMIUM

---------------------------------------------------------------------
IRON0512-028 05/01/2015

<table>
<thead>
<tr>
<th>Rates</th>
<th>Fringes</th>
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<tbody>
<tr>
<td>IRONWORKER, STRUCTURAL AND REINFORCING</td>
<td>$ 31.04</td>
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</table>

* LABO1091-006 05/01/2016

ST LOUIS (South of T. 55 N)

<table>
<thead>
<tr>
<th>Rates</th>
<th>Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABORERS</td>
<td></td>
</tr>
<tr>
<td>(1) Common or General</td>
<td>$ 29.13</td>
</tr>
<tr>
<td>(2) Mason Tender Cement/Concrete</td>
<td>$ 29.33</td>
</tr>
<tr>
<td>(6) Pipe Layer</td>
<td>$ 31.63</td>
</tr>
</tbody>
</table>

* LABO1091-007 05/01/2016

SOUTHERN ST. LOUIS COUNTY

<table>
<thead>
<tr>
<th>Rates</th>
<th>Fringes</th>
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<tbody>
<tr>
<td>LABORER</td>
<td></td>
</tr>
<tr>
<td>Common or General (Natural Gas Pipeline only)</td>
<td>$ 29.13</td>
</tr>
</tbody>
</table>

LABO1097-002 05/01/2014

NORTHERN ST. LOUIS COUNTY

<table>
<thead>
<tr>
<th>Rates</th>
<th>Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABORER</td>
<td></td>
</tr>
<tr>
<td>Common or General (Natural Gas Pipeline only)</td>
<td>$ 25.02</td>
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</tbody>
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LABO1097-005 05/01/2014
### St. Louis (North of T. 55 N)

<table>
<thead>
<tr>
<th>Rates</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Laborers</strong></td>
<td></td>
</tr>
<tr>
<td>(1) Common or General.......$ 25.02</td>
<td>18.16</td>
</tr>
<tr>
<td>(2) Mason Tender Cement/Concrete.............$ 25.22</td>
<td>18.16</td>
</tr>
<tr>
<td>(6) Pipe Layer..............$ 27.52</td>
<td>18.16</td>
</tr>
</tbody>
</table>

---

**PLAS0633-036 05/01/2012**

### St. Louis County (North of T 55N)

<table>
<thead>
<tr>
<th>Rates</th>
<th>Fringes</th>
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</thead>
<tbody>
<tr>
<td><strong>Concrete Mason/Concrete Finisher</strong>...$ 26.71</td>
<td>14.64</td>
</tr>
</tbody>
</table>

---

**PLAS0633-039 05/01/2012**

### St. Louis County (South of T 55N)

<table>
<thead>
<tr>
<th>Rates</th>
<th>Fringes</th>
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</thead>
<tbody>
<tr>
<td><strong>Concrete Mason/Concrete Finisher</strong>...$ 32.78</td>
<td>16.80</td>
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</tbody>
</table>

---

**TEAM0160-018 05/01/2015**

### St. Louis County (South of T 55N)

<table>
<thead>
<tr>
<th>Rates</th>
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<tbody>
<tr>
<td><strong>Truck Driver (Dump)</strong></td>
<td></td>
</tr>
<tr>
<td>(1) Articulated Dump Truck..$ 28.70</td>
<td>15.20</td>
</tr>
<tr>
<td>(2) 3 Axles/4 Axles; 5 Axles receive $0.30 additional per hour............$ 28.15</td>
<td>15.20</td>
</tr>
<tr>
<td>(3) Tandem Axles; &amp; Single Axles..........................$ 28.05</td>
<td>15.20</td>
</tr>
</tbody>
</table>

---

**SUMN2009-072 09/28/2009**

### St. Louis County (South of T 55N)

<table>
<thead>
<tr>
<th>Rates</th>
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</thead>
<tbody>
<tr>
<td><strong>Laborer: Landscape</strong>..............$ 12.88</td>
<td>4.61</td>
</tr>
</tbody>
</table>

---

Welders - Receive rate prescribed for craft performing operation to which welding is incidental.

---

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

---
The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. Example: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.
A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

---

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

    Branch of Construction Wage Determinations
    Wage and Hour Division
    U.S. Department of Labor
    200 Constitution Avenue, N.W.
    Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

    Wage and Hour Administrator
    U.S. Department of Labor
    200 Constitution Avenue, N.W.
    Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

    Administrative Review Board
    U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

==============================================

END OF GENERAL DECISION
General Decision Number: MN160001 04/01/2016  MN1
State: Minnesota
Construction Type: Highway
Counties: Carlton, Cook, Itasca, Koochiching, Lake, Pine and St Louis Counties in Minnesota.

HIGHWAY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.15 for calendar year 2016 applies to all contracts subject to the Davis-Bacon Act for which the solicitation was issued on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.15 (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2016. The EO minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

<table>
<thead>
<tr>
<th>Modification Number</th>
<th>Publication Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>04/01/2016</td>
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SUMN2016-001 05/01/2014

<table>
<thead>
<tr>
<th></th>
<th>Rates</th>
<th>Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CARPENTER</td>
<td>$35.65</td>
<td>17.08</td>
</tr>
<tr>
<td>CEMENT MASON/CONCRETE FINISHER</td>
<td>$34.20</td>
<td>17.38</td>
</tr>
<tr>
<td>ELECTRICIAN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electrician</td>
<td>$35.01</td>
<td>24.62</td>
</tr>
<tr>
<td>Ground Person</td>
<td>$28.26</td>
<td>13.92</td>
</tr>
<tr>
<td>Lineman</td>
<td>$32.27</td>
<td>14.11</td>
</tr>
<tr>
<td>Wiring System Installer</td>
<td>$25.84</td>
<td>12.02</td>
</tr>
<tr>
<td>Wiring System Technician</td>
<td>$36.90</td>
<td>14.43</td>
</tr>
<tr>
<td>IRONWORKER</td>
<td>$30.94</td>
<td>23.45</td>
</tr>
<tr>
<td>LABORER</td>
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<td></td>
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<tr>
<td>Blaster</td>
<td>$28.89</td>
<td>15.33</td>
</tr>
<tr>
<td>Common or General</td>
<td>$29.23</td>
<td>17.02</td>
</tr>
<tr>
<td>Flag Person</td>
<td>$29.23</td>
<td>17.02</td>
</tr>
<tr>
<td>Landscape</td>
<td>$27.64</td>
<td>12.64</td>
</tr>
<tr>
<td>Skilled</td>
<td>$29.23</td>
<td>17.02</td>
</tr>
<tr>
<td>Underground &amp; Open Ditch (8 ft below grade)</td>
<td>$29.93</td>
<td>17.02</td>
</tr>
<tr>
<td>MILLWRIGHT</td>
<td>$37.83</td>
<td>15.33</td>
</tr>
</tbody>
</table>
PAINTER (Including Pavement Marking) .........................$ 28.01 18.77
PILEDRIVERMAN...........................................$ 35.65 17.08

POWER EQUIPMENT OPERATOR:
   GROUP 2..........................$ 34.39 18.90
   GROUP 3..........................$ 33.84 18.90
   GROUP 4..........................$ 33.54 18.90
   GROUP 5..........................$ 30.50 18.90
   GROUP 6..........................$ 29.29 18.90
   Special Equipment
   Articulated Hauler.........$ 33.54 18.90
   Boom Truck.................$ 35.54 18.90
   Off-Road Truck.............$ 31.37 16.70
   Pavement Marking or
   Marking Removal Equipment
   Operator (one or two
   person operators), Self-
   Propelled Truck or
   Trailer Mounted Units......$ 28.36 16.36

OPERATING ENGINEER CLASSIFICATIONS

GROUP 2:  Helicoper Pilot; Concrete Pump; Cranes over 135 ft
boom excluding jib; Dragline, Crawler, Hydraulic Backhoe and
other similar equipment with shovel-type controls including
attachments 3 cu yd & over; Grader or Motor Patrol; Pile Driving

GROUP 3:  Asphalt Bituminous Stabilizer Plant; Cableway;
Concrete Mixer, Stationary Plant; Derrick (guy or stiff
leg)(power)(skids or stationary); Dragline, Crawler, Hydraulic
Backhoe and other similar equipment with shovel-type controls
including attachments up to 3 cu yd; Dredge or Engineers Dredge
(Power); Front end loader 5 cu yd & over including
attachments; Locomotive Crane Operator; Mixer (paving)
cement paving, Road Mole including Mucking operations,
Conway or similar type; Mechanic, Welder; Tractor, Boom type.
Tandem Scraper; Truck Crane, Crawler Crane

GROUP 4:  Air Track Rock Drill; Automatic Road Machine CMI or
similar; Backfiller; Concrete Batch Plant; Bituminous Roller
Rubber Tire or Steel Drum 8 tons & over; Bituminous Spreader &
Finishing Machine (power), including pavers, Macro Surfacing &
Micro Surfacing or similar types (operator & Screed person);
Brokk or RTC remote control or similar type with attachments;
Cat Challenger Tractor or similar types pulling Rock Wagons;
Bulldozer & Scraper; Chip Harvester & Tree Cutter; Concrete
Distributor & Spreader Finishing Machine, Longitudinal Float
Joint Machine, Spray Machine; Concrete Mixer on jobsite;
Concrete Mobil; Crushing Plant (gravel, stone) or Gravel
Washing, Crushing & Screening Plant; Curb Machine; Directional
Boring Machine; Drill Rigs, Heavy Rotary or Churn or Cable
Drill, Dual Tractor; Elevating Grader; Fort Lift; Front End,
Skid Steer 1 to 5 cu yd; GPS Remote Operating of equipment;
Hoist Engineer (power); Hydraulic Tree Planter; Launcher
Person; Locomotive; Milling, Grinding, Planing, Fine Grade, or
Trimmer Machine; Multiple Machines such as Air Compressors,
Welding Machines, Generators, Pumps; Pavement Breaker or
Tamping Machine, Mighty Mite or similar type; Pickup Sweeper 1 cu yd & over hopper capacity; Horizontal Boring Machine power actuated over 6 inches; Pugmill; Pumpcrete; Rubber Tired Farm Tractor with Backhoe attachment; Scraper; Self-Propelled Soil Stabilizer; Slip Form (power driven) paving; Tractor, Bulldozer; Wheel type Tractor over 50 hp with PTO; Trenching Machine excludes walk behind Trencher; Tub Grinder, Morbark or similar type; Well Point installation Dismantling.

GROUP 5: Air Compressor 600 cfm or over; Bituminous Roller under 8 tons; Concrete Saw multiple blade; Form Tench Digger (power); Front End Skid Steer up to 1 cu yd; Gunite Gunall; Hydraulic Log Splitter; Loader, Barber Greene or similar; Post Hole Driving Machine/Post Hole Auger; Power Actuated Auger & Boring Machine; Power Actuated Jack; Pump; Self-Propelled Chip Spreader (Flaherty or similar); Sheep Foot Compactor with blade 200 hp & over; Shouldering Machine (Power) APSCO or similar type including self-propelled Sand and Chip Spreader; Stump Chipper and Tree Chipper; Tree Farmer (Machine).

GROUP 6: Cat, Challenger or similar tractor when pulling Disk or Roller; Conveyor; Dredge Deck Hand; Fire Person or Tank Car Heater; Gravel Screening Plant (portable, not crushing or washing); Greaser (tractor); Lever Person; Oiler (Power Shovel, Truck Crane, Dragline, Crusher and Milling Machine); Power Sweeper; Sheep Foot Roller & Rollers on Gravel Compaction including vibrating rollers; Wheel type Tractor over 50 hp.

TRUCK DRIVER

GROUP 1.....................$ 30.15            15.20
GROUP 2.....................$ 26.30            14.40
GROUP 3.....................$ 26.20            14.40
GROUP 4.....................$ 27.82            17.20

TRUCK DRIVER CLASSIFICATIONS:

GROUP 1: Mechanic, Welder; Tractor Trailer; Truck hauling machinery including operation of hand and power operated winches.

GROUP 2: Four or more axle unit straight body truck.

GROUP 3: Bituminous Distributor driver; Bituminous Distributor (one person operation); Three Axle units.

GROUP 4: Bituminous Distributor Spray operator (rear and oiler); Dump Person; Greaser; Pilot Car; Rubber Tire self-propelled Packer under 8 tons; Two Axle unit; Slurry Operator; Tank Truck Tender (gas, road oil, water); Tractor under 50 hp.

Tunnel Miner.....................$ 29.93            17.02

--------------------

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

=================================================================

Unlisted classifications needed for work not included within
the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

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---

WAGE DETERMINATION APPEALS PROCESS

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* a survey underlying a wage determination
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   200 Constitution Avenue, N.W.
   Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION
Construction Type: Highway and Heavy

Region Number: 01

Counties within region:

- CARLTON-09
- COOK-16
- ITASCA-31
- KOOCHICHING-36
- LAKE-38
- PINE-58
- ST. LOUIS-69

Effective: 2015-10-12   Revised: 2016-04-25

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
<table>
<thead>
<tr>
<th>LABORERS (101 - 112) (SPECIAL CRAFTS 701 - 730)</th>
<th>EFFECT DATE</th>
<th>BASIC RATE</th>
<th>FRINGE RATE</th>
<th>TOTAL RATE</th>
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<tbody>
<tr>
<td>101 LABORER, COMMON (GENERAL LABOR WORK)</td>
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<td>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;)</td>
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<td>28.11</td>
<td>16.57</td>
<td>44.68</td>
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PERFORM AND CHECK CALCULATIONS; REVIEW AND UNDERSTAND CONSTRUCTION PLANS AND LAND SURVEY MATERIALS). THIS CLASSIFICATION DOES NOT APPLY TO THE WORK PERFORMED ON A PREVAILING WAGE PROJECT BY A LAND SURVEYOR WHO IS LICENSED PURSUANT TO MINNESOTA STATUTES, SECTIONS 326.02 TO 326.15.

111 TRAFFIC CONTROL PERSON (TEMPORARY SIGNAGE)

112 QUALITY CONTROL TESTER (FIELD AND COVERED OFF-SITE FACILITIES; TESTING OF AGGREGATE, ASPHALT, AND CONCRETE MATERIALS); LIMITED TO MN DOT HIGHWAY AND HEAVY CONSTRUCTION PROJECTS WHERE THE MN DOT HAS RETAINED QUALITY ASSURANCE PROFESSIONALS TO REVIEW AND INTERPRET THE RESULTS OF QUALITY CONTROL TESTERS. SERVICES PROVIDED BY THE CONTRACTOR.

SPECIAL EQUIPMENT (201 - 204)

201 ARTICULATED HAULER

202 BOOM TRUCK

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

204 OFF-ROAD TRUCK

205
PAVEMENT MARKING OR MARKING REMOVAL EQUIPMENT (ONE OR TWO PERSON OPERATORS); SELF-PROPELLED TRUCK OR TRAILER MOUNTED UNITS.

HIGHWAY/HEAVY POWER EQUIPMENT OPERATOR

**GROUP 2**

| 2015-10-12 | 33.78 | 17.90 | 51.68 |
| 2016-05-01 | 34.39 | 18.90 | 53.29 |

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**

| 2015-10-12 | 33.23 | 17.90 | 51.13 |
| 2016-05-01 | 33.84 | 18.90 | 52.74 |

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

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<th>Rate</th>
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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  SCRAPPER
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

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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**

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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**

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601  MECHANIC . WELDER
602  TRACTOR TRAILER DRIVER
603  TRUCK DRIVER (HAULING MACHINERY INCLUDING OPERATION OF HAND AND POWER OPERATED WINCHES)

**GROUP 2**

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604  FOUR OR MORE AXLE UNIT, STRAIGHT BODY TRUCK

04/25/2016
### GROUP 3

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### GROUP 4

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### SPECIAL CRAFTS

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<td>723</td>
<td>TERRAZZO WORKERS</td>
<td>For Rate Call 651-284-5091 or Email <a href="mailto:DLI.PREVWAGE@STATE.MN.US">DLI.PREVWAGE@STATE.MN.US</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>724</td>
<td>TILE SETTERS</td>
<td>For Rate Call 651-284-5091 or Email <a href="mailto:DLI.PREVWAGE@STATE.MN.US">DLI.PREVWAGE@STATE.MN.US</a></td>
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<tr>
<td>725</td>
<td>TILE FINISHERS</td>
<td>For Rate Call 651-284-5091 or Email</td>
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04/25/2016
<table>
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<tr>
<th>Code</th>
<th>Job Title</th>
<th>Dates</th>
<th>Hourly Rate</th>
<th>Benefits Rate</th>
<th>Total Rate</th>
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<tr>
<td>727</td>
<td>WIRING SYSTEM TECHNICIAN</td>
<td>2015-10-12</td>
<td>36.00</td>
<td>14.43</td>
<td>50.43</td>
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<td></td>
<td>2016-07-01</td>
<td>36.90</td>
<td>14.43</td>
<td>51.33</td>
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<td>728</td>
<td>WIRING SYSTEMS INSTALLER</td>
<td>2015-10-12</td>
<td>25.21</td>
<td>12.02</td>
<td>37.23</td>
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<td></td>
<td>2016-07-01</td>
<td>25.84</td>
<td>12.02</td>
<td>37.86</td>
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<td>729</td>
<td>ASBESTOS ABATEMENT WORKER</td>
<td>2015-10-12</td>
<td>28.50</td>
<td>16.88</td>
<td>45.38</td>
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<td></td>
<td>2016-01-01</td>
<td>29.30</td>
<td>17.33</td>
<td>46.63</td>
</tr>
<tr>
<td>730</td>
<td>SIGN ERECTOR</td>
<td>FOR RATE CALL 651-284-5091 OR EMAIL <a href="mailto:DLI.PREVWAGE@STATE.MN.US">DLI.PREVWAGE@STATE.MN.US</a></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Labor Standards

Prevailing wage minimum truck rental rates: Region 1

The operating costs were determined by survey on a statewide basis. The operating cost for "four or more axle units, straight body trucks" is determined to be $50.82 an hour. The operating cost for "three axle units" is determined to be $37.35 an hour. The operating cost for "tractor only" is determined to be $49.17 an hour. The operating cost for "tractor trailers" is determined to be $60.63 an hour.

Adding the prevailing wage for drivers of these four types of trucks from each of the state's 10 highway and heavy construction areas to the operating costs, the minimum hourly truck rental rate for the four types of trucks in each area is certified to be as follows.

<table>
<thead>
<tr>
<th>Minimum hourly truck rental rates</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Region 1</strong></td>
</tr>
<tr>
<td>Jan. 25, 2016</td>
</tr>
<tr>
<td>May 1, 2016</td>
</tr>
</tbody>
</table>
AFFIDAVIT AND INFORMATION REQUIRED OF BIDDERS

Affidavit of Non-Collusion:

I hereby swear (or affirm) under penalty of perjury:

1) That I am the bidder (if the bidder is an individual), a partner in the bidder (if the bidder is a partnership), or an officer or employee of the bidding corporation having authority to sign on its behalf (if the bidder is a corporation);

2) That the attached bid or bids have been arrived at by the bidder independently and have been submitted without collusion with and without agreement, understanding, or planned common course of action with any other vendor or materials, supplied, equipment or services described in the invitation to bid, designed to limit independent bidding or competition;

3) That the contents of the bid or bids have not been communicated by the bidder or its employees or agents to any person not an employee or agent of the bidder or its surety on any bond furnished with the bid or bids and will not be communicated to any such person prior to the official opening of the bid or bids; and

4) That I have fully informed myself regarding the accuracy of the statements made in this affidavit.

Signed: ______________________________

Firm Name: ______________________________

Subscribed and sworn to me before this____ day of _________________, __________

NOTARY PUBLIC_______________________________________________________

My commission expires:__________________________________________________

Bidder’s E.I. Number_____________________________________________________

(Number used on employer’s quarterly Federal Tax return)
EQUAL EMPLOYMENT OPPORTUNITY (EEO) AFFIRMATIVE ACTION
POLICY STATEMENT & COMPLIANCE CERTIFICATE

TO: City of Duluth, Minnesota PROJECT NUMBER & DESCRIPTION ________________________________
___________________________________________________________________________________

FROM: ______________________________________________________________________________
___________________________________________________________________________________
(FIRM’s name, address, telephone number)

A) Employment: It is the policy of the above named FIRM to afford equal opportunity for employment to all individuals regardless of race, color, creed, religion, national origin, ancestry, age, sex, marital status, status with respect to public assistance and/or disability. The FIRM will take affirmative action to ensure that we will: (1) recruit, hire, and promote all job classifications without regard to race, color, creed, religion, national origin, ancestry, age, sex, marital status, status with respect to public assistance, and/or disability, except where sex is a bona fide occupational qualification; (2) base decisions on employment so as to further the principle of equal employment opportunity; (3) ensure that promotion decisions are in accord with the principles of equal employment opportunity by imposing only valid requirements for promotional opportunities; (4) ensure that all personnel actions such as compensation, benefits, transfers, layoffs, return from layoff, FIRM sponsored training, education tuition assistance, social and recreational programs will be administered without regard to race, color, creed, religion, national origin, ancestry, age, sex, marital status, status with respect to public assistance, and/or disability. The FIRM also intends full compliance with Veteran affirmative action requirements. Additionally, minority and female employees shall be encouraged to participate in all FIRM activities and refer applicants.

I have designated (name) _______________________________________________ to direct the establishment of and to monitor the implementation of personnel procedures to guide the FIRM’s affirmative action program. Where PROJECTS exceed $500,000, this official shall also serve as the liaison officer that administers the FIRM’s “Minority Business Enterprise Program.” This official is charged with designing and implementing audit and reporting systems that will keep management informed on a monthly basis of the status of the equal opportunity area.

Supervisors have been made to understand that their work performance is being evaluated on the basis of their equal opportunity efforts and results, as well as other criteria. It shall be the responsibility of the FIRM and its supervisors to take actions to prevent harassment of employees placed through affirmative action efforts.

B) Reports: Unless exempted by law and regulation, the FIRM shall make available and file those reports related to equal opportunity as may be required by the City of Duluth and State and Federal compliance agencies. Requirements and Reports are defined in 41CFR60 “Compliance Responsibility for Equal Opportunity” published by the U. S. Department of Labor which is incorporated herein by reference. Additional requirements are defined in various State and Federal Civil Rights Legislation and Rules promulgated thereunder.

C) Nonsegregated Facilities: The FIRM certifies that it does not maintain or provide for its employees any segregated facilities at any of its establishments and that it does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The FIRM certifies that it will not maintain or provide for its employees any segregated facilities at any of its establishments and that it will not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The FIRM agrees that a breach of this
certification is a violation of the Equal Opportunity Clause in this certificate. As used in this Certification, the term “segregated facilities” means any waiting rooms, work area, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation for entertainment area, transportation, and housing facilities provided for employees which are segregated by explicit directive or are, in fact, segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise.

D) **Affirmative Action Compliance Program:** Unless exempted by regulation and law, the FIRM—if the FIRM has 50 or more employees and if the value of current contracts with the City of Duluth exceeds $50,000—shall prepare and maintain a written affirmative action compliance program that meets the requirement as set forth in 41CFR60.

E) **Non-Compliance:** The FIRM certifies that it is not currently in receipt of any outstanding letters of deficiencies, show cause, probable cause, or other such notification of non-compliance with EEO Laws and Regulations.

F) **Employment Goals - “Construction” Projects:** It shall be the goal of the FIRM if the PROJECT is of a construction nature that in all on-site employment generated that no less than 3% of the on-site workforce will be minority employees and that no less than 7% of the on-site workforce will be female employees. Further, it is the goal of the FIRM if the PROJECT is of a construction nature that in all on-site employment generated that no less than 3% of the work hours generated shall be worked by minority employees and that no less than 7% of the work hours generated shall be worked by female employees.

G) **Subcontractors:** The FIRM will for all its PROJECT subcontractors regardless of tier (unless exempted by law and regulation) that received in excess of $2,500 require that: (1) the subcontractor shall execute an “EEO Statement and Certification” similar in nature to this “Statement and Certification”, (2) said documentation to be maintained on file with the FIRM or subcontractor as may be appropriate.

Executed this ________ day of ______________, 20__ by:

________________________________________________________________________

Printed name and title

________________________________________________________________________

Signature

**NOTE:** In addition to the various remedies prescribed for violation of Equal Opportunity Laws, the penalty for false statements is prescribed in 18 U.S.C. 1001.
KNOW ALL MEN BY THESE PRESENTS: That we:

_____________________________________________________________________________

(contractor’s name)

(hereinafter called the “Contractor”) located at:________________________________________

_____________________________________________________________________________

(contractor’s address)

and __________________________________________________________________________

(surety’s name)

(a corporation holding a certificate of the Insurance Commissioner of the State of Minnesota showing that it is authorized to contract as a surety, hereinafter called the “Surety”) located at:

_____________________________________________________________________________

(surety’s address)

are held and firmly bound unto the City of Duluth (hereinafter called the “Owner”), in the penal sum of _______________________________________________________________________

Dollars ($___________________) for the payment of which we bind ourselves, our heirs, executors and administrators, successors and assigns, for the faithful performance of a written contract for the purpose of:

_____________________________________________________________________________

_____________________________________________________________________________

_____________________________________________________________________________

according to plans, profiles, and specifications thereto annexed. A copy of that contract is incorporated herein by reference and is made a part hereof as if fully copied herein.

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION ARE SUCH That,

A) If the Contractor shall in all respects comply with the terms and conditions of the Contract (which includes the contract documents) and such alterations as may be made in said contract as documents therein provide for, and shall complete the contract in accordance with its terms,

B) If the Contractor shall indemnify, defend and save harmless the owner from all costs, expenses, damages, injury or conduct, want or care or skill, negligence or default, including patent infringement on the part of the Contractor, agents or employees, in the execution or performance of the contract,

C) If the Contractor shall indemnify the owner for all costs that may accrue on account of the
enforcing of the terms of the bond, if action is brought on the bond, including reasonable
attorney’s fees, in any case where such action is successfully maintained,

D) If the Contractor shall comply with all laws pertaining to doing the work under the contract,

Then, this obligation shall be void; the Contractor and Surety jointly and severally agree to pay to the Owner any difference between the sum to which the Contractor will be entitled on the completion of the contract and that which the Owner may be obliged to pay for the completion of the work by contract or otherwise, and any damages, direct or indirect, or consequential, which the Owner may sustain on account of the work, or on account of the failure of the Contractor to properly and in all things, keep and execute all of the provisions of the Contract, provided however that Surety’s liability to pay damages is limited to the amount of the Performance Bond as set forth above.

And, the said Contractor and Surety hereby further bind themselves, their successors, executors, administrators and assigns, jointly and severally, that they will employ and fully protect the said Owner against and will pay any and all amounts, damages, costs and judgements which may be recovered against or which the Owner may be called upon to pay to any person or corporation by reason of any damage arising from the performance of said work, repair or maintenance thereof, or the manner of doing the same, or the neglect of the said Contractor or his agents or servants, or the improper performance of the said work by the Contractor or his agents or servants, or the infringements of any patent rights by reason of the use of any material furnished or work done, as aforesaid, or otherwise. For the purpose of this paragraph, a subcontractor shall be deemed to be the agent or employee of the Contractor to the extent of his subcontract.

The Contractor and the Sureties do hereby expressly waive any objection that might be interposed as to the right of the Owner to require a bond containing the foregoing provisions, and they do hereby further expressly waive any defense which they or either and any of them might interpose to an action brought hereon by any person, firm, or corporation, including subcontractors, materialmen and third persons, for work, labor, services, supplies or material performed, rendered or furnished as aforesaid, upon the ground that there is no law authorizing the Owner to require the foregoing provisions to be placed in this bond.

And the Surety, for value received, hereby stipulates and agrees that the obligations of the Surety and this bond shall in no way be impaired or affected by any extension of time, modification, omission, addition or change in or to the contract or the work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provision thereof, or by any assignment, subletting or other transfer thereof, or of any part thereof, or of any work to be performed, or of any moneys due or to become due thereunder; and
the said Surety does hereby waive notice of any and all such extensions, modifications, omissions, additions, changes, payments, waivers, assignments, subcontracts and transfers, and hereby stipulates and agrees that any and all things done and omitted to be done by and in relation to executors, administrators, successors, assignees, subcontractors and other transferees, shall have the same effect as to said Surety as though done or omitted to be done by and in relation to the Contractor.

Signed this _____ day of ____________________, 20___.

Name of Principal

By

Name of Surety

By ________________________________

Attorney-in-Fact
ACKNOWLEDGEMENTS

State of Minnesota ) ) ss. Principal – Individual
County of St. Louis )

This instrument was acknowledged before me on ________________________________
by ________________________________.

Notary Seal                                      Notary Public

State of Minnesota ) ) ss. Principal – Corporate or Partnership
County of St. Louis )

This instrument was acknowledged before me on ________________________________
by ________________________________ as ________________________________
of ________________________________.

Notary Seal                                      Notary Public

State of Minnesota ) ) ss. Surety
County of St. Louis )

Be It Known, That on this _____ day of ________________ A. D., 20___, came before me personally
_________________________________________________________________, to me personally known, who being
by me duly sworn, did say that he/she is the ______________________________________(title) of
____________________________________________________________________________________________
the above named corporation which executed the foregoing bond as surety; that the seal affixed to the foregoing
instrument is the corporate seal of said corporation; that said instrument was executed in behalf of said corporation, by
authority of its Board of Directors; that said corporation hold a certificate of the Insurance Commissioner of the State of
Minnesota showing that it is authorized to contract as a surety; and said
____________________________________
acknowledged said instrument to be the free act and deed of said corporation.

Notary Seal                                      Notary Public

APPROVED AS TO FORM, CORRECTNESS AND VALIDITY HEREOF

Dated this _____ day of ________________, 20___

____________________________________
Assistant City Attorney   Duluth MN

Dated this _____ day of ________________, 20___

____________________________________
Finance Director   Duluth MN
KNOW ALL MEN BY THESE PRESENTS: That we:

_____________________________________________________________________________
(contractor’s name)

(hereinafter called the “Contractor”) located at: ________________________________________

_____________________________________________________________________________
(contractor’s address)

and __________________________________________________________________________

_____________________________________________________________________________
(surety’s name)

(a corporation holding a certificate of the Insurance Commissioner of the State of Minnesota
showing that it is authorized to contract as a surety, hereinafter called the “Surety”) located at:

_____________________________________________________________________________
(surety’s address)

are held and firmly bound unto the City of Duluth (hereinafter called the “Owner”), for the benefit of
persons furnishing labor and materials for the contract set forth below, in the penal sum of

_____________________________________________________________________________
Dollars ($___________________) for the payment of which we bind ourselves, our heirs,
executors and administrators, successors and assigns, for the payment of all labor and materials
supplied by any person in the performance of a written contract for the purpose of:

_____________________________________________________________________________

according to plans, profiles, and specifications thereto annexed. A copy of that contract is
incorporated herein by reference and is made a part hereof as if fully copied herein.

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION ARE SUCH That,

A) If the Contractor shall make payments, as they may become due, to all persons supplying
“labor and materials,” as defined in Minnesota Statutes Section 574.26, used directly or
indirectly by the Contractor, or his Subcontractor, in the prosecution of the work provided
for in the contract,

B) If the Contractor shall indemnify the owner or other claimant for all costs that may accrue
on account of the enforcing of the terms of the bond, if action is brought on the bond,
including reasonable attorney’s fees, in any case where such action is successfully
maintained,
Then, this obligation shall be void; otherwise it shall remain in full force and effect.

And, the said Contractor and Surety agree that in accordance with Minnesota Statutes Section 574.26 not only said City, but any person furnishing “labor and materials,” as defined in Minnesota Statutes 574.26, may sue on this bond for their use on account of any sums due them for anything so furnished.

The Contractor and the Sureties do hereby expressly waive any objection that might be interposed as to the right of the Owner to require a bond containing the foregoing provisions, and they do hereby further expressly waive any defense which they or either and any of them might interpose to an action brought hereon by any person, firm, or corporation, including subcontractors, materialmen and third persons, for work, labor, services, supplies or material performed, rendered or furnished as aforesaid, upon the ground that there is no law authorizing the Owner to require the foregoing provisions to be placed in this bond.

And the Surety, for value received, hereby stipulates and agrees that the obligations of the Surety and this bond shall in no way be impaired or affected by any extension of time, modification, omission, addition or change in or to the contract or the work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provision thereof, or by any assignment, subletting or other transfer thereof, or of any part thereof, or of any work to be performed, or of any moneys due or to become due thereunder; and the said Surety does hereby waive notice of any and all such extensions, modifications, omissions, additions, changes, payments, waivers, assignments, subcontracts and transfers, and hereby stipulates and agrees that any and all things done and omitted to be done by and in relation to executors, administrators, successors, assignees, subcontractors and other transferees, shall have the same effect as to said Surety as though done or omitted to be done by and in relation to the Contractor.

Signed this _____ day of ____________________, 20___.

_____________________________________________
Name of Principal

_____________________________________________
By

_____________________________________________
Name of Surety

By __________________________________________
Attorney-in-Fact
ACKNOWLEDGEMENTS

State of Minnesota)  
County of St. Louis)  
) ss. Principal – Individual

This instrument was acknowledged before me on ________________________________
by ________________________________________________________.

Notary Seal  
Notary Public

State of Minnesota)  
County of St. Louis)  
) ss. Principal – Corporate or Partnership

This instrument was acknowledged before me on ________________________________
by __________________________________________ as __________________________________________
of __________________________________________.

Notary Seal  
Notary Public

State of Minnesota)  
County of St. Louis)  
) ss. Surety

Be It Known, That on this ______ day of ________________ A. D., 20__, came before me personally
_________________________________________________________________, to me personally known, who being
by me duly sworn, did say that he/she is the _____________________________________________________ (title) of

______________________________________________________________________________________________

the above named corporation which executed the foregoing bond as surety; that the seal affixed to the foregoing
instrument is the corporate seal of said corporation; that said instrument was executed in behalf of said corporation, by
authority of its Board of Directors; that said corporation hold a certificate of the Insurance Commissioner of the State of
Minnesota showing that it is authorized to contract as a surety; and said _____________________________________
acknowledged said instrument to be the free act and deed of said corporation.

Notary Seal  
Notary Public

APPROVED AS TO FORM, CORRECTNESS AND VALIDITY HEREOF

Dated this ______ day of ________________, 20__

__________________________________________  
Assistant City Attorney  Duluth MN

Dated this ______ day of ________________, 20__

__________________________________________  
Finance Director  Duluth MN
City of Duluth
Indemnification & Insurance Requirements

INDEMNIFICATION CLAUSE

To the extent allowed by law, Consultant shall defend, indemnify and hold City and its employees, officers, and agents harmless from and against any and all cost or expenses, claims or liabilities, including but not limited to, reasonable attorneys’ fees and expenses in connection with any claims resulting from the Consultant’s a) breach of this agreement or b) its negligence or misconduct or that of its agents or contractors in performing the Services hereunder or c) any claims arising in connection with Consultant’s employees or contractors, or d) the use of any materials supplied by the Consultant to the City unless such material was modified by City and such modification is the cause of such claim. This Section shall survive the termination of this Agreement for any reason.

INSURANCE

a. Contractor shall provide the following minimum amounts of insurance from insurance companies authorized to do business in the state of Minnesota, which insurance shall indemnify Contractor and City from all liability described in the paragraph above, subject to provisions of subparagraph below.

(1) Worker’s compensation in accordance with the laws of the state of Minnesota.
(2) Public Liability and Automobile Liability Insurance with limits not less than $1,500,000 Single Limit, and twice the limits provided when a claim arises out of the release or threatened release of a hazardous substance; shall be in a company approved by the city of Duluth; and shall provide for the following: Liability for Premises, Operations, Completed Operations, Independent Contractors, and Contractual Liability.
(3) City of Duluth shall be named as Additional Insured under the Public Liability, Excess/Umbrella Liability* and Automobile Liability, or as an alternate, Contractor may provide Owners-Contractors Protective policy, naming itself and the City of Duluth. Contractor shall also provide evidence of Statutory Minnesota Worker’s Compensation Insurance. Contractor to provide Certificate of Insurance evidencing such coverage with 30-days’ notice of cancellation, non-renewal or material change provisions included. The City of Duluth does not represent or guarantee that these types or limits of coverage are adequate to protect the Contractor's interests and liabilities.
(4) An umbrella policy with a “following form” provision is acceptable if written verification is provided that the underlying policy names the City of Duluth as an additional insured.
(4) If a certificate of insurance is provided, the form of the certificate shall contain an unconditional requirement that the insurer notify the City without fail not less than 30 days’ prior to any cancellation, non-renewal or modification of the policy or coverages evidenced by said certificate and shall further provide that failure to give such notice to City will render any such change or changes in said policy or coverages ineffective as against the City.
(5) The use of an “Acord” form as a certificate of insurance shall be accompanied by two forms – 1) ISO Additional Insured Endorsement (CG-2010 pre-2004) and 2) Notice of Cancellation Endorsement (IL 7002) or equivalent, as approved by the Duluth City Attorney’s Office.

b. The insurance required herein shall be maintained in full force and effect during the life of this Agreement and shall protect Contractor, its employees, agents and representatives from claims and damages including but not limited to personal injury and death and any act or failure to act by Contractor, its employees, agents and representatives in the negligent performance of work covered by this Agreement.

c. Certificates showing that Contractor is carrying the above described insurance in the specified amounts shall be furnished to the City prior to the execution of this Contract and a certificate showing continued maintenance of such insurance shall be on file with the City during the term of this Contract.

d. The City shall be named as an additional insured on each liability policy other than the workers’ compensation policies of the Contractor.

e. The certificates shall provide that the policies shall not be changed or canceled during the life of this Contract without at least 30 days advanced notice being given to the City.
f. Contractor shall be required to provide insurance meeting the requirements of this Paragraph unless Contractor successfully demonstrates to the satisfaction of the City Attorney, in the exercise of his or her discretion, that such insurance is not reasonably available in the market. If Contractor demonstrates to the satisfaction of the City Attorney that such insurance is not reasonably available, the City attorney may approve an alternative form of insurance which is reasonably available in the market which he or she deems to provide the highest level of insurance protection to the City which is reasonably available.

PRE-2004 CG 2010
A. **Section II - Who Is an Insured** is amended to include as an insured the person or organization shown in the Schedule, but only with respect to liability arising out of your ongoing operations performed for that insured.

*****************************************************************************

**NOTICE OF CANCELLATIONS ENDORSEMENT**

All Coverage Parts included in this policy are subject to the following condition: If we cancel this policy for any reason other than non-payment of premium, we will mail advance notice to the person(s) or organization(s) as shown in the Schedule.

<table>
<thead>
<tr>
<th>Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person or Organization (Name and Address)</td>
</tr>
<tr>
<td>City of Duluth Purchasing Division Room 100 City Hall 411 West First Street Duluth MN 55802</td>
</tr>
</tbody>
</table>

City of Duluth Indemnification & Insurance Requirements - Revised May 2015
CONTRACTOR
&
CITY OF DULUTH

THIS AGREEMENT, effective as of the date of attestation by the City Clerk, is made by and between the CITY OF DULUTH, a municipal corporation, hereinafter referred to as the "CITY," party of the first part, and Contractor, address, hereinafter referred to as the "Contractor," party of the second part;

WITNESSETH: That the Contractor and the City agree as follows:

1. The following shall be deemed to be part of this contract:
   a. The annexed resolution and legal advertisement of the City Council.
   b. The bid request and specifications, as modified by irreconcilable language in this written contract.
   c. The bid by Contractor, as modified by irreconcilable language in this written contract.
   d. The performance bond and payment bond certification.
   e. All provisions of law applicable to a contract of this nature.

2. The Contractor agrees to furnish and deliver to the Department all labor, supervision, material, equipment, supplies, insurance, performance bond, payment bond and everything else necessary for general construction of Project at location, all in strict accordance with plans and specifications prepared by design co. or city architect, your bid of $ and resolution no. passed on date. Contractor shall not commence performance of any work under this contract until Contractor receives authorization from the City’s Purchasing Agent in writing and dated.

3. The City agrees to pay progress payments and make final payments to the Contractor as stated in the contract specifications. The total amount payable under this contract shall not exceed dollar amount spelled out ($) unless the contract is modified by formal amendment or change order. Payments under this Agreement shall be made from the following funding and RQ no. Due to the dollar amount of this contract, a Project Labor Agreement is or is not included as part of this contract (City Code Section 2-29).

4. The Contractor shall furnish and maintain in full force and effect until this contract is completely performed by the Contractor, a performance bond and payment bond if and when required by law, or if and when required by the City.

5. Inasmuch as this contract concerns work, materials and equipment needed for the public benefit, the provisions of this contract relating to the time of performance and completion of work and delivery of materials or equipment are of the essence of this contract.

6. The Contractor will defend, indemnify and save the City harmless from all costs, charges, damages, and loss of any kind that may grow out of the matters covered by this contract.
Said obligation does not include indemnification of the City for claims of liability arising out of the sole negligent or intentional acts or omissions of City but shall include but not be limited to the obligation to defend, indemnify and save harmless the City in all cases where claims of liability against the City arise out of acts or omissions of City which are derivative of the negligence or intentional acts or omissions of Contractor such as, and including but not limited to, the failure to supervise, the failure to warn, the failure to prevent such act or omission by Contractor and any other such source of liability. In addition Contractor will comply with all local, state and federal laws, rules and regulations applicable to this contract and to the work to be done and things to be supplied hereunder.

7. Insurance

a. Contractor shall provide the following minimum amounts of insurance from insurance companies authorized to do business in the state of Minnesota, which insurance shall indemnify Contractor and City from all liability described in Paragraph 6 above, subject to provisions below.

(1) Workers’ compensation insurance in accordance with the laws of the State of Minnesota.

(2) Public Liability and Automobile Liability Insurance with limits not less than $1,500,000 Single Limit, and twice the limits provided when a claim arises out of the release or threatened release of a hazardous substance; shall be in a company approved by the city of Duluth; and shall provide for the following: Liability for Premises, Operations, Completed Operations, Independent Contractors, and Contractual Liability.

(3) City of Duluth shall be named as Additional Insured under the Public Liability, Excess/Umbrella Liability* and Automobile Liability, or as an alternate, Contractor may provide Owners-Contractors Protective policy, naming itself and the City of Duluth. Contractor shall also provide evidence of Statutory Minnesota Workers Compensation Insurance. Contractor to provide Certificate of Insurance evidencing such coverage with 30-days’ notice of cancellation, non-renewal or material change provisions included. The City of Duluth does not represent or guarantee that these types or limits of coverage are adequate to protect the Contractor’s interests and liabilities.

*An umbrella policy with a “following form” provision is acceptable if written verification is provided that the underlying policy names the City of Duluth as an additional insured.

(4) If a certificate of insurance is provided, the form of the certificate shall contain an unconditional requirement that the insurer notify the City without fail not less than 30 days’ prior to any cancellation, non-renewal or modification of the policy or coverages evidenced by said certificate and shall further provide that failure to give such notice to City will render any such change or changes in said policy or coverages ineffective as against the City.
(5) The use of an “ACORD” form as a certificate of insurance shall be accompanied by two forms – 1) ISO Additional Insured Endorsement (CG-2010 pre-2004) and 2) Notice of Cancellation Endorsement (IL 7002) or equivalent, as approved by the Duluth City Attorney’s Office.

b. The insurance required herein shall be maintained in full force and effect during the life of this Agreement and shall protect Contractor, its employees, agents and representatives from claims and damages including but not limited to personal injury and death and any act or failure to act by Contractor, its employees, agents and representatives in the negligent performance of work covered by this Agreement.

c. Certificates showing that Contractor is carrying the above described insurance in the specified amounts shall be furnished to the City prior to the execution of this Contract and a certificate showing continued maintenance of such insurance shall be on file with the City during the term of this Contract.

d. Contractor shall be required to provide insurance meeting the requirements of this Paragraph 7 unless Contractor successfully demonstrates to the satisfaction of the City Attorney, in the exercise of his or her discretion, that such insurance is not reasonably available in the market. If Contractor demonstrates to the satisfaction of the City Attorney that such insurance is not reasonably available, the City Attorney may approve an alternative form of insurance which is reasonably available in the market which he or she deems to provide the highest level of insurance protection to the City which is reasonably available.

8. No claim whatsoever shall be made by the Contractor against any officer, agent or employee of the City for, or on account of, anything done, or omitted to be done, in connection with this contract. If this contract is not made in conformity with mandatory provisions of any statute or of the ordinances and charter of the City of Duluth, the Contractor agrees to raise no defense and make no claim against the City on the basis of ratification, laches, estoppel, or implied contract.

9. The Contractor shall not assign, transfer, convey or otherwise dispose of this contract, or his right to execute it, or his right, title or interest in or to it, or any part thereof, without the consent of the City, evidenced by a resolution duly adopted by the City Council. The prohibition contained in this paragraph shall not be deemed to prevent the contractor from subcontracting. Contractor shall remain primarily responsible for all work performed by any subcontractor.

10. The Contractor agrees that in the hiring of common or skilled labor for the performance of any work under this contract, Contractor will not discriminate by reason of race, creed or color, religion, national origin, sex, marital status, status with regard to public assistance, disability or age.

11. The Contractor agrees that Contractor shall not in any manner discriminate against or intimidate or prevent the employment of any person or persons, or on being hired, prevent or conspire to prevent any person or persons from the performance or work under this contract on account of race, creed or color, religion, national origin, sex, marital status, status with regard to public assistance, disability or age.
12. The contractor agrees that, as provided in Minnesota Statutes 16C.05, Subd. 5, contractor's books, records, documents, and accounting procedures and practices are subject to examination by the City or the state auditor for six years from the date of final payment under this contract.

13. This contract may be cancelled or terminated by the City and all moneys due or to become due hereunder may be forfeited for any failure to perform any terms or conditions of this contract including but not limited to any violation of the terms or conditions of Section 10 or 11 of this contract.

14. Any waiver by any party of any provision of this contract shall not imply a subsequent waiver of that or any other provision.

15. This contract is made in the state of Minnesota and shall be construed and interpreted in accordance with the laws of the State of Minnesota. The appropriate venue and jurisdiction for any litigation hereunder shall be in a court located in St. Louis, County, Minnesota, and the parties to this Agreement waive objection to the jurisdiction of this court, whether based on convenience or otherwise.

16. This Agreement constitutes the entire agreement between the City and the Contractor on the subject matter hereof. It may not be changed, modified, discharged or extended except by written instrument duly executed on behalf of the City and the Contractor. The Contractor agrees that no representations or warranties made by the City shall be binding upon the City unless expressed in writing herein.

17. This Agreement shall not be in force and effect, or in any way binding upon the City until the same shall have been approved by the Department Head, signed by the Mayor, attested by the Clerk, and countersigned by the City Auditor.

18. The Contractor unconditionally guarantees to perform all work pursuant to this contract in a good and workmanlike manner, in strict compliance with the specifications and instructions hereto attached, and to the satisfaction of the City of Duluth.

19. This Agreement may be executed in counterparts, each of which shall be deemed to be original and all of which together shall constitute the binding and enforceable agreement of the parties hereto. This Agreement may be executed and delivered by a party by facsimile or PDF transmission, which transmission copy shall be considered an original and shall be binding and enforceable against such party.
Countersigned:

______________________________________
City Auditor
Approved this_______ day of ____________

______________________________________
Department Director
Approved this_______ day of ____________

______________________________________
Purchasing Agent
Approved this_______ day of ____________

______________________________________
Assistant City Attorney
Approved this_______ day of ____________

CITY OF DULUTH-Client
By

______________________________________
Mayor
Attest:

______________________________________
City Clerk
Attested this_______ day of ____________

CONTRACTOR/COMPANY
Contractor
By

______________________________________
Company Representative
Its

______________________________________
Title of Representative
Approved this_______ day of ____________
The following conditions take precedence over any conflicting conditions in this Contract.

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**E-Mail Addresses**

For ease in communication, the e-mail address of the person(s) responsible for preparing certified payroll reports (CPRs) is required from the prime contractor and all subcontractors (regardless of tier). This information will be provided to the project engineer prior to the pre-construction meeting OR with materials required in the Letter of Intent.

**Section I**

**Restrictions on Disbursements**

No money under this Contract shall be disbursed by the City to any Contractor except pursuant to a written contract which incorporates the applicable PART II, Supplementary General Conditions for Federally, State of Minnesota, and/or City Assisted Activities, and unless the Contractor is in compliance with the Federal Agency requirements with regard to accounting and fiscal matters to the extent they are applicable.

**Subcontractors**

(A) The Contractor shall include in any subcontract the clauses set forth in the PART II, Supplementary General Conditions for Federally, State of Minnesota and/or City Assisted Activities in their entirety and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts which they may enter into, together with a clause requiring this insertion in any further subcontracts that may in turn be made.

(B) The Contractor shall not subcontract any part of the work covered by this Contract or permit subcontracted work to be further subcontracted without the City's prior written approval of the subcontractors. The City will not approve any subcontractor for work covered by this Contract who is at the time ineligible under the provisions of any applicable regulations issued by a Federal Agency or the Secretary of Labor, United States Department of Labor, to receive an award of such subcontract.

**Federal Agency Requirements**

Unearned payments under this Contract may be suspended or terminated upon refusal to accept any additional conditions that may be imposed by the Federal Agency at any time; or if the grant, if applicable, to the City under which this Contract is made is suspended or terminated.

**Separability**

If any provisions of this Contract are held invalid, the remainder of this Contract shall not be affected thereby if such remainder would then continue to conform to the terms and requirements of applicable law.

**Property**

Acquisition, use, and disposal of all property, materials and goods acquired as a result of activities made possible by this Contract shall be accomplished in accordance with the applicable provisions of Federal Management Circular (FMC) 74-7, as amended.

**Section 2**

**Miscellaneous Provisions**

(A) **Copyrights.** In the event this Contract results in a book or other copyrightable material, the author is free to copyright the work, but Federal Agency and the City reserve a royalty-free, nonexclusive, and irrevocable license to reproduce, publish or otherwise use, all copyrighted material and all material which can be copyrighted.

(B) **Patents.** Any discovery or invention arising out of or developed in the course of work aided by this Contract shall be promptly and fully reported to the Federal Agency and the City for determination by the Federal Agency as to whether patent protection on such invention or discovery shall be sought and how the rights in the invention or discovery, including rights under any patent issued thereon, shall be disposed of and administered in order to protect the public interests.

(C) **Political Activity Prohibited.** None of the funds, materials, property or services provided directly or indirectly under this Contract shall be used in the performance of this Contract on any partisan political activity, or to further the election or defeat of any candidate for public office.

(D) **Lobbying Prohibited.** None of the funds under this Contract shall be used for publicity or propaganda purposes designed to support or defeat legislation pending before the Congress or the City.

(E) **Prohibition of and Elimination of Lead-Based Paint Hazard.** Notwithstanding any other provision, the Agency and Contractor agree to comply with the regulation issued by the Secretary of Housing and Urban Development set forth in 37 F. R. 22732-3 and all applicable rules and orders issued thereunder which prohibit the use of lead-based paint in residential structures undergoing Federally assisted construction or rehabilitation and require the elimination of lead-based paint hazards. Every contract or subcontract, including paint, pursuant to which such Federally assisted construction or rehabilitation is performed shall include appropriate provisions prohibiting the use of lead-based paint.
(F) **Architectural Barriers Act.** The design for and construction of any facility funded in whole or in part by this Contract shall be in conformance with the American Standard Specification for Making Buildings and Facilities Accessible and Usable by the Physically Handicapped, Number A-117.1-1971, as modified.

(G) **Relocation and Acquisition.** Any relocation or acquisition resulting from activities funded in whole or in part by this Contract shall be in conformance with the provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (40 U.S.C. 4601) and the implementing regulations 24CFR Part 42.

(H) **Prohibition Against Payments of Bonus or Commission.** The assistance provided under this Contract shall not be used in the payment of any bonus or commission for the purpose of obtaining Federal Agency approval for such assistance, or Federal Agency approval of applications for additional assistance, or any other approval or concurrence of a Federal Agency required under this Contract, Federal Law or Federal Regulations thereto; provided, however, that reasonable fees or bona fide technical, consultant, managerial or other such services, other than actual solicitation, are not hereby prohibited if otherwise eligible as project costs.

(I) **Hatch Act.** Where applicable, the Contractor will comply with the provisions of the Hatch Act which limits the political activity of the Contractor’s employees.

### Section 3

**Definitions**

(A) City means the City of Duluth, Contracting Officer, or other persons authorized to act on behalf of the City of Duluth.

(B) Contracting Officer is the delegated representative of the City who has the responsibility for administering the Project.

(C) Contractor means an entity, whether public or private, which furnishes (other than standard commercial supplies, office space or printing services) to the City, products, services or supplies as described in this project Contract.

(D) Federal Agency means the United States, the District of Columbia, and any executive department, independent establishment, administrative agency, or instrumentality of the United States or of the District of Columbia, including any corporation, all or substantially all of the stock of which is beneficially owned by the United States, by the District of Columbia, or by any of the foregoing departments, establishments, agencies, and instrumentalities. The term Federal Agency shall also include the person or persons authorized to act on behalf of said Federal Agency.

(E) Project means the activities to be undertaken by the Contractor as described in this Contract, which from time to time may be amended by mutual consent of the City and Contractor.

(F) Subcontractor means an entity, regardless of tier, which has entered into an agreement with the Contractor or another Subcontractor, to undertake certain Project activities as described in that agreement.

(G) The term labor standards, as used in the Contract, means the requirements of the Davis-Bacon Act, the Contract Work Hours and Safety Standards Act (other than those relating to safety and health), the Copeland Act, and the prevailing wage provisions of the other statutes listed in 20 CFR 5.1.

(H) Work means all labor necessary to produce the construction required by the Contract Documents, all materials and equipment incorporated or to be incorporated in such construction, products, services, or supplies required by the Contract Documents, or any other requirements set forth in the Contract.

(I) Additional Definitions, that are applicable to the Labor Standards provisions - Section 8 - of this Contract can be found in 29CFR5.2 as published by the U.S. Department of Labor and said definitions are hereby incorporated by reference into the provisions of this Contract.

### Section 4

**Environmental Provisions**

(A) The Contractor agrees to follow the regulations, requirements, policies, goals and procedures set forth by the Council on Environmental Quality (CEQ) under provisions of the National Environmental Policy Act (NEPA) (Pub. L. 91-196, 42 U.S.C. 4321 et seq.), Executive Order 11514, and 40 CFR Part 1500.

(B) **Historic Properties.** The Contractor agrees to follow the regulations, requirements, policies, goals, and procedures set forth under provisions of the National Historic Preservation Act of 1966 (Pub. L. 89-665); Preservation of Historic and Archeological Data Act of 1974 (Pub. L. 93-291); Executive Order 11593; 36 CFR, Part 800 and applicable State legislation or regulations.

(C) **Coastal Zones and Wetlands.** The Contractor agrees to follow the regulations, requirements, policies, goals and procedures set forth under provisions of the Coastal Zone Management Act of 1972 (Pub. L. 92-583) and applicable State legislation or regulations.


(E) **Flood Plain.** The Contractor agrees to comply with the provisions set forth in the Flood Disaster Protection Act of 1973 (Pub. L. 93-234) and implementing regulations; Title 24, Chapter X, Subchapter B, National Flood Insurance Program, Executive Order 11296, and Executive Order 11988 relating to the evaluation of flood hazards.

(F) **Air Quality.** The Contractor agrees to comply with provisions set forth in the Clean Air Act (Pub. L. 90-148) and Clean Air Amendments of 1970 (Pub. L. 91-604); and applicable U.S. Environmental Protection Agency implementing regulations.

(G) **Water Quality.** The Contractor agrees to comply with the provisions set forth in the Federal Water Pollution Control Act (Pub. L. 92-500) and applicable U.S. Environmental Protection Agency implementing regulations, and Executive Order 11288 relating to the protection, control, and abatement of water pollution.

(H) **Wildlife.** The Contractor agrees to comply with the provisions of the Fish and Wildlife Coordination Act (Pub. L. 85-264).

### Section 5

**Contract Compliance**

(A) In the event of the Contractor’s noncompliance with the provisions of this Contract or with any of the said regulations, the City may withhold payment(s) until evidence of compliance by the Contractor has been demonstrated, or the Contract may be canceled, terminated or suspended in whole or in part and the Contractor may be declared ineligible for further City contracts.

(B) In the event the Contract is terminated or canceled as a result of noncompliance with any of the provisions of this Contract, the City may subject to bids the remainder of the Project for which this Contract was made. The City shall have the right upon termination or suspension to withhold all further payments under this
Contract to the Contractor. Upon the award of a new contract for the remainder of the Project, the City shall pay to the Contractor an amount no more than the balance remaining due to the Contractor less the sum of the costs incurred by the City which are necessary in preparing the new bid specifications. In the event the amount paid the Contractor prior to the date of termination or cancellation exceeds the full amount of this Contract less the cost of the new contract and the additional costs mentioned above, the Contractor agrees to reimburse the City for such excess amount within ninety days after the new contract is awarded by the above procedures.

(C) Provisions contained in subparagraph (A) and (B) above shall not be interpreted as precluding any authorized Federal, State, or County governmental unit from exercising their legal administrative or other responsibilities in respect to the enforcement by said governmental units of laws or regulations concerning activities of the Contractor.

Section 6
Records

(A) Establishment and Maintenance of Records. Records shall be maintained in accordance with requirements prescribed by the Federal Agency or the City with respect to all matters covered by this Contract. Except as otherwise authorized by the Federal Agency, such records shall be maintained for a period of three years after receipt of final payment under this Contract.

(B) Documentation of Costs. All costs shall be supported by properly executed payrolls, time records, invoices, contracts, or vouchers, or other official documentation evidencing in proper detail the nature and propriety of the charges. All checks, payrolls, invoices, contracts, vouchers, orders, or other accounting documents pertaining in whole or in part to this Contract shall be clearly identified and readily accessible.

Reports and Information

At such times and in such forms as the Federal Agency or the City may require, there shall be furnished to the Federal Agency or the City such statements, records, data and information as the Federal Agency or the City may request pertaining to matters covered by this Contract.

Audits and Inspection

At any time during normal business hours and as often as the City, the Federal Agency and/or the Comptroller General of the United States may deem necessary, there shall be made available to the City, the Federal Agency and/or representatives of the Comptroller General for examination of all its records with respect to all matters covered by this Contract and will permit the City, the Federal Agency and/or representative of the Comptroller General to audit, examine and make excerpts from such records, and to make audits of all contracts, invoices, materials, payrolls, records of personnel, conditions of employment, and other data relating to all matters covered by this Contract.

Section 7
Conflict of Interest and Lobbying

(A) Interest of Members, Officers, or Employees of the City, Members of Local Governing Body, or Other Public Officials. No member, officer, or employee of the City, or its designees or agents, or member of the governing body of the City, during his/her tenure of for one year thereafter, shall have any interest, direct or indirect in any contract or subcontract, or the proceeds thereof, for work to be performed in connection with the Project assisted under this Contract. Any contract in which any of the above indicated individuals becomes directly or indirectly, interested, personally or as a member of a firm, or as an officer, director, or stockholder of a corporation, shall be and become absolutely void; and any money which shall have been paid on such contract by the City may be recovered back from any or all persons interested therein, by a joint action or several actions.

(B) The Contractor agrees that he will incorporate into every contract required to be in writing the following provisions: Interest of Contractors and Employees - The Contractor covenants that he presently has no interest and shall not acquire any interest, direct or indirect, in the Project which would conflict in any manner or degree with the performance of this Contract, and no person having any conflicting interest shall be employed. Any interest on the part of the Contractor or his employees must be disclosed to the Federal Agency and the City. Provided, however, that this paragraph shall be interpreted in such a manner so as not to unreasonably impede any statutory requirements that opportunity be provided for employment of and participation by certain residents of a designated geographical area, if applicable.

(C) Interest of Member or of Delegate to Congress. No member of or Delegate to Congress, or Resident Commissioner, shall be admitted to any share or part of this Contract or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this Contract if made with a corporation for its general benefit.

(D) The Contractor by signing this document certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the Contractor, to any person for influencing or attempting to influence an officer or employee of any 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.

(2) If any funds other than Federal appropriations have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any 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 Contractor shall complete and submit Standard Form -LLL, “Disclosure Form to Report Lobbying,” in accordance with its instructions.

The above 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 section 1332, title 31, U.S. Code. 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.

(E) The parties to this Contract certify and agree that they are under no contractual or other disability which would prevent them from complying with the terms of this Contract.

Section 8
Labor Standards - Physical Improvement Projects

Where applicable, there shall be included in all construction, rehabilitation, alteration or repair contracts with private entities made possible by or resulting from this Contract, the following Labor Standards provisions:

(A) General Requirements.
(1) **Subcontracts.** The Contractor shall include in any subcontract the clauses set forth in Section 8, Labor Standards, in their entirety and also a clause requiring the subcontractors to include these clauses in any Tower tier subcontract which they may enter into, together with a clause requiring this insertion in any further subcontracts that may in turn be made.

(2) The transporting of materials and supplies to or from the site of the Project or Program to which this Contract pertains by the Employees of the Contractor or of any subcontractor, and the manufacturing or furnishing of materials, articles, supplies, or equipment on the site of the Project or Program to which this Contract pertains by persons employed by the Contractor or by any subcontractor, shall for the purpose of this Contract, and without limiting the generality of the foregoing provisions of this Contract, be deemed to be work to which these Labor Standards provisions are applicable.

(3) No person under the age of eighteen years shall be employed on work covered by this Contract.

(4) In connection with the performance of work under this Contract, the Contractor agrees not to employ any person undergoing sentence of imprisonment except as provided by Public Law 89-176, September 10, 1955 (18 U.S.C. 4082 (c) (2)) and Executive Order 11755, December 29, 1973.

(5) The Contractor will permit authorized representatives of the Federal Agency and the City to interview employees during working hours on the job.

(6) No employee to whom the wage, salary, or other Labor Standards provisions of this Contract are applicable shall be discharged or in any other manner discriminated against by the Contractor or any subcontractor because such employee has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or relating to the Labor Standards applicable under this Contract to his employer.

(B) **Safety Standards.** No Contractor or subcontractor contracting for any part of a construction contract shall require any laborer or mechanic, including apprentices and trainees, employed in the performance of the Contract to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous to his health or safety, as determined under construction safety and health standards promulgated by the Secretary of Labor. The Contractor or subcontractor comply with all the rules, regulations, and relevant orders, promulgated by the Secretary of Labor pursuant to Public Law 91-54.

(C) **Davis-Bacon Act - 29 CFR 5.5**

web site: [http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title29/29cfr5_main_02.tpl](http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title29/29cfr5_main_02.tpl)

Refer to Section 10, Page 10 Housing and Urban Development (HUD) form 4010 (06/2009) Ref Handbook 1344.1

City of Duluth “Mini Davis-Bacon”

(D) **City of Duluth - Minimum Wage Ordinance 8940, as Amended.**

(1) On a project (as defined below) funded in whole or in part by federal and/or state funds and/or city of Duluth funds, these local provisions shall prevail in those instances where the requirements of the local provisions are equal to or greater than similar minimum labor standards provisions as set forth in applicable federal and/or state laws and regulations.

(2) In all contracts in excess of $2,000 for projects (as defined below), the Contractor’s particular attention is called to Ordinance 8940, effective June 8, 1989, respectively coded as Article IV of Chapter 2 of the Duluth City Code, and entitled “An Ordinance Pertaining to Wages and Working Hours of Persons on Public Works in the City of Duluth”, as set forth below:

(3) **Definitions.** For the purposes of this section the following words and phrases shall have the meanings respectively ascribed to them in this section:

(a) **Basic hourly rate.** - The hourly wage paid to any employee.

(b) **Prevailing wage rate.** - The basic hourly rate plus fringe benefits prevailing in the city of Duluth as determined by the United States secretary of labor pursuant to the Davis-Bacon act, as amended; provided that whenever employer and employee organizations employing and representing a majority of a class of workers in a particular industry within the city jointly certify that the prevailing basic hourly rate plus fringe benefits of such workers differs from the amount determined by the secretary of labor, the certified rate shall be considered to be the prevailing wage rate for such class of workers in that industry.

(c) **Fringe benefits.** - Employer contribution for health and welfare benefits, vacation benefits, pension benefits, and all other economic benefits other than the basic hourly rate.

(d) **Apprentice.** - An employee who is working under a training program which is approved either by the U.S. Department of Labor Bureau of Apprenticeship & Training or the Minnesota Director of Voluntary Apprenticeship; see apprentice ratios on pages 6-7 and HUD 4010 in Section 10.

(e) **Trainee.** - An employee registered with the U.S. Department of Labor Employment & Training Administration; see HUD 4010 in Section 10.

(f) **Project.** - Erection, construction, demolition, painting, remodeling or repairing of any public building, highway, sidewalk, bridge, water or gas line, sewer and sewage treatment facility or other public work performed under contract with the city.

(g) **Labor, mechanic.** - All persons utilized, employed or working on a project who are doing work usually done by mechanics and laborers, including proprietors, partners, and members of cooperatives.

(4) **Wage Rates and Hours for City of Duluth Projects.**

(a) Any contract which provides for a project of estimated total cost of over $2,000.00 shall contain a stipulation that no laborer, mechanic or apprentice-trainee employed directly upon the project work site by the contractor or any subcontractor shall be permitted or required to work at a rate of pay less than the prevailing wage rate; nor shall any such employee be permitted or required to work more than 8 hours in any work day OR 40 hours in any work week unless he is paid at a rate of at least 1½ Times such basic hourly rate for all hours in excess of 8 per day OR 40 per week [in other words: all hours in excess of eight per day and all hours after 40 per week] and unless he receives fringe benefits that are at least equal to those in the prevailing wage rate; provided that whenever employer and employee organizations employing and representing a majority of a class of workers in a particular industry within the city jointly certify that the maximum number of hours that such persons may work under existing labor agreements before overtime wages must be paid differs from the hours specified in this paragraph, the maximum number of hours specified in such labor agreements shall be substituted for those specified above in applying the provisions of this paragraph to such workers.

(b) The word “or” in the state statute and the city of Duluth Code refers to the number of hours worked in any one week or, in the alternative, the number of hours worked in any one day in the week (the days in one week being totaled for reporting purposes); the law requires use of the alternative which results in the higher number of overtime hours for each employee whose time is being reported.

**EXCEPTIONS:** Federal government funding only and HUD (Housing and Urban Development) funding - see point “e’
In summary, if a project is solely funded with city of Duluth monies, city ordinance 8940 as amended allows the employees to work four ten-hour days and be paid at the regular hourly rate for those ten hours; exceeding hours must be paid at the overtime rate. An employer may not withhold overtime payment exclusively until 40 hours per week have been worked. Daily overtime must be paid as it is earned.

- The base workweek hours must be clearly indicated on each payroll. Employees may be assigned a different workweek; however, that must be clearly marked beside the employees’ names.

The following are examples of how these rules apply to different situations.

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State Funded with or without federal funding Projects

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City-only Funded Projects (4 ten-hour days)

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Overtime Calculations

Minnesota Statutes Chapter 177.42, subd 4 specifies that the prevailing hours of labor may not be more than eight hours per day or more than 40 hours per week (as stated above in (b), the City of Duluth does allow for ten hours per day/40 hours per week with City funding only. Example: hours exceeding eight per day are paid at 1.5 times the rate in the contract’s wage decision OR the base rate the employee is being paid if it is higher than the required base rate; once 40-hours in any one week are attained, all hours exceeding that 40 are paid at 1.5 times the rate in the project contract’s wage decision. See example (1) and (2) below.

Minnesota Statutes Chapter 177.42, subd 5 defines the hourly basic rate as the hourly wage paid to any employee. (subd 6): The prevailing wage rate means the hourly basic rate of pay plus the contribution for health and welfare benefits, vacation benefits, pension benefits, and any other economic benefit paid to the largest number of workers engaged in the same class of labor within the area...

An employer may pay a lower regular time/straight time hourly rate and higher fringe benefit rate--to a bona fide plan--than stated in the contract’s wage decision providing the total of the two rates is equal to or greater than the total in the wage decision; however, the OVERTIME rate must be paid on the higher rate in the contract’s wage decision.

(1) Overtime Calculation with Fringe Benefits Paid to Bona Fide Plans

For overtime purposes, an employer paying higher fringe benefits to a bona fide plan and paying a lower hourly rate MUST calculate the overtime on the higher hourly rate as stated in the project contract’s wage decision. The fringe benefit amount may be reduced to reflect any increase in the total prevailing wage package if the plan administrator permits such a reduction. This acceptance must be verified in writing by the plan administrator and attached to the appropriate certified payroll report.

(2) Overtime Calculation with Cash Payment of Fringe Benefits

When the fringe benefit is paid directly to an employee, the prevailing base rate and the fringe benefit rate as established in the project contract’s wage decision for a specific classification are totaled to arrive at the hourly rate. Overtime is calculated at 1.5 x the base rate of the wage decision with the fringe benefit amount added to that rate: base rate of the wage decision x 1.5 + fringe benefit rate = overtime rate.

Contract Work Hours and Safety Standards Act

[Refer to page two of this document.] All projects valued at $100,000 or greater are subject to this Act. As with Minnesota Statutes Chapter 177.43, the overtime rate is calculated as in items one and two above OR (e) below.

(d) A contractor shall not reduce a worker’s private, regular rate of pay when the wage rate certified by the U.S. Department of Labor or the Minnesota Department of Labor & Industry is less than the worker’s normal hourly wage [Minnesota Statute 181.03 subdivision 1(2)].
(e) Regular Time & Overtime Definitions

• **State of Minnesota** funded projects with or without federal funding *only allow for five eight-hour days per week at regular time.* Overtime is calculated at a rate not less than time and one-half (1.5) of the prevailing base rate as stated in the wage decision OR the base rate the employee is being paid if it is higher than the required base rate—plus the straight time fringe benefit amount.  *(see (1) above for example when a lower base rate and higher fringe are paid)*

• **City of Duluth** funded projects do permit four ten-hour work days at regular time—see point 4-a, b for stipulations. Overtime is calculated at a rate not less than time and one-half (1.5) of the prevailing base rate as stated in the wage decision—OR the base rate the employee is being paid if it is higher than the required base rate—plus the straight time fringe benefit amount.  *(see (1) above for example when a lower base rate and higher fringe are paid)*

• **Federal** funded only projects allow overtime pay for hours worked in excess of 40 in a workweek at a rate not less than time and one-half (1.5) of the prevailing base rate as stated in the wage decision OR the base rate the employee is being paid if it is higher than the required base rate—plus the straight time fringe benefit amount.

• **HUD** funded projects allow overtime pay for hours worked in excess of 40 in a workweek at a rate not less than time and one-half (1.5) of the prevailing base rate as stated in the wage decision OR the base rate the employee is being paid if it is higher than the required base rate—plus the straight time fringe benefit amount.

**When a combination of funding sources are included in any one project, the most strict requirements will apply.**

(f) The minimum hourly prevailing wages are contained in each project specification. When both federal (general decision rates from the U. S. Department of Labor) and State of Minnesota prevailing wages for state funded construction projects from the Minnesota Department of Labor and Industry are used, the prime contractor and all subcontractors including trucking operations, are required to **pay the higher of the two wages** for all laborers and mechanics [Mn/DOT Contract Administration Manual, Section 5-591.320].

(g) The prime contractor and any lower-tier subcontractor shall review all wage decisions and compensate a worker according to the type of work performed and at the rate that is the greatest.

(h) State of Minnesota prevailing wages typically list two rates for each classification with two effective dates. Should any City of Duluth contract continue to and past the second effective date, that rate and fringe benefit will be in effect through the remainder of the project.

(i) **Mn/DOT Statement of Compliance is required on all city of Duluth construction projects (regardless of the project funding source) with each weekly certified payroll report.**  web site:  [http://dot.state.mn.us/const/labor/forms.html](http://dot.state.mn.us/const/labor/forms.html)

(j) All contracts for city projects shall have applicable schedules of prevailing wage rates set forth in the contract. Schedules of applicable prevailing wage rates shall be posted on all project job sites for public review and shall be protected from the weather.

(k) Employees on projects shall be paid at least weekly. Fringe benefits shall be paid either in cash or to an employee benefit plan that has been approved by the U.S. Department of Labor.  ■ The fringe benefit package is an integral portion of the prevailing wage.  Should the prime contractor or any subcontractor (regardless of tier) become delinquent with any fringe benefit plan administrator’s requirements for monthly payment, the monthly estimate(s) may be withheld until the plan payments are made current.  *(city ordinance 8940 6-18-89 plus amendments)*

See MnDOT Specification 1906 on page nine and Section 5 of this document: Contract Compliance.  
See Statement of Compliance and Certified Payroll Report requirements in Section 10, HUD 4010 and web sites in Section 14, Forms.

(l) Any contractor or subcontractor working on a project shall furnish the City with **original** certified payroll reports with **original signatures** relating to the project.  Such certified payroll reports shall be submitted weekly on U.S. Department of Labor standard forms (WH-347) or their equivalent—using the same format—to the City of Duluth Labor Standards representative.  All City of Duluth funded projects must have the base workweek hours indicated on the certified payroll form and/or beside each employee’s name (should some employees be working different base workweeks).

(m) No contractor or subcontractor working on a project shall evade or attempt to evade the provisions of this section through the use of non-recognized training programs. The only employees involved in training programs that shall be allowed to work on projects covered by this section shall be apprentice-trainees as defined by this article.

(n) Any person violating the provisions of this section shall be guilty of a misdemeanor with each day of violation constituting a separate offense. In addition, if the prevailing wage rate and accompanying fringe benefit rate is not paid to employees working on a project, the City of Duluth may withhold contract payments to the prime contractor until such deficiencies are corrected. Should fringe benefits be paid to authorized Plans, the payments must be made within the demands of those Plans. Delinquencies may result in withholding of project funds to the prime contractor.

(o) This section shall not apply to contracts for projects where the total cost of the project is less than $2,000.00; nor to materialmen who do no more than deliver materials to the work site, except that this section shall apply to employees who deliver asphalt, concrete or mineral aggregate such as sand, gravel or stone where such material is incorporated into the project by depositing the material substantially in place, either directly or through spreaders, from the transporting vehicle.

(5) **Helpers**

A helper may perform work only if the helper classification is specified and defined in the federal wage decision and/or State of Minnesota wage decision incorporated into the project contract.  Without such a helper classification, the contractor must assign a job classification that is the “same or most similar” [Minnesota Statute 177.44, subdivision 1] and compensate the helper for the actual work performed regardless of the helper’s skill level.

(6) **Apprentice Ratios**

Journeyworkers must be on site with the apprentices and their hours must match.

**FUNDING SOURCE:**

City of Duluth and State of Minnesota with or without Federal funding

• Apprentices are not permitted to work alone under any circumstances.
• Working foremen are acceptable as a journeyworker PROVIDING he/she is in the same classification.  » Example: carpenter foreman and carpenter apprentice
• Ratios are determined by the trade’s labor agreement.
• In the absence of ratio language, the following State of Minnesota apprenticeship ratios will be applied:

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<th>Apprentice : Journeyworker</th>
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<th>3:7</th>
<th>4:10, etc.</th>
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• Employees working in excess of the allowable ratio must be paid the full journeyworker compensation.
• Out-of-ratio apprentices will be calculated beginning with the apprentice at the highest level of training and, then, to less senior apprentices in their rank order.
• Should two or more out-of-ratio apprentices have the same level of training, whoever was on the work site first will receive journeyworker pay; if the apprentices at the same level of training began work on the project site at the same time, hours worked out-of-ratio for which restitution is due will be divided among those apprentices.

Examples:
- Four apprentices working unsupervised are on site: [4:0]
- Ratio calls for four apprentices and ten journeyworkers: [4:10]
  Correction: all apprentices will receive the full journeyworker compensation as apprentices are not permitted to work alone.
- Three apprentices and two journeyworkers are on site: [3:2]
- Ratio calls for three apprentices and seven journeyworkers: [3:7]
  Two journeyworkers may accompany only one apprentice; therefore, the two highest level apprentices are paid the full journeyworker compensation.
  Even though this particular job has three apprentices—the second journeyworker is a mute point; a third journeyworker would also be a mute point in this example.
  Correction: the two highest level apprentices are paid the full journeyworker compensation and the third lower level apprentice is considered in ratio.

HUD (CDBG) and Federal funding only
• Apprentices are not permitted to work alone unless the U. S. Department of Labor-approved agreement allows that practice.
• Working foremen are acceptable as a journeyworker PROVIDING he/she is in the same classification.
• Ratios are determined by the trade’s U. S. Department of Labor-approved agreement.
• In the event of the absence of ratio language in the applicable agreement, the Minnesota Department of Labor ratio of one apprentice for the first journeyworker and one apprentice for each three journeyworkers thereafter will be applied, (i.e., 1:1, 2:4, 3:7, 4:10, etc.).

• The legal apprentices are those who first came to work on the job site; in the event that all apprentices begin work on the project site at the same time, hours worked out-of-ratio for which restitution is due will be divided among the apprentices.
• Time cards will be required to substantiate the start times.
• Employees working in excess of the allowable ratio--or for which U. S. Department of Labor-apprentice agreement/certificate is not provided--must be paid the full journeyworker compensation.

Examples:
- Four apprentices and one journeyworker are on site: [4:1]
- Ratio calls for four apprentices and ten journeyworkers: [4:10]
  The first apprentice on site is considered in ratio as one journeyworker may only accompany one apprentice [1:1]; this particular job has four apprentices.
  Correction: the second through the fourth apprentices coming on site are paid the full journeyworker compensation.
- Six apprentices and two journeyworkers are on site: [6:2]
- Ratio calls for six apprentices and sixteen journeyworkers: [6:16]
  The first apprentice on site is considered in ratio as two journeyworkers may only accompany one apprentice; this particular job has six apprentices—the second journeyworker is a mute point.
  Correction: the second through sixth apprentices coming on site are paid the full journeyworker compensation.

(7) Poster Boards
The prime contractor must construct and display a poster board, which contains all required posters, is legible and is accessible to all workers from the first day of work until the project is 100% complete. Posters must be protected from the weather. Prime contractors are not allowed to place a poster board at an off-site facility location.

(8) Trucking Issues

a) For the purpose of sections seven and eight, the term “owner” includes all persons having an ownership interest in the trucking entity or a partnership interest in the trucking entity and has a legal and rightful title to the vehicle(s) or has an approved lease on the vehicle(s). “Operate” means the owner either physically drives the vehicle or hires another to physically drive the vehicle; yet, maintains the right to direct the day-to-day operations of the vehicle.

b) Trucking Operations Definitions: See MN Rule 5200.1106 web site: [https://www.revisor.mn.gov/rules/?id=5200.1106](https://www.revisor.mn.gov/rules/?id=5200.1106)

Independent Trucking Operator: an individual or partnership who owns or holds a vehicle under lease and who contracts that the vehicle and the owner’s services to an entity which provides construction services to a public works project. The individual owns or leases and drives the equipment, is responsible for the maintenance of the equipment, bears all operating costs, determines the details and means of performing the services, and enters into a legally binding agreement that specifies the relationship to be that of an independent contractor and not that of an employee.

Multiple Truck Operations: any legal business entity that owns more than one vehicle and hires the vehicles out for services to brokers or contractors on public works projects. The owners of a trucking firm may either drive the vehicles or hire employees to drive the vehicles. Employee drivers are subject to the appropriate prevailing wage rate. The owner driving a vehicle is obligated to account for the value of his/her services as a driver at the appropriate prevailing wage.

Partnerships: a legal business entity where two or more individuals hold vehicles under lease and contract those vehicles and their services to an entity which provides construction services to a public works project. The partners own or lease the equipment, are responsible for maintenance and all operating costs, drive the equipment, determine the details and means of performing the services, and enter a legally binding agreement that specifies the
relationship to be that of a partner and not that of an employee. All partners are subject to the appropriate prevailing wage per city of Duluth ordinance 8940 as amended.

Corporation: any legal business entity that owns or leases vehicles to provide construction services to public works projects. All individuals are employees of the corporation and subject to the appropriate prevailing wage regardless of title or position.

Broker: an individual or firm who (activities include, but are not limited to):
• contracts to provide trucking services [equipment and driver] in the construction industry to users of such services, such as prime contractors and various subcontractors of the prime;
• contracts to obtain services from other trucking operations and dispatches them to various assignments;
• receives payment from the users (such as prime contractors and various subcontractors) in consideration for the trucking services provided; and
• makes payment to the providers (truck operating so contracted with) for their services.

(9) Specific documentation from trucking operations.

Independent Trucking Operators
The owner/operator of a truck must submit a copy of his/her commercial driver’s license (CDL), cab card, and insurance certificate for each truck the owner/operator drives on each construction project before commencing work on that project. These documents must be sent to the prime contractor who will then forward the material to Labor Standards, Engineering Division at the City of Duluth.

Multiple Truck Operators
Weekly certified payrolls and corresponding prevailing wages plus fringe benefit package will be required for each project where trucks are operating. This covers the owner plus all employees performing work on the project.

Partnerships
Weekly certified payrolls and payment of corresponding prevailing wages plus fringe benefit packages will be required for each project where trucks are operating. This covers all partners of the organization who perform work on the project. Each partner performing work on a project must submit a copy of his/her commercial driver’s license (CDL), cab card, and insurance certificate for the truck being operated with that weekly certified payroll. It is not necessary to repeat such supporting documentation until a different truck is used and/or certificates or licenses have expired. Employees of the partnership are always reported on a weekly certified payroll and paid the appropriate prevailing wage plus fringe benefit package for the work being performed.

Corporations
All persons employed by the corporation are subject to receive payment of the prevailing wage plus the fringe benefit package for the work performed on a project regardless of title or position. Weekly certified payrolls must be submitted for all work performed on the project.

Brokers
Truck ownership and a bonafide contract between the broker and another trucking operation, a prime contractor, or a subcontractor must be identified. Paperwork must be submitted with the month end trucking report to the city of Duluth Labor Standards representative - Engineering. Certified payrolls are not required when the above documentation is provided and approved.

(10) Month End Trucking Report - ONLY REQUIRED WITH STATE OF MINNESOTA FUNDING

The Minnesota Department of Transportation Month End Trucking Report Form A and Form B plus Minnesota Department of Transportation Month End Trucking Report Statement of Compliance are only required on state funded projects. A guide for completing the forms including definitions and the reports, themselves, may be downloaded from: www.dot.state.mn.us/const/labor/forms.html

Payment to the prime contractor may be withheld until documentation is received and approved.

(11) Truck Rental Rates - ONLY REQUIRED WITH STATE OF MINNESOTA FUNDING

Truck rental rates are listed in the prevailing wage section of the project specifications.

(12) Minnesota Rules 5200.1105 and 5200.1106

These rules are incorporated into this supplementary general conditions part II by reference and are found on these web sites: www.revisor.mn.gov/rules/?id=5200

(13) Truck Axles web site: https://www.revisor.mn.gov/rules/?id=5200.1100

Per Minnesota Rules 5200.1100 Master Job Classifications, a truck “unit” refers to all axles including the steering axle. A tag axle is also counted as one of the axles. Examples: four rear axles plus one steering axle = five axles total, one rear axle plus one steering axle = two axles total

(14) Non-Compliance and Enforcement

a) The prime contractor shall be liable for any unpaid wages to its workers or those of its lower-tier subcontractors, trucking companies/Multiple Truck Owners (MTO’s) and/or Independent Truck Owner/Operator (ITO’s) [MnDOT Standard Specifications for Construction, Section 1801].
b) See Section 9, MnDOT Specification 1906 Partial Payments and Section 5, page two of this document.
c) City of Duluth ordinance 8940 as amended.

(15) IC-134 form - Withholding Affidavit for Contractors

The IC-134 form will be required from all Multiple Truck Operators, Partnerships, and Corporations performing trucking services on a project before the retainage or all remaining funds can be released. Web site for completing form online: www.mndor.state.mn.us

The form, itself, is found at: and www.taxes.state.mn.us/Forms_and_Instructions/ic134.pdf

(16) Owners, Supervisors, Foremen listed on certified payrolls.

All persons working on a City of Duluth project including owners, partners, supervisors, salaried persons, and working foremen who perform laborer and/or mechanic work shall be reported on the weekly certified payroll reports including all data required of any laborer or mechanic. (ordinance 8731, 6/24/85 and 8940 as amended).
(17) **Supporting documentation.**

At his/her discretion, the City of Duluth employee responsible for prevailing wage labor standards may demand proof of payment of the prevailing wage which may include copies of a payroll register, itemized time sheet and matching cancelled check, or any other supporting documents as stipulated. Payment to the prime contractor may be withheld until documentation is received and approved.

(18) **Kickbacks from Public Works employees prohibited.**

No contractor working on a project or other person shall, by force intimidation, or threat of termination of employment, cause any employee working on a project to give up any part of the compensation to which he is entitled under his contract of employment.

Section 9

**Minnesota Department of Transportation Specification 1906 Partial Payments**

**Process For “Withholding Contract Monies” and “Default and Termination of a Contract” 11/5/04**

Mn/DOT Specification 1906 Partial Payments describes the Commissioner’s authority to withhold funds to protect the Department’s interests. In addition, Specification 1808 Default and Termination of a Contract describes the Commissioner’s authority to take the prosecution of the work out of the hands of the Contractor.

Additionally, on projects funded in whole or part with federal funds and in accordance with the Required Contract Provisions Federal-Aid Construction Contracts Form – 1273, Section IV, Subpart 6, “Withholding”, incorporated into federal aid contracts, the Contracting Officer 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.

However, the Department must give the Contractor, and it’s Sureties due notice prior to exercising these authorities. The withholding of contract funds, in accordance with Specification 1906 or the Required Contract Provisions Federal-Aid Construction Contracts Form – 1273, Section IV, Subpart 6, “Withholding”, should be implemented as soon as a possible prevailing wage violation is recognized. However, Default and Termination of a Contract, in accordance with Specification 1808, should only be exercised as a “last resort” if the Contractor is not willing to comply.

**Definitions**


**Commissioner:** The Commissioner of the Minnesota Department of Transportation, or the chief executive of the department or agency constituted for administration of Contract work with its jurisdiction.

**Contractor:** The individual, firm or corporation 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.

**Department:** The Department of Transportation or 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.

(From 1273 - 29 CFR, Part 5.1, Definitions)

**Contracting Officer:** The individual, a duly appointed successor or authorized representative who is designated and authorized to enter into Contracts on behalf of the Federal Agency and/or the City of Duluth.

**Important Considerations**

1. Upon completion of the work under a contract, the department should consider issuing the final voucher as soon as possible. Failure to finalize a contract expeditiously could result in subsequent claims that would prevent the department from finalizing the contract. However, before the issuance of the final voucher, the department must be able to ensure that the terms of the contract have been satisfied. Failure on the part of the department to ensure compliance could result in the Mn/DOT state aid division retaining funds from the department in accordance with Minnesota Rules 8820.3000, subpart 5.

2. On every contract, the department should withhold the final retainage in accordance with the following guidelines: (1) if the total amount of the contract is $1,000,000 or more, the department should retain funds not more than $50,000, (2) if the total amount of the contract is less than $1,000,000, the department should retain 5% of the total contract, (3) retainage should be withheld until the department can ensure that the contractor has met the terms of the contract or until the finalization of the contract.

3. This guide specifies that the department verbally notify the bonding company early in the process. Generally, as a “rule of thumb”, notifying the bonding company is usually the “last resort”. However, the justification for the early notification is related to the language found in Minnesota statute 574.31, subdivision 2, which summarizes that if an individual or the department does not submit a claim on the payment bond within 120 days after the completion of work under the contract, the claim can be denied.

The following are general guidelines that should be followed prior to placing a Contractor in default:

**Step 1:** Upon verbal or written notification that a possible prevailing wage violation exists, the Department should give written notice to the Contractor regarding the nature of the claim, along with the Department’s intent to withhold monies until the claim is investigated and determined to be in compliance. Additionally, the Department should inform the Contractor that the bonding company has been verbally notified of the claim. Please be aware, the Department should ensure employee confidentiality at all times.

**Step 2:** Upon a preliminary determination surrounding the financial extent of the claim, the Department should consider retaining a “reasonable” portion of one or more partial estimates in accordance with Mn/DOT’s 2000 Standard Specifications for Construction, Section 1906; or on federal aid contracts, in accordance with the Required Contract Provisions Federal-Aid Construction Contracts Form – 1273, Section IV, Subpart 6, “Withholding”.

**Step 3:** If it is determined that the claim is valid, the Department should schedule a meeting with the Contractor and attempt to resolve the matter. If the claim is determined to be invalid, the Department should release any partial estimates that may have been held as a result of the claim. However, the Department should continue to withhold the final retainage in accordance with the above-mentioned: Important Considerations, 7.

**Step 4:** If resolution cannot be obtained through a meeting, the Department should order the Contractor, in writing, to complete their obligations under the contract. The letter should clearly state the circumstances under which the Department has deemed that the Contractor has not met the terms of the contract. Additionally, the Department should include a reasonable deadline for this obligation to be completed. A copy of this letter should be forwarded to the Surety, District State Aid Engineer (DSAE), Labor Compliance Unit and the Department’s Attorney.

**Step 5:** In the event that the Contractor does not respond to the Department’s written order, the Department should send a similar letter, requesting that the Contractor respond immediately, in writing, regarding the Contractor’s intention to comply or not comply with the order. A copy of this letter should be forwarded to the Surety, District State Aid Engineer (DSAE), Labor Compliance Unit and the Department’s Attorney.

**Step 6:** If the Department still does not get a proper response from the Contractor, the Department should write another letter, addressed to both the Contractor and the Surety, specifying all the facts of the alleged breach, demanding that the Contractor, or its Surety, respond satisfactorily within 10 days or the Department may exercise its authority to Default and Terminate the Contract in accordance within DOT’s 2000 Specifications for Construction, Section
1808. It's important to provide sufficient detail so that the Surety understands the situation. This notification should be sent by certified mail. A copy of this letter should be forwarded to the Surety, District State Aid Engineer (DSAE), Labor Compliance Unit and the Department’s Attorney.

Step 7: If the Contractor or Surety is unresponsive after 10 days, the Department should consult with their attorney to consider proceeding with Default and Termination of the Contract.

Step 8: Upon termination of the contract, the Department provides a written order to the Surety, requiring the Surety to bring resolution to the prevailing wage violation.

Step 9: The Department places the Contractor on a Non-Responsible Bidder’s List and rejects any future awards.

Section 10

Previous editions are obsolete  Page 1 of 5 form HUD-4010 (06/2009) ref. Handbook 1344.1

Applicability

The Project or Program to which the construction work covered by this contract pertains is being assisted by the United States of America and the following Federal Labor Standards Provisions are included in this Contract pursuant to the provisions applicable to such Federal assistance.

A. 1. (i) Minimum Wages. 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 l(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 29 CFR 5.5(a)(1)(iv); 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 confirmed under 29 CFR 5.5(a)(1)(ii) 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.

(ii) (a) Any class of laborers or mechanics 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. HUD shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination;
(2) The classification is utilized in the area by the construction industry; and
(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(b) If the contractor and the laborers or mechanics to be employed in the classification (if known), or their representatives, and HUD or its designee 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 HUD or its designee to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB control number 1215-0140.)

(c) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and HUD or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), HUD or its designee shall refer the questions, including the views of all interested parties and the recommendation of HUD or its designee, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

(d) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(iii)(b) or (c) of this paragraph, 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.

(iii) 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.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part Previous editions are obsolete Page 2 of 5 form HUD-4010 (06/2009) ref. Handbook 1344.1 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 applicable standards of the Davis-Bacon Act.

2. Withholding. HUD or its designee 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, HUD or its designee may, after written notice to the contractor, sponsor, applicant, or owner, 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. HUD or its designee may, after written notice to the contractor, disburse such amounts withheld for and on account of the contractor or subcontractor to the respective employees to whom they are due. The Comptroller General shall make such disbursements in the case of direct Davis-Bacon Act contracts.
3. (i) Payrolls and basic records. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work 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 (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 (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 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. (Approved by the Office of Management and Budget under OMB Control Numbers 1215-0140 and 1215-0017.)

(ii) A contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant sponsor, or owner, as the case may be, for transmission to HUD or its designee. 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/whd/wh347.pdf 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 HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant sponsor, or owner, as the case may be, for transmission to HUD or its designee, the contractor, 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 subparagraph 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 HUD or its designee. (Approved by the Office of Management and Budget under OMB Control Number 1215-0149.)

(b) Each payroll 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:

(1) That the payroll for the payroll period contains the information required to be provided under 29 CFR 5.5 (a)(3)(i), the appropriate information is being maintained under 29 CFR 5.5(a)(3)(i), and that such information is correct and complete;

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(2) 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 29 CFR Part 3;

(3) 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 under the applicable wage determination incorporated into the contract.

(c) 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 subparagraph A.3.(ii)(b).

(d) 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.

(iii) The contractor or subcontractor shall make the records required under subparagraph A.3.(i) available for inspection, copying, or transcription by authorized representatives of HUD or its designee or the Department of Labor, and shall permit such representatives to interview employees working during the years on the job. If the contractor or subcontractor fails to submit the required records or to make them available, HUD or its designee may, after written notice to the contractor, sponsor, applicant or owner, 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.

(i) Apprentices. 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 performed by the apprentice in the project in a locality other than that in which its program is registered. Any worker who is employed as stated above, shall 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, apprentices 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.

(ii) Trainees. 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 an individually registered in a program which has received prior approval, evidence of 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 journeymen 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

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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

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the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the 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.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under 29 CFR Part 5 shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

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 will insert in any subcontracts the clauses contained in subparagraphs 1 through 11 in this paragraph A and such other clauses as HUD or its designee may by appropriate instructions require, and a copy of the applicable prevailing wage decision, and also a clause requiring the subcontractors to include these clauses 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 this paragraph.

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 HUD or its designee, the U.S. Department of Labor, or the employees or their representatives.

10. (i) Certification of Eligibility. 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) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(ii) 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) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001. Additionally, U.S. Criminal Code, Section 1 01 0, Title 18, U.S.C., “Federal Housing Administration transactions”, provides in part: “Whoever, for the purpose of . . . influencing in any way the action of such Administration . . . makes, utters or publishes any statement knowing the same to be false . . . shall be fined not more than $5,000 or imprisoned not more than two years, or both.”

11. Complaints, Proceedings, or Testimony by Employees. No laborer or mechanic to whom the wage, salary, or other labor standards provisions of this Contract are applicable shall be discharged or in any other manner discriminated against by the Contractor or any subcontractor because such employee has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or relating to the labor standards applicable under this Contract to his employer.

8. Contract Work Hours and Safety Standards Act. The provisions of this paragraph B are applicable where the amount of the prime contract exceeds $100,000. 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 the individual is employed on such work to work in excess of 40 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 40 hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in subparagraph (1) of this paragraph, 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 subparagraph (1) of this paragraph, 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 40 hours without payment of the overtime wages required by the clause set forth in sub-paragraph (1) of this paragraph.

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(3) Withholding for unpaid wages and liquidated damages. HUD or its designee 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 contract, 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 subparagraph (2) of this paragraph.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraph (1) through (4) of this paragraph 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 subparagraphs (1) through (4) of this paragraph.

C. Health and Safety. The provisions of this paragraph C are applicable where the amount of the prime contract exceeds $100,000.
(1) No laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health and safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation.

(2) The Contractor shall comply with all regulations issued by the Secretary of Labor pursuant to Title 29 Part 1926 and failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act, (Public Law 91-54, 83 Stat 96), 40 USC 3701 et seq.

(3) The contractor shall include the provisions of this paragraph in every subcontract so that such provisions will be binding on each subcontractor. The contractor shall take such action with respect to any subcontractor as the Secretary of Housing and Urban Development or the Secretary of Labor shall direct as a means of enforcing such provisions.

Section 11
Equal Opportunity Laws and Regulations

(A) In addition to Contract specifications set forth below, the Contractor shall conduct and administer this Contract in compliance with:

1. Title VI of the Civil Rights Act of 1964 (Pub. L. 88-352) and implementing regulations issued at 24 CFR Part 1;
2. Title VIII of the Civil Rights Act of 1968 (Pub. L. 90-284), as amended, and implementing regulations;
3. Section 109 of the Housing and Community Development Act of 1974, as amended; and the regulations issued pursuant thereto (24 CFR Section 570.601);
5. Executive Order 11246, as amended by Executive Order 11375 and 12086 and implementing regulations at 41 CFR Chapter 60;
6. Executive Order 11063, as amended by Executive Order 12259 and implementing regulations at 24 CFR Part 107;
7. Section 504 of the Rehabilitation Act of 1973 (Pub. L. 93-112), as amended, and implementing regulations when published for effect;
8. The Age Discrimination Act of 1975, as amended, (Pub. L. 94-135) and implementing regulations when published for effect;

Equal Opportunity and Affirmative Action

(A) Contractors and Subcontractors that have a work force in excess of fifty (50) employees and a contract in excess of $50,000.00 shall prepare and maintain an appropriate affirmative action plan in accordance with the provisions of 41 CFR 60 “Compliance Responsibility for Equal Opportunity”.

(B) Non-segregated Facilities. The Contractor shall certify that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The Contractor covenants that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. As used in this paragraph the term “segregated facilities” means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, creed, religion, national origin, ancestry, age, marital status, status with respect to public assistance, and/or disability because of habit, local custom, or otherwise.

General Provisions Against Discrimination

(A) In all hiring or employment made possible by or resulting from this Contract, there:

1. will not be any discrimination against any employee or applicant for employment because of race, color, creed, religion, national origin, ancestry, age, sex, marital status, status with respect to public assistance, and/or disability.

2. affirmative action will be taken to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, creed, religion, national origin, ancestry, age, sex, marital status, status with respect to public assistance, and/or disability. This requirement shall apply to, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; lay-off or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. There shall be posted in conspicuous places available to employees and applicants for employment, notices setting forth the provisions of this clause. All solicitations or advertisements for employees shall state that all qualified applicants will receive consideration for employment without regard to race, color, creed, religion, national origin, ancestry, age, sex, marital status, status with respect to public assistance, and/or disability.

(B) No person in the United States shall, on the grounds of race, color, creed, religion, national origin, age, sex, marital status, status with respect to public assistance, and/or disability, be excluded from participation in, be denied the benefits of, or be subject to discrimination under any program or activity made possible by or resulting from this Contract. The Contractor and each employer will comply with all requirements imposed by or pursuant to the regulations of the Federal Agency effectuating Title VI of the Civil Rights Act of 1966. The Contractor will note this requirement in all solicitations or advertisements for employees. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(C) The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice advising the labor union or workers’ representative of the Contractor’s commitments under these provisions, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(D) The Contractor hereby agrees that he will incorporate 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 pursuant to this Contract, the equal opportunity clause which is a part of these Contract Documents.

(E) The Contractor further agrees that he will be bound by the equal opportunity clause and other provisions of 41 CFR Chapter 60, with respect to his own employment practices when he participates in federally assisted construction work: Provided: That of the Contractor 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. Also, the Contractor will make his files available to inspection by appropriate government agencies and shall furnish those reports as may be required by said agencies.

(F) The Contractor agrees that he will assist and cooperate actively with the Federal Agency and the Secretary of Labor in obtaining the compliance of subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that he will furnish the Federal Agency and the Secretary of Labor such information as they may require for the supervision of such compliance, and that he will otherwise assist the Federal Agency in the discharge of its primary responsibility for securing compliance.
The Contractor further agrees that he will refrain from entering into any contract or any contract modification subject to Executive Order 11246 of September 24, 1965, with a subcontractor debarred from, or who has not demonstrated eligibility for, Government contracts and federally assisted construction contracts pursuant to the Executive Order. In addition, the Contractor agrees that if he fails or refuses to comply with these undertakings, the City or the Federal Agency may take any or all of the following actions: Terminate or suspend in whole or in part this Contract; refrain from extending any further assistance to the Contractor under the Project with respect to which the failure or refusal occurred until satisfactory assurance of future compliance has been received from such Contractor and refer the case to the Department of Justice for appropriate legal proceedings.

Affirmative Action - "Construction Contracts" over $10,000
Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity
(Executive Order 11246)

1. The Offeror’s or Bidder’s attention is called to the “Equal Opportunity Clause” and the “Standard Federal Equal Employment Opportunity Construction Contract Specifications” set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor’s aggregate workforce in each trade on all construction work in the covered area, are as follows:

<table>
<thead>
<tr>
<th>Timetables</th>
<th>Goals for minority participation (percent)</th>
<th>Goals for female participation (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From April 1, 1980 until revised</td>
<td>3.0</td>
<td>6.9</td>
</tr>
</tbody>
</table>

These goals are applicable to all the Contractor’s construction work (whether or not it is Federal or federally assisted) performed in the covered area.

The Contractor’s compliance with the Executive Order and the regulations in 41 CFR Part 60-4 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), 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 female 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 or female 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. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the City and to the Director of the Office of Federal Contract Compliance Programs; U.S. Department of Labor, ESA/OFCCP, 16th Floor, 230 South Dearborn Street, Chicago, Illinois, 60604, within 10 working days of award of any construction subcontract and/or subcontract in excess of $10,000 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 contractor and/or subcontractor; employer identification number; estimated dollar amount of the prime contract; 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, the “covered area” is all work under a contract currently held with the City of Duluth, Minnesota.

Standard Federal Equal Employment Opportunity
Construction Contract Specifications (Executive Order 11246)

1. As used in these specifications:
   a) “Director” means Director, Office of Federal Contract Compliance Programs, United States Department of Labor; or any person to whom the Director delegates authority;
   c) “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 the provisions of these specifications and the Notice which contains the applicable goals for minority and female 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 in 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 EO 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 7a through p of these specifications. 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 minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. 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, Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the non-working training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must 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 must be trained pursuant to training programs approved by the U.S. Department of Labor.
7. The Contractor shall take specific affirmative action to ensure equal employment opportunity. The evaluation of the Contractor’s compliance with these specifications shall 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:

a. Ensure and 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. 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 female individuals working at such sites or in such facilities.

b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female 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 female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such 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 Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority or 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 area which expressly include minorities and women, including upgrading programs and apprenticeships and trainee programs relevant to the Contractor’s employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notices of these programs to the sources compiled under 7b above.

f. Disseminate the Contractor’s EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO 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 female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the company’s EEO 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 initiation 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 EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor’s EEO 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, female and community organizations, to schools with minority and female students and to minority and female recruitment sources 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 female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female 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.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

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 EEO policy and the Contractor’s obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of officers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisor’s adherence to and performance under the Contractor’s EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). 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 7a through p 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 female workforce 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 a 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 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 violation of the Executive Order if a specific minority group of women is underutilized).

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, national origin, sex, ancestry, age, marital status, status with respect to public assistance and/or disability.

11. The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and 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, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails
to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by 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 (e.g., 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 herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

**Affirmative Action for Handicapped Workers**
(applies to contracts in excess of $2,500)

(A) The Contractor will not discriminate against any employee or applicant for employment because of physical or mental handicap in regard to any position for which the employee or applicant is qualified. The Contractor agrees to take affirmative action to employ, advance in employment and otherwise treat qualified handicapped individuals without discrimination based upon their physical or mental handicap in all employment practices such as the following: Employment, upgrading, demotion or transfer, recruitment, advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship.

(B) The Contractor agrees to comply with the rules, regulations, and relevant orders of the Secretary of Labor issued pursuant to the Act.

(C) In the event of the Contractor’s noncompliance with the requirements of this clause, actions for noncompliance may be taken in accordance with the rules, regulations and relevant orders of the Secretary of Labor issued pursuant to the Act.

(D) The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices in a form to be prescribed by the Director, provided by or through the contracting officer. Such notices shall state the Contractor’s obligation under the law to take affirmative action to employ and advance in employment qualified handicapped employees and applicants for employment, and the rights of applicants and employees.

(E) The Contractor will notify each labor union or representative of workers with which it has a collective bargaining agreement or other contract understanding, that the Contractor is bound by the terms of Section 503 of the Rehabilitation Act of 1973, and is committed to take affirmative action to employ and advance in employment physically and mentally handicapped individuals.

(F) The Contractor will include the provisions of this clause in every subcontract or purchase order of $2,500 or more unless exempted by rules, regulations, or orders of the Secretary issued pursuant to Section 503 of the Act, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the Director of the Office of Federal Contract Compliance Programs may direct to enforce such provisions, including action for noncompliance.

**Affirmative Action for Disabled Veterans and Veterans of the Vietnam Era**
(applies to contracts in excess of $10,000)

(A) The Contractor will not discriminate against any employee or applicant for employment because he or she is a disabled veteran or veteran of the Vietnam era 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 veterans and veterans of the Vietnam era without discrimination based upon their disability or veteran status in all employment practices such as the following: Employment, upgrading, demotion or transfer, recruitment, advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship.

(B) The Contractor agrees that all suitable employment openings of the Contractor which exist at the time of the execution of this contract and those which occur during the performance of this contract, including those not generated by this contract and including those occurring at an establishment of the Contractor other than the one wherein the contract is being performed but excluding those of independently operated corporate affiliates, shall be listed at an appropriate local office of the State employment service system wherein the opening occurs. The Contractor further agrees to provide such reports to such local office regarding employment openings and hires as may be required. State and local government agencies holding Federal contracts of $10,000 or more shall also list all their suitable openings with the appropriate office of the State employment service, but are not required to provide those reports set forth in paragraphs (D) and (E).

(C) Listing of employment openings with the employment service system pursuant to this clause shall be made at least concurrently with the use of any other recruitment source or effort and shall involve the normal obligations which attach to the placing of a bona fide job order, including the acceptance of referrals of veterans and non-veterans. The listing of employment openings does not require the hiring of any particular job applicant or from any particular group of job applicants, and nothing herein is intended to relieve the Contractor from any requirements in Executive Orders of regulations regarding nondiscrimination in employment.

(D) The reports required by paragraph (B) of this clause shall include, but not be limited to, periodic reports which shall be filed at least quarterly with the appropriate local office or, where the Contractor has more than one hiring location in a State, with the central office of that State employment service. Such reports shall indicate for each hiring location (1) the number of individuals hired during the reporting period, (2) the number of non-disabled veterans of the Vietnam era hired, (3) the number of disabled veterans of the Vietnam era hired, and (4) the total number of disabled veterans hired. The reports should include covered veterans hired for on-the-job training under 38 U.S.C. § 1787. The Contractor shall maintain at each hiring location copies of the reports submitted until the expiration of one year after final payment under the contract, during which time these reports and related documentation shall be made available, upon request, for examination by any authorized representatives of the contracting officer of the Director of Labor. Documentation would include personnel records respecting job openings, recruitment and placement.

(E) Whenever the Contractor becomes contractually bound to the listing provisions of this clause, it shall advise the employment service system in each State where it has establishments of the name and location of each hiring location in the State. As long as the Contractor is contractually bound to these provisions, and has so
The Contractor proposes to fill from within his own organization or to fill pursuant to a customary and traditional employer-union hiring arrangement for that opening.

(F) This clause does not apply to the listing of employment openings which occur and are filled outside of the 50 States, the District of Columbia, Puerto Rico, Guam, and the Virgin Islands.

(G) The provisions of paragraphs (B), (C), (D), and (E) of this clause do not apply to openings which the Contractor proposes to fill from within his own organization or to fill pursuant to a customary and traditional employer-union hiring arrangement for that opening.

(H) As used in this clause:

1. "All suitable employment openings" includes, but is not limited to, openings which occur in the following job categories: Production and non-production; plant and office; laborers and mechanics; supervisory and non-supervisory; technical; and executive, administrative, and professional openings as are compensated on a salary basis of less than $25,000 per year. This term includes full-time employment, temporary employment of more than 3 days' duration, and part-time employment. It does not include openings which the Contractor proposes to fill from within his own organization or to fill pursuant to a customary and traditional employer-union hiring arrangement nor openings in an educational institution which are restricted to students of that institution. Under the most compelling circumstances an employment opening may not be suitable for listing, including such situations where the needs of the Government cannot reasonably be otherwise supplied, where listing would be contrary to national security, or where the requirement of listing would otherwise not be for the best interest of the Government.

2. "Appropriate office of the State employment service system" means the local office of the Federal-State national system of public employment offices with assigned responsibility for serving the area where the employment opening is to be filled, including the District of Columbia, Guam, Puerto Rico, and the Virgin Islands.

3. "Openings which the Contractor proposes to fill from within his own organization" means employment openings for which no consideration will be given to persons outside the Contractor's organization (including any affiliates, subsidiaries, and the parent companies) and includes any openings which the Contractor proposes to fill from regularly established "recall" lists.

4. "Openings which the Contractor proposes to fill pursuant to a customary and traditional employer-union hiring arrangement" means employment openings which the Contractor proposes to fill from union halls, which is part of the customary and traditional hiring relationship which exists between the Contractor and representatives of his employees.

(I) The Contractor agrees to comply with the rules, regulations, and relevant orders of the Secretary of Labor issued pursuant to the Act.

(J) In the event of the Contractor's noncompliance with the requirements of this clause, actions for noncompliance may be taken in accordance with the rules, regulations and relevant orders of the Secretary of Labor issued pursuant to the Act.

(K) The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices in a form to be prescribed by the Director, provided by or through the contracting officer. Such notices shall state the Contractor's obligation under the law to take affirmative action to employ and advance in employment qualified disabled veterans and veterans of the Vietnam era for employment, and the rights of applicants and employees.

(L) The Contractor will notify each labor union representative of workers with which it has a collective bargaining agreement or other contract understanding, that the Contractor is bound by this contract clause.

(M) The Contractor will include the provisions of this clause in every subcontract or purchase order of $10,000 or more unless exempted by rules, regulations, or orders of the Secretary issued pursuant to the Act, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the Director of the Office of Federal Contract Compliance Programs may direct to enforce such provisions, including action for noncompliance.

Section 12
Employment Opportunities - "HUD Section 3"

These requirements apply to the City of Duluth contracts receiving assistance under the U.S. Department of Housing and Urban Development (HUD) Community Development Block Grant (CDBG) Program.

Type of Covered Projects

24CFR570.607 (b) of the HUD CDBG Program Regulations state in part "... that employment and other economic opportunities arising in connection with housing rehabilitation, housing construction, or other public construction projects shall to the greatest extent feasible, and consistent with existing Federal, State, and local laws and regulations be given to low- and very low-income persons.

Thresholds

In accordance with the provisions of 24CFR135.3(a) (3) (iii) (A), the requirements of this Section apply to those recipients as defined at 24CFR135.5 when the amount of this contract exceeds $200,000.

In addition, in accordance with the provisions of 24CFR135.3 (a) (3) (ii) (B), the requirements of this Section apply to any contractor or subcontractor whose contract exceeds $100,000 as a result of assistance provided under this contract.

Requirements (Section 3 Clause)

(A) The work to be performed under this contract is subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u (section 3). The purpose of Section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by section 3, shall, to the greatest extent feasible, be directed to low- and very low-income persons, particularly persons who are recipients of HUD assistance for housing.

(B) The parties to this contract agree to comply with HUD's regulations in 24 CFR part 135, which implement section 3. As evidenced by their execution of this contract, the parties to this contract certify that they are under no contractual or other impediment that would prevent them from complying with the part 135 regulations.

(C) The contractor agrees to send to each labor organization or representative of workers with which the contractor has a collective bargaining agreement, or other understanding, if any, a notice advising the labor organization or workers' representative of the contractor's commitments under this section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice.
notice shall describe the section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions, the qualifications for each; and the name and location of the person(s) taking applications for each of the positions; and the anticipated date the work shall begin.

(D) The Contractor agrees to include this section 3 clause in every subcontract subject to compliance with regulations in 24 CFR part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 CFR part 135. The contractor will not subcontract with any subcontractor where the contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 CFR part 135.

(E) The contractor will certify that any vacant employment positions, including training positions, that are filled (1) after the contractor is selected but before the contract is executed, and (2) with persons other than those to whom the regulations of 24 CFR part 135 require employment opportunities to be directed, were not filled to circumvent the contractor’s obligation under 24 CFR part 135.

(F) Noncompliance with HUD’s regulations in 24 CFR part 135 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD-assisted contracts.

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**Section 13**

**Federal Requirements for Minority/Women Business Enterprises Contract Guidance - MPFA**

**General**

Municipalities that receive loan funding must comply with Federal requirements concerning utilization of Minority Business Enterprises (MBE) and Women’s Business Enterprises (WBE). These requirements are designed to encourage the prime contractors to utilize MBEs and WBEs whenever procurement opportunities occur.

**Regulation**

40 C.F.R. Section 35.3145(d) Application of other Federal Authorities, M/WBE Requirements

Executive Orders No. 11625, 12138 and 12432 - Promoting the use of M/WBEs

Section 129 of Public Law 100-590 - Small Business Administration Reauthorization and Amendment Act of 1988

Regulations detailed in the EPA’s Cross-Cutting Federal Authorities - Clean Water Act State Revolving Fund Program and Safe Drinking Water Act State Revolving Fund Program

**Implementation**

The “fair share” target percentage participation proposed for this project is 3.5 percent (3.5%) for MBE and 11.5 percent (11.5%) for WBE.

If the Contractor intends to let any subcontractors for a portion of the work, the Contractor shall take affirmative steps to assure that minority and women businesses are utilized when possible as sources of supplies, equipment, construction and services. Affirmative steps shall include the following:

- Include qualified minority businesses on solicitation lists.
- Assure that minority businesses are solicited whenever they are potential sources.
- When economically feasible, divide total requirements into smaller tasks or quantities so as to permit maximum small and minority business participation.
- Where the requirement permits, establish delivery schedules, which will encourage participation by minority businesses.
- Use the services and assistance of the Office of Minority Business Enterprise of the Department of Commerce.

The low bidder will be required to submit to the City of Duluth documentation of his good faith efforts to meet the targeted goals of utilizing MBEs and WBEs.

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**Section 14 - Forms**

**Minnesota Department of Transportation and City of Duluth, Minnesota funded certified payroll forms**

- MnDOT Prime Contractor’s-Subcontractor’s Statement of Compliance form (12/2010)  
  [www.dot.state.mn.us/const/labor/forms.html](http://www.dot.state.mn.us/const/labor/forms.html)
- Certified Payroll Forms  
  use front side only

**U. S. Department of Housing and Urban Development and federal government funded certified payroll forms**

- Statement of Compliance Form & Certified Payroll Forms  
  (use reverse side for Statement of Compliance form)
- MnDOT Prime Contractor’s-Subcontractor’s Statement of Compliance form (12/2010)  
  [www.dot.state.mn.us/const/labor/forms.html](http://www.dot.state.mn.us/const/labor/forms.html)

**Minnesota Department of Transportation Trucking Requirements**

- Month End Trucking Report Form A and Form B
- Month End Trucking Report Statement of Compliance
- Definitions, instructions, forms:  
  [www.dot.state.mn.us/const/labor/forms.html](http://www.dot.state.mn.us/const/labor/forms.html)
PROJECT LABOR AGREEMENT
NO STRIKE, NO LOCKOUT

PUBLIC SECTOR

CITY OF DULUTH

&

Vendor

Project name

Project No.
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This Project Labor Agreement (hereinafter, the “Agreement”), effective as of the date of attestation by the City Clerk, by and between the various contractors engaged in the construction of facilities to be known as the (Project). The parties to this Agreement are the Building and Construction Trades Council, on behalf of its affiliated Local Unions (hereinafter “Union” or “Unions”), the City of Duluth (hereinafter “Owner”) and Contractor (hereinafter “Construction Manager/General Manager,” “Contractor,” and “Contractors”).

It is understood by the parties to this Agreement that it is the policy of the Owner that the construction work covered by this Agreement shall be contracted to Contractors who agree to be bound by the terms of this Agreement. Therefore, the Union agrees that other Contractors may execute the Agreement for the purpose of covering that work. The Construction Manager/General Contractor shall monitor compliance with this Agreement by all Contractors who through their execution of this Agreement, together with their subcontractors, have become bound hereto.

The term “Contractor” shall include all Contractors and subcontractors of whatever tier engaged in on-site construction work within the scope of this Agreement.

The Union and all signatory Contractors agree to abide by the terms and conditions contained in this Agreement with respect to the administration of the Agreement by the Owner and the performance of the construction by the Contractor of the Project. This Agreement represents the complete understanding of the parties, and it is further understood that no Contractor party is required to sign any other agreement as a condition of performing work within the scope of this Agreement. No practice, understanding or agreement between a Contractor and a Union party which is not explicitly set forth in this Agreement shall be binding on any other party unless endorsed in writing by the Project Contractor.
ARTICLE I - PURPOSE

The (Project), an undertaking of the Owner, is a public project which will employ numbers of skilled and unskilled workers. Construction of the Project will entail utilization of the construction industry in an area having multiple labor contracts and employer associations. Consequently, conflicts within labor-management relations could cause delay or disruption of the efficient completion of the Project unless maximum cooperation of all segments of the construction industry is obtained. This Agreement is to establish as the minimum standards on the Project the hours and working conditions as those prevailing for the largest number of workers engaged in the same classes of work within the area.

It is in the public interest that the Project progress and be completed in an expeditious and efficient manner, free of disruption or delay of any kind. Therefore, it is essential to secure optimum productivity and to eliminate any delays in the work. In recognition of the special needs of this Project and to maintain a spirit of harmony, labor-management peace and stability during the term of this Project Labor Agreement, the parties agree to establish effective and binding methods for the settlement of all misunderstandings, disputes or grievances which may arise. Therefore, the Unions agree not to engage in any strike, slowdown or interruption of work and the Contractor agrees not to engage in any lockout.

ARTICLE II - SCOPE OF THE AGREEMENT

Section 1. This Agreement, hereinafter designated as the “Project Labor Agreement” or “Agreement,” shall apply and is limited to all construction work included in all Bid Categories for the (Project), under the direction of the signatory Contractors and performed by those Contractor(s) of whatever tier which have contracts awarded for such work on and after the effective date of this Agreement with regard to the Project.

Such Project is generally described as the construction of: Project
Section 2. It is agreed that all direct subcontractors of a Contractor, of whatever tier, who have been awarded contracts for work covered by this Agreement on or after the effective date of this Agreement shall be required to accept and be bound by the terms and conditions of the Project Labor Agreement.

Section 3. The provisions of this Project Labor Agreement shall apply to all craft employees represented by any Union listed in Schedule A hereto attached and shall not apply to other field personnel or managerial or supervisory employees as defined by the National Labor Relations Act.

Section 4. All employees covered by this Agreement shall be classified in accordance with work performed and paid the base hourly wage rates for those classifications as specified in the attached Schedule A.

Section 5. The Contractors agree to pay contributions to the established employee benefit funds in the amounts designated in the appropriate Schedule A.

Contractors that are not signatory to a collective bargaining agreement beyond the scope of this Agreement (“PLA contractor”) may select to participate in the legally established industry health reimbursement arrangement (“HRA”) plan, in lieu of contributing to the respective bona fide benefit funds as designated in Schedule A. The amount of the contribution is based on the difference between the contribution amount of the bona fide Schedule A benefit funds and the cost of the PLA contractor's bona fide non-discretionary plans. Contributions must be made on behalf of named employees. Participating contractors will submit to the Trustees of the HRA trust and plan a copy of their plan, summary plan description, and the premium structure for workers covered under the PLA contractor's bona fide, non-discretionary plans. The value of the PLA contractor's benefit plans are subject to confirmation by the Trustees of the HRA trust and plan. This may include an independent audit according to a policy as established by the Trustees. Contractors are required to submit certified payroll reports to the Trustees or authorized administrator in order to confirm compliance with the terms of the HRA trust and plan.
The Contractors adopt and agree to be bound by the written terms of the legally-established Trust Agreements (or in lieu thereof, the aforementioned HRA plan and trust including any policies) specifying the detailed basis on which payments are to be made into, and benefits paid out of, such Trust Funds. The Contractors authorize the parties to such Trust Agreements to appoint trustees and successor trustees to administer the Trust funds and hereby ratify and accept the Trustees so appointed as if made by the Contractors.

Section 6. In the event of any conflict between any provisions of this Agreement and in the Local Area Agreements, the terms of this Agreement will be applied. In other words, where a subject covered by the provisions of this Project Labor Agreement is also covered by the Local Area Agreement the provisions of this Project Labor Agreement shall prevail. Where a subject is covered by the Local Area Agreement and not covered by this Project Labor Agreement, the Local Area Agreement provisions shall prevail.

Section 7. This Agreement shall only be binding on the signatory parties hereto and shall not apply to the parents, affiliates, subsidiaries, or other ventures of any such party.

Section 8. This Agreement shall be limited to work historically recognized as construction work. Nothing contained herein shall be construed to prohibit, restrict, or interfere with the performance of any other operation, work or function which may occur in or around the Project site or be associated with the development of the Project, or with the ongoing operations of the Owner.

Section 9. It is understood that the liability of any Contractor and the liability of the separate Unions under this Agreement shall be several and not joint. The Union agrees that this Agreement does not have the effect of creating any joint employment status between or among Owner and any Contractor.

Section 10. All workers delivering fill, sand, gravel, crushed rock, transit/concrete mix, asphalt or other similar materials and all workers removing any materials from the construction site as required by the specifications are subject to the provisions of the Minnesota state
prevailing wage law and are entitled to the appropriate area standard wage. For purposes of this contract, such materials are for specified future use and per Minnesota state prevailing wage law delivery and pickup of the above-listed materials constitutes incorporation.

**ARTICLE III - UNION RECOGNITION AND REPRESENTATION**

Section 1. The Contractor recognizes the Union as the sole and exclusive bargaining representative of all craft employees working on facilities within the scope of this Agreement.

Section 2. Authorized representatives of the Union shall have access to the Project, provided they do not interfere with the work of employees and further provided that such representatives fully comply with the posted visitor and security and safety rules of the Project.

**ARTICLE IV - LABOR HARMONY CLAUSE**

The contractor shall furnish labor that can work in harmony with all other elements of labor employed on that (Project) and shall submit a labor harmony plan to demonstrate how this will be done. “Harmony” shall include the provision of labor that will not, either directly or indirectly, cause or give rise to any work disruptions, slow downs, picketing, stoppages, or any violence or harm to any person or property while performing any work, or activities incidental thereto at the (project). The labor harmony plan should include the company's labor management policies, collective bargaining agreements if any and their expiration dates, past labor relations history, a listing of activities anticipated under this contract that may potentially cause friction with on-site workers, and procedures the company will undertake to eliminate this friction.

The contractor agrees that it shall require every lower-tier subcontractor to provide labor that will work in harmony with all other elements of labor employed in the work, and will include the provisions contained in the paragraph above, in every lower-tier subcontract let for work under this contract.
The requirement to provide labor that can work in harmony with all other elements of labor employed in the work throughout the contract performance is a material element of this contract. Failure by the contractor or any of its lower tier subcontractors to comply with this requirement shall be deemed a material breach of the contract which will subject the contractor to all rights and remedies the city of Duluth may have, including without limitation the right to terminate the contract.

ARTICLE V - WORK STOPPAGES AND LOCKOUTS

Section 1. There shall be no strike, picketing, work stoppages, slowdowns or other disruptive, activity for any reason by the Union or employees against any Contractor covered under this Agreement, and there shall be no lockout by the Contractor. Failure of any Union or employee to cross any picket line established by any union, signatory or non-signatory, or any other organization, at or in proximity to the Project site is a violation of this Article.

Section 2. Any party alleging a breach of Section 1, of Article IV shall have the right to petition a court for temporary and permanent injunctive relief. The moving party need not show the existence of irreparable harm, and shall be required to post bond only to secure payment of court costs and attorney fees as may be awarded by the court.

ARTICLE VI - DISPUTES AND GRIEVANCES

Section 1. This Agreement is intended to provide close cooperation between management and labor. The Construction Manager/General Contractor and the Building and Construction Trades Council shall each assign a representative to this Project for the purpose of assisting the Local Unions, together with the Contractor, to complete the construction of the Project economically, efficiently, continuously and without interruption, delays or work stoppages. Each Contractor shall hold a pre-job conference with the Union and Construction Manager/General Contractor to clear up any project question and work assignments in which there is thought to be a difference in opinion. Every effort will be made to hold such conference well in advance of actual work performance.
Section 2. The Contractor, Union, and employees collectively and individually, realize the importance to all parties to maintain continuous and uninterrupted performance of the work of the Project, and agree to resolve disputes over grievances in accordance with the arbitration provisions set forth in the Local Area Agreements in effect with the Unions listed in Schedule A attached hereto.

ARTICLE VII - JURISDICTIONAL DISPUTES

Section 1. There will be no strikes, work stoppages, slowdowns, or other disruptive activity arising out of any jurisdictional dispute. Pending the resolution of the dispute, the work shall continue uninterrupted as assigned by the Contractor.

Section 2. Building construction work shall be assigned by the Contractor in accordance with the procedural rules of the Plan for the Settlement of Jurisdictional Disputes in the Construction Industry (hereinafter the “Plan”). Any jurisdictional dispute over the Contractor's assignment of work shall be settled in accordance with the provisions of the Plan.

Section 3. Where a jurisdictional dispute involves the International Brotherhood of Teamsters, it shall be referred for resolution to that International Union and the disputing International Union. The resolution of the dispute shall be reduced to writing, signed by the authorized representative of the International Unions and the Contractor. The assignments made by the Contractor shall be followed until such time as the dispute is resolved in accordance with this Section.

ARTICLE VIII - NO DISCRIMINATION

Section 1. The Contractor and Union agree that they will not discriminate against any employee or applicant for employment because of his or her membership or nonmembership in a Union or based upon race, color, religion, sex, national origin or age in any manner prohibited by law or regulation.
Section 2. Any complaints regarding application of the provisions of Section 1 should be brought to the immediate attention of the involved Contractor for consideration and resolution.

Section 3. The use of the masculine or feminine gender in this Agreement shall be construed as including both genders.

ARTICLE IX - SAVINGS AND SEPARABILITY

It is not the intention of the parties to violate any laws governing the subject matter of this Agreement. The parties hereto agree that in the event any provisions of the Agreement are finally held determined to be illegal or void as being in contravention of any applicable law, the remainder of the Agreement shall remain in full force and effect unless the part or parts so found to be void are wholly inseparable from the remaining portions of this Agreement. Further, the contractor and Union agree that if and when any and all provisions of this Agreement are finally held or determined to be illegal or void by Court of competent jurisdiction, the parties will promptly enter into negotiations concerning the substance affected by such decision for the purpose of achieving conformity with the requirements of an applicable law and the intent of the parties hereto.

ARTICLE X DURATION OF THE AGREEMENT

The Project Labor Agreement shall be effective as of the date of attestation by the City Clerk, and shall continue in effect for the duration of the Project construction work described in Article II hereof. Construction of any phase, portion, section or segment of the project shall be deemed complete when such phase, portion, section or segment has been turned over to the Owner and has received the final acceptance from the Owner's representative.

Since there are provisions herein for no strikes or lockouts in the event any changes are negotiated and implemented under a Local Area Agreement during the term of this Agreement, the Contractor agrees that, except as specified herein, such changes shall be recognized and shall apply retroactively to the termination date in the particular Local Agreement involved. Each Contractor which has a Local Agreement with a Union at the time that its contract at the project
commences shall continue it in effect with each said Union so long as the Contractor remains on
the project. In the event any such Local Area Agreement expires, the Contractor shall abide by
all of the terms of the expired Local Agreement until agreement is reached on a new Local
Agreement, with any changes being subject to the provisions of this Agreement.

The Union agrees that there will be no strikes, work stoppages, sympathy actions, picketing,
slowdowns or other disruptive activity affecting the Project by any Union involved in the
negotiation of a Local Area Agreement nor shall there be any lockout on this Project affecting
the Union during the course of such negotiations.
IN WITNESS WHEREOF the parties have entered into this Agreement to be effective as of the day and year above written.

DULUTH BUILDING AND CONSTRUCTION TRADES COUNCIL

By: _________________________________
   Its __________________________________
   (Printed Name/Title)
   Date: _______________

VENDOR

By: _________________________________
   Its __________________________________
   (Printed Name/Title)
   Date: _______________

CITY OF DULUTH

By: _________________________________
   Mayor

Attest:

   __________________________________
   City Clerk
   Date: _______________

   __________________________________
   City Auditor
   Date: _______________

   _________________________________
   Assistant City Attorney
   Date: _______________
<table>
<thead>
<tr>
<th>A1</th>
<th>Asbestos Workers Local 49</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-2</td>
<td>Boilermakers Local 647</td>
</tr>
<tr>
<td>A-3</td>
<td>BAC Local 1 Chapter 3 Duluth &amp; Iron Range</td>
</tr>
<tr>
<td>A-4</td>
<td>Carpenters Local 361</td>
</tr>
<tr>
<td>A-5</td>
<td>Cements Masons/Plasterers Local 633</td>
</tr>
<tr>
<td>A-6</td>
<td>Elevator Constructors Local 9</td>
</tr>
<tr>
<td>A-7</td>
<td>IBEW Local 242</td>
</tr>
<tr>
<td>A-8</td>
<td>Iron Workers Local 512</td>
</tr>
<tr>
<td>A-9</td>
<td>Laborers Local 1091</td>
</tr>
<tr>
<td>A-10</td>
<td>Millwrights &amp; Machinery Erectors Local 1348</td>
</tr>
<tr>
<td>A-11</td>
<td>Operating Engineers Local 49</td>
</tr>
<tr>
<td>A-12</td>
<td>Painters &amp; Allied Trades Local 106</td>
</tr>
<tr>
<td>A-13</td>
<td>Plumbers &amp; Fitters Local 11</td>
</tr>
<tr>
<td>A-14</td>
<td>Roofers Local 96</td>
</tr>
<tr>
<td>A-15</td>
<td>Sheet Metal Workers Local 10</td>
</tr>
<tr>
<td>A-16</td>
<td>Sprinkler Fitters Local 669</td>
</tr>
<tr>
<td>A-17</td>
<td>Teamsters Local 346</td>
</tr>
</tbody>
</table>
Building Trades Affiliates
Contract Expirations

Heat & Frost Insulators Local 49  May 31, 2017
Boilermakers Local 647   December 31, 2016
Bricklayers Local 1    April 30, 2016
Carpenters Local 361    May 30, 2017
Cement Masons Local 633  April 30, 2017
Elevator Constructors Local 9  July 8, 2017
Glaziers Local 106     April 30, 2017
IBEW Local 242        May 31, 2019
Iron Workers Local 512 April 30, 2016
Laborers Local 1091   April 30, 2017
Operator Engineers Local 49 (Bldrs) April 30, 2016
                        (Hwy Heavy) April 30, 2017
Painters Local 106     April 30, 2017
Plumbers & Steamfitters Local 11 April 30, 2017
Roofers Local 96    June 30, 2016
Sheet Metal Local 10   April 30, 2016
Sprinkler Fitters Local 669 March 31, 2016
Teamsters Local 346    April 30, 2017

Updated 9/4/2015
ASBESTOS WORKERS LOCAL 49
Dave Cartwright
2002 London Road #210
Duluth, MN 55812
(218) 724-3223 / Fax# 724-1870
dave@insulatorslocal49.org

BOILERMakers LOCAL 647
Bill Polchow
1007 NW 4th Street, Ste C
Grand Rapids, MN 55744
(218) 326-2522 / Fax# SAME
bpolchow647@outlook.com

BAC LOCAL #1 CHAPTER 3
DULUTH & IRON RANGE
Stan (Ogie) Paczynski
2002 London Road #100
Duluth, MN 55812
(218) 724-8374 / Fax# 724-8341
spaczynski@bac1mn-nd.org

CARPENTERS LOCAL 361
Steve Rissacher & Chris Hill
5238 Miller Trunk Hwy
Hermantown, MN 55811
(218) 724-3297 / Fax# 724-8536
srisacher@ncsrrcc.org
christ@ncsrrcc.org

CEMENT MASONs LOCAL 633
Michael Syversrud
2002 London Road #112
Duluth, MN 55812
(218) 724-2323 / Fax# 724-2472
mikey@local633.org

ELEVATOR CONSTRUCTORS LOCAL 9
Dave Aaserud
433 Little Canada Rd E
Little Canada, MN 55117
(651) 287-0817 / Fax# 287-0820
d.aaserud@local9.com

IBEW LOCAL 242
Don Smith
2002 London Road #111
Duluth, MN 55812
(218) 726-6895 / Fax# 728-1965
dsmith242@unionselecom.com

IRON WORKERS LOCAL 512
Darrell Godbou, Vice President
3752 Midway Road
Hermantown, MN 55810
(218) 724-5073 / Fax# 724-1525
darrell512@iron512.com

LABORERS LOCAL 1091
Dan Olson, Secretary
2002 London Road #119
Duluth, MN 55812
(218) 728-5151 / Fax# 728-2431
labors@local1091.com

MILLRIGHTS & MACHINERY ERectors LOCAL 1348
Wayne Nordin
307 N 1st Street
Virginia, MN 55792
(218) 741-6314 / Fax# 741-6017
wnordin@ncsrrcc.org

OPERATING ENGINEERS LOCAL 49
Brent Pykkonen
2002 London Road #116
Duluth, MN 55812
(218) 724-3840 / Fax# 728-1441
bpyke49@yahoo.com

PAINTERS LOCAL 106
Craig Olson, President
2002 London Road #106
Duluth, MN 55812
(218) 724-6466 / Fax# 724-7359
painters@duluthbuildingtrades.com

team346qwest.net

PLUMBERS & FITTERS LOCAL 11
Jeff Daveau, Treasurer
4402 Airpark Boulevard
Duluth, MN 55811
(218) 727-2199 / Fax# 727-2298
jeff@ualocal11.com

ROOFERS LOCAL 96
Vance Anderson
1145 Villa Vista Circle
Cromwell MN 55726
(218) 644-1096 / Fax# SAME
valocal96@yahoo.com

SPRINKLER FITTERS LOCAL 669
James Westby
PO Box 398
Mabel, MN 55954
(507) 493-5671 / Fax# 493-5481
westby@mabeltel.coop

BUILDING & CONSTRUCTION TRADES COUNCIL
2002 LONDON ROAD
DULUTH, MN. 55812

Officers:
Craig Olson
President
Darrell Godbou, Vice President
Dan Olson
Secretary
Jeff Daveau
Treasurer
Boilermakers #647
Bricklayers #1
Carpenters #361
Cement Masons #633
Elevator #9
IBEW #242
Insulators #49
Ironworkers #512
Laborers #1091
Millwrights #1348
Operators #49
Painters #106
Pipefitters #11
Roofers #96
Sheetmetal #10
Sprinklerfitters #669
Teamsters #346
December 1, 2015

TO WHOM IT MAY CONCERN:

The following wage package changes listed below become effective 01/01/2016 thru 12/31/2016 for Boilermakers Local Lodge #647. Per the Great Lakes Articles of Agreement for the year of 2016, there is a $1.40 increase to be allocated by the membership. The $1.40 has been allocated as follows: $1.00 will go to a wage increase, $.40 will go to an Annuity increase. Per Article 24.4, the 647 Development and Training Fund (D&T) will increase $.05 for a total contribution of $.51.

<table>
<thead>
<tr>
<th>CHANGES AS OF:</th>
<th>January 1, 2016</th>
<th>Effective:</th>
<th>01/01/2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase General Foreman</td>
<td>$ 1.00</td>
<td>General Foreman Wage</td>
<td>$ 39.65</td>
</tr>
<tr>
<td>Increase Foreman</td>
<td>1.00</td>
<td>Foreman Wage</td>
<td>37.65</td>
</tr>
<tr>
<td>Increase Journeymen</td>
<td>1.00</td>
<td>Journeyman Wage</td>
<td>35.15</td>
</tr>
<tr>
<td>Increase Annuity</td>
<td>.40</td>
<td>Pension Trust</td>
<td>14.14</td>
</tr>
<tr>
<td>Increase D&amp;T Fund</td>
<td>.05</td>
<td>Annuity Trust</td>
<td>4.40</td>
</tr>
<tr>
<td>Increase Vacation Fund Deduction</td>
<td>.95</td>
<td>Health &amp; Welfare Fund</td>
<td>7.07</td>
</tr>
<tr>
<td>Increase Subsistence</td>
<td>5.00</td>
<td>Retiree Welfare Plan</td>
<td>.50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Apprenticeship Fund</td>
<td>.40</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MOST</td>
<td>.34</td>
</tr>
<tr>
<td></td>
<td></td>
<td>647 D&amp;T</td>
<td>.51</td>
</tr>
</tbody>
</table>

Deductions (after tax)
Vacation Trust                  2.00
647 Political Action Fund  .05

All other benefits and deductions remain the same for the Great Lakes Articles of Agreement as listed further in this letter.

Subsistence will be paid under the terms and conditions of the Great Lakes Articles of Agreement. For the provisions of the agreement on subsistence, Addendum A of the agreement states effective 01/01/2016 thru 12/31/2016 the daily rate of Subsistence is $65.00 per day if a Boilermaker's permanent address is 50 miles from the jobsite.

Boilermaker-Blacksmith National Pension Trust ($14.14), National Annuity ($4.40), National Health & Welfare Fund ($7.07), Boilermakers Great Lakes Region Retiree Welfare Plan ($ .50), Boilermakers 647 D&T Fund ($ .51), Boilermakers 647 Political Action Fund ($ .05 deducted after taxes), to be paid on hours PAID, not hours worked.
Vacation Trust ($2.00 deducted after taxes), Apprenticeship Fund ($0.40) and MOST ($0.34) are to be paid on hours WORKED.

647 Political Action Fund and 647 D&T Fund monies will be submitted to Local 647 on separate forms and will require separate checks for each fund.

Boilermakers receive time and one-half over the established workday of eight hours and all time worked on Saturdays. All time worked on Sundays and holidays are double time.

Effective November 1, 2011, Field Dues increased to 4.25% of the gross pay, which is remitted to Local 647.

An Emergency Work Addendum has been added to the Great Lakes Articles of Agreement which provides for time and one half rate of pay for unscheduled emergency outages. If you would like a copy of this addendum please contact Local 647.

This is the third and final year of the agreement.

If you have any questions please call me at 763-712-9930.

Very truly yours,

[Signature]

Luke A. Voigt
Business Manager/Secretary Treasurer
Boilermakers Local Lodge #647

LAV/vm
opeiu #12
**Bricklayers and Allied Craftworkers**

**Local Union 1 Minnesota / North Dakota**

312 Central Avenue, Suite 328  
Minneapolis, Minnesota 55414

“Building For the Future”  
TELEPHONE: 612/379-2966  
FAX: 612/379-8754

MICHAEL J COOK  
President/Secretary-Treasurer

To:  
All Associated General Contractors  
Minnesota Masonry Contractors  
Independent Contractors  
Chapter #3  
Duluth Area

January 28, 2015

**Scope of the Agreement**  
This agreement shall cover all of the part of St. Louis County, south of a line between townships 54 and 55 (two miles north of Cotton), also the eastern half of Aitkin County on a line with the northeast boundary line of Mille Lacs County, also Carlton, Lake, Cook, Pine and Kanabec.

**BRICKLAYER AND ALLIED CRAFTWORKERS**  
**LOCAL UNION 1 MINNESOTA / NORTH DAKOTA**  
**DULUTH AREA – BRICKLAYER, BLOCKLAYERS AND P.C.C.'S**

This is to advise you that the new working agreement calls for a $1.00 increase per hour on May 1, 2015. Please inform your bookkeeping department of the following rates.

The total wage rate effective May 1, 2015 for members of the Bricklayers and Allied Craftworkers will be as follows:

<table>
<thead>
<tr>
<th>HEALTH WAGES</th>
<th>$BANK – RPP</th>
<th>HRA</th>
<th>IU &amp; PPA</th>
<th>LOCAL PENSION</th>
<th>DUL ANN</th>
<th>DUL VAC</th>
<th>DUL DUES</th>
<th>IMI</th>
<th>APPR</th>
<th>FCF</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>29.64</td>
<td>(5.65 + 1.10)</td>
<td>.88</td>
<td>(1.50 + .44)</td>
<td>6.70</td>
<td>3.85</td>
<td>2.00</td>
<td>1.23</td>
<td>.54</td>
<td>.30</td>
<td>.02</td>
<td>53.85</td>
</tr>
</tbody>
</table>

Base Rate: $29.64  
Vacation, Dues Check Off: $3.23  
Taxable Amount: $32.87

**FOREMAN RATE** - The Foreman rate shall be an additional $3.00 above the scale.  
**REFRACTORY** - The Refractory Base Wage rate shall be $31.14 with above fringe benefits.  
**VACATION PAY** - Vacation Pay shall be pyramided in all overtime pay. Time and one-half = $3.00  
Double-time = $4.00

Sincerely,

Michael J Cook

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**Apprentice Wages**

<table>
<thead>
<tr>
<th>BASE WAGE</th>
<th>TAXABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st 1000 hours 50%</td>
<td>$14.82</td>
</tr>
<tr>
<td>2nd 1000 hours 55%</td>
<td>$16.30</td>
</tr>
<tr>
<td>3rd 1000 hours 65%</td>
<td>$19.27</td>
</tr>
<tr>
<td>4th 1000 hours 75%</td>
<td>$22.23</td>
</tr>
<tr>
<td>5th 1000 hours 85%</td>
<td>$25.19</td>
</tr>
<tr>
<td>6th 1000 hours 95%</td>
<td>$28.16</td>
</tr>
</tbody>
</table>

* Taxable wage - Includes Vacation and Dues
Scope of the Agreement
This agreement shall cover the counties of St. Louis, Koochiching, Itasca, Aitkin, Carlton, Lake, and Cook. The agreement shall also cover all of the part of Pine County north of County Road 30 and include the city of Sandstone.

March 5, 2015

**BRICKLAYERS AND ALLIED CRAFTWORKERS**  
**LOCAL UNION 1 MINNESOTA / NORTH DAKOTA**

**DULUTH AREA – TILE LAYERS**

This is to advise you that the new working agreement calls for a $1.06 increase per hour on May 1, 2015. Please inform your bookkeeping department of the following rates.

The total wage rate effective May 1, 2015 for members of the Bricklayers and Allied Craftworkers will be as follows:

<table>
<thead>
<tr>
<th>HEALTH WAGES</th>
<th>IU &amp; PPA</th>
<th>LOCAL PENSION</th>
<th>LOCAL ANNUITY</th>
<th>VAC. DUES</th>
<th>IMI</th>
<th>APPR</th>
<th>FCF</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>23.02</td>
<td>5.65</td>
<td>1.50</td>
<td>6.70</td>
<td>4.68</td>
<td>.50</td>
<td>.46</td>
<td>.20</td>
<td>.02</td>
</tr>
</tbody>
</table>

Base Rate: $23.02  
Vacation, Dues Check Off: $1.57  
Taxable Amount: $24.59

Foreman shall receive an additional $1.00 above the scale.

Sincerely,

**Michael J. Cook**

Michael J. Cook  
President / Secretary - Treasurer  
Bricklayers and Allied Craftworkers  
Local Union 1 Minnesota / North Dakota

**APPRENTICESHIP WAGES**

<table>
<thead>
<tr>
<th>BASE WAGE</th>
<th>TAXABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st 2000 hours 91% - $20.95</td>
<td>$22.52 *</td>
</tr>
<tr>
<td>2nd 2000 hours 94% - $21.64</td>
<td>$23.21 *</td>
</tr>
<tr>
<td>3rd 2000 hours 97% - $22.33</td>
<td>$23.90 *</td>
</tr>
</tbody>
</table>

* Taxable wage = Includes Dues
March 5, 2015

BRICKLAYERS AND ALLIED CRAFTWORKERS
LOCAL UNION 1 MINNESOTA / NORTH DAKOTA
DULUTH AREA - TILE FINISHERS

This is to advise you that the new working agreement calls for a $.80 increase per hour on May 1, 2015. Please inform your bookkeeping department of the following rates.

The total wage rate effective May 1, 2015 for members of the Bricklayers and Allied Craftworkers will be as follows:

<table>
<thead>
<tr>
<th>HEALTH WAGES</th>
<th>$BANK - RPP</th>
<th>IU &amp; PPA</th>
<th>LOCAL PENSION</th>
<th>LOCAL ANNUITY</th>
<th>VAC.</th>
<th>DUES</th>
<th>IMI</th>
<th>APPR</th>
<th>FCF</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.24</td>
<td>(6.65 + 1.10)</td>
<td>.50</td>
<td>(1.50 + .44)</td>
<td>6.70</td>
<td>.50</td>
<td>.50</td>
<td>.85</td>
<td>.35</td>
<td>.20</td>
<td>.02</td>
</tr>
</tbody>
</table>

Base Rate: $16.24
Vacation, Dues Check Off: $1.35
Taxable Amount: $17.59

Sincerely,

Michael J. Cook

Michael J. Cook
President / Secretary - Treasurer
Bricklayers and Allied Craftworkers
Local Union 1 Minnesota / North Dakota

APPRENTICESHIP WAGES

<table>
<thead>
<tr>
<th>BASE WAGE</th>
<th>TAXABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st 1000 hours 60% - $9.74</td>
<td>$11.09*</td>
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<tr>
<td>2nd 1000 hours 70% - $11.37</td>
<td>$12.72 *</td>
</tr>
<tr>
<td>3rd 1000 hours 80% - $12.99</td>
<td>$14.34 *</td>
</tr>
<tr>
<td>4th 1000 hours 90% - $14.62</td>
<td>$15.97 *</td>
</tr>
</tbody>
</table>

* Taxable wage = Includes Dues

47-2015
Residential work is defined as single family or duplex or smaller. All other work is considered commercial and should be paid

<table>
<thead>
<tr>
<th>Classification of Carpenters</th>
<th>Contracting</th>
<th>Fair</th>
<th>Apprentice/ Education</th>
<th>DC Pension</th>
<th>DB Pension</th>
<th>Health</th>
<th>Dues</th>
<th>Savings</th>
<th>Gross Wages</th>
<th>Percent (%)</th>
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</thead>
<tbody>
<tr>
<td>Commercial</td>
<td>$48,105</td>
<td>$15,000</td>
<td>$8,000</td>
<td>$2,000</td>
<td>$1,000</td>
<td>$1,000</td>
<td>$1,000</td>
<td>$1,000</td>
<td>$50,000</td>
<td>100%</td>
</tr>
<tr>
<td>Non-Residential</td>
<td>$48,105</td>
<td>$15,000</td>
<td>$8,000</td>
<td>$2,000</td>
<td>$1,000</td>
<td>$1,000</td>
<td>$1,000</td>
<td>$1,000</td>
<td>$50,000</td>
<td>100%</td>
</tr>
<tr>
<td>Residential</td>
<td>$48,105</td>
<td>$15,000</td>
<td>$8,000</td>
<td>$2,000</td>
<td>$1,000</td>
<td>$1,000</td>
<td>$1,000</td>
<td>$1,000</td>
<td>$50,000</td>
<td>100%</td>
</tr>
</tbody>
</table>

Effective May 1, 2015

Carpenters
Regional Council of Northern Minnesota

Local 361

Northern Minnesota
### May 1, 2019 Increases

Dive's Expense: $10.00 per day for use of personal equipment and $9.00 per day for use of air compressor.

Reimbursement: 
always assume a crew that complies with OSHA regulations and may increase the crew to meet productivity and safety.

District 1: Predetermined Foreperson, Ellison Budget allocations are also the same as a District 1 Predetermined Foreperson.

NOTE: Gross Wages for Predetermined Apprentices' working in all districts are calculated using the respective percentages of a Predetermined Foreperson.

### Table: Predetermined Wage Rates

<table>
<thead>
<tr>
<th>Classification</th>
<th>Time</th>
<th>Percent</th>
<th>Package</th>
<th>Fringe Benefits</th>
<th>Deductions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predetermined Foreperson</td>
<td>0-6 Months</td>
<td>70%</td>
<td>$42.90</td>
<td>7.1-12 Months</td>
<td>$42.90</td>
</tr>
<tr>
<td>Predetermined Foreperson</td>
<td>12-18 Months</td>
<td>75%</td>
<td>13.69</td>
<td>18-24 Months</td>
<td>$42.90</td>
</tr>
<tr>
<td>Predetermined Foreperson</td>
<td>24-30 Months</td>
<td>80%</td>
<td>$42.90</td>
<td>30-36 Months</td>
<td>$42.90</td>
</tr>
<tr>
<td>Predetermined Foreperson</td>
<td>36-42 Months</td>
<td>85%</td>
<td>$42.90</td>
<td>42-48 Months</td>
<td>$42.90</td>
</tr>
<tr>
<td>Predetermined Foreperson</td>
<td>48-54 Months</td>
<td>90%</td>
<td>$42.90</td>
<td>54-60 Months</td>
<td>$42.90</td>
</tr>
<tr>
<td>Predetermined Foreperson</td>
<td>60-66 Months</td>
<td>95%</td>
<td>$42.90</td>
<td>66-72 Months</td>
<td>$42.90</td>
</tr>
<tr>
<td>Predetermined Foreperson</td>
<td>72-78 Months</td>
<td>100%</td>
<td>$42.90</td>
<td>78-84 Months</td>
<td>$42.90</td>
</tr>
<tr>
<td>Predetermined Foreperson</td>
<td>84-90 Months</td>
<td>100%</td>
<td>$42.90</td>
<td>90-96 Months</td>
<td>$42.90</td>
</tr>
</tbody>
</table>

### Effective May 1, 2019

Carpenters
Regional Council of
North Central States

Minnesota Highway Heavy
May 1, 2016 Increase $1.54 to be allocated

They are intended. Please check with local training centers to find correct jurisdictional information.

IMPORTANT NOTE TO CONTRACTORS: Wage Percentages for Apprentices Only match rates in the jurisdiction in which the work is to be performed. Percentages for other classifications are intended to be used as a guide for wage comparisons. Percentages for Fair/Prime/Contracting are intended to be used as a guide for wage comparisons. Percentages for DC Pension, DB Pension, Health, Dues, Savings, and Gross Wages are intended to be used as a guide for specific requirements.

<table>
<thead>
<tr>
<th>Deductions</th>
<th>Prime/Contracting</th>
<th>Fair</th>
<th>DC Pension</th>
<th>DB Pension</th>
<th>Health</th>
<th>Dues</th>
<th>Savings</th>
<th>Gross Wages</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.873</td>
<td>$38.96</td>
<td>$0.02</td>
<td>$9.00</td>
<td>$6.66</td>
<td>$35.75</td>
<td>$0.05</td>
<td>$0.06</td>
<td>$7.33</td>
<td>63%</td>
</tr>
<tr>
<td>0.875</td>
<td>$39.19</td>
<td>$0.02</td>
<td>$9.00</td>
<td>$6.66</td>
<td>$35.75</td>
<td>$0.05</td>
<td>$0.06</td>
<td>$7.33</td>
<td>63%</td>
</tr>
<tr>
<td>0.875</td>
<td>$39.19</td>
<td>$0.02</td>
<td>$9.00</td>
<td>$6.66</td>
<td>$35.75</td>
<td>$0.05</td>
<td>$0.06</td>
<td>$7.33</td>
<td>63%</td>
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<tr>
<td>0.875</td>
<td>$39.19</td>
<td>$0.02</td>
<td>$9.00</td>
<td>$6.66</td>
<td>$35.75</td>
<td>$0.05</td>
<td>$0.06</td>
<td>$7.33</td>
<td>63%</td>
</tr>
<tr>
<td>0.875</td>
<td>$39.19</td>
<td>$0.02</td>
<td>$9.00</td>
<td>$6.66</td>
<td>$35.75</td>
<td>$0.05</td>
<td>$0.06</td>
<td>$7.33</td>
<td>63%</td>
</tr>
<tr>
<td>0.875</td>
<td>$39.19</td>
<td>$0.02</td>
<td>$9.00</td>
<td>$6.66</td>
<td>$35.75</td>
<td>$0.05</td>
<td>$0.06</td>
<td>$7.33</td>
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</tr>
<tr>
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<td>$39.19</td>
<td>$0.02</td>
<td>$9.00</td>
<td>$6.66</td>
<td>$35.75</td>
<td>$0.05</td>
<td>$0.06</td>
<td>$7.33</td>
<td>63%</td>
</tr>
<tr>
<td>0.875</td>
<td>$39.19</td>
<td>$0.02</td>
<td>$9.00</td>
<td>$6.66</td>
<td>$35.75</td>
<td>$0.05</td>
<td>$0.06</td>
<td>$7.33</td>
<td>63%</td>
</tr>
<tr>
<td>0.875</td>
<td>$39.19</td>
<td>$0.02</td>
<td>$9.00</td>
<td>$6.66</td>
<td>$35.75</td>
<td>$0.05</td>
<td>$0.06</td>
<td>$7.33</td>
<td>63%</td>
</tr>
<tr>
<td>0.875</td>
<td>$39.19</td>
<td>$0.02</td>
<td>$9.00</td>
<td>$6.66</td>
<td>$35.75</td>
<td>$0.05</td>
<td>$0.06</td>
<td>$7.33</td>
<td>63%</td>
</tr>
<tr>
<td>0.875</td>
<td>$39.19</td>
<td>$0.02</td>
<td>$9.00</td>
<td>$6.66</td>
<td>$35.75</td>
<td>$0.05</td>
<td>$0.06</td>
<td>$7.33</td>
<td>63%</td>
</tr>
<tr>
<td>0.875</td>
<td>$39.19</td>
<td>$0.02</td>
<td>$9.00</td>
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<td>$35.75</td>
<td>$0.05</td>
<td>$0.06</td>
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</tr>
<tr>
<td>0.875</td>
<td>$39.19</td>
<td>$0.02</td>
<td>$9.00</td>
<td>$6.66</td>
<td>$35.75</td>
<td>$0.05</td>
<td>$0.06</td>
<td>$7.33</td>
<td>63%</td>
</tr>
<tr>
<td>0.875</td>
<td>$39.19</td>
<td>$0.02</td>
<td>$9.00</td>
<td>$6.66</td>
<td>$35.75</td>
<td>$0.05</td>
<td>$0.06</td>
<td>$7.33</td>
<td>63%</td>
</tr>
</tbody>
</table>

Effective May 1, 2015

Carpenters
Regional Council of
Southern California
TO: ALL NORTHERN MINNESOTA & NORTHWESTERN WISCONSIN PLASTERING CONTRACTORS

ATTN: PAYROLL DEPT, 2015 WAGE RATES

This Agreement shall govern work done in the areas defined as follows:
All of the following counties: Aitkin, Carlton, Cook, Itasca, Lake, St. Louis, and that part of Pine County north of T.24N, as well as the following counties in Wisconsin: Ashland, Bayfield, Douglas, Iron, Sawyer, Washburn, Burnett, and Price.

EFFECTIVE MAY 1, 2015

<table>
<thead>
<tr>
<th>BASIC WAGE*</th>
<th>HEALTH &amp; HRA WELFARE</th>
<th>PENSION</th>
<th>SAVINGS*</th>
<th>TRAINING</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>31.24</td>
<td>7.23</td>
<td>2.00</td>
<td>7.94</td>
<td>(3.60)</td>
<td>.46</td>
</tr>
</tbody>
</table>

*The Basic Wage before the deduction of savings is the straight time wage used in determining overtime. (EXAMPLE: 1.5 X $31.24 = $46.86 TAXED, THEN MINUS $3.60 FOR SAVINGS EACH HOUR) After all taxes are deducted from the Basic Wage rate, $3.60 per hour for each hour worked shall be deducted and applied to the Minnesota Cement Masons Savings Plan.

Foreman: $1.50 above basic wage

APPRENTICE RATES:

<table>
<thead>
<tr>
<th>HOURS</th>
<th>RATE</th>
<th>HOURS</th>
<th>RATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>UP TO 1000</td>
<td>70%</td>
<td>1001-2000</td>
<td>75%</td>
</tr>
<tr>
<td>1001-3000</td>
<td>80%</td>
<td>2001-4000</td>
<td>85%</td>
</tr>
<tr>
<td>3001-5000</td>
<td>90%</td>
<td>4001-6000</td>
<td>95%</td>
</tr>
</tbody>
</table>

TO: ALL IRON RANGE AREA CONTRACTORS
TO: ALL DULUTH AREA CONTRACTORS

ATTN: PAYROLL DEPT

RE: 2015 WAGE RATES - HIGHWAY/HEAVY DIVISION

This Agreement shall govern work done in the areas defined as follows:
All of the following counties: Aitkin, Carlton, Cook, Lake and that part of
Pine County north of T.24N, and that part of St. Louis County south of
T.55N, as well as the following counties in Wisconsin: Ashland, Douglas,
Bayfield, Burnett, Iron, Washburn, Sawyer and Price.

EFFECTIVE MAY 1, 2015

<table>
<thead>
<tr>
<th>BASIC WAGE*</th>
<th>HEALTH &amp; WELFARE</th>
<th>HRA</th>
<th>PENSION</th>
<th>SAVINGS</th>
<th>TRAINING</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>33.70</td>
<td>7.23</td>
<td>1.75</td>
<td>7.94</td>
<td>(5.42)</td>
<td>.46</td>
<td>51.08</td>
</tr>
</tbody>
</table>

*The Basic Wage before the deduction of savings is the straight time wage used in determining overtime. (EXAMPLE: 1.5 x $33.70 = $50.55, TAXED, THEN MINUS $5.42 FOR SAVINGS EACH HOUR) After all taxes are deducted from the Basic Wages, $5.42 per hour for each hour worked shall be deducted and applied to the Minnesota Cement Masons Savings Plan.

Foreman: $1.50 above basic wage

APPRENTICE RATES:

| UP TO 1000 HRS | 70% | 23.59 |
| 1001-2000 HRS | 75% | 25.28 |
| 2001-3000 HRS | 80% | 26.96 |
| 3001-4000 HRS | 85% | 28.65 |
| 4001-5000 HRS | 90% | 30.33 |
| 5001-6000 HRS | 95% | 32.02 |
CEMENT MASON, PLASTERERS AND SHOPOHANDS
Local No. 633
of Minnesota, North Dakota, and NW Wisconsin • AFL-CIO
312 Central Avenue • Room 376 • Minneapolis, Minnesota 55414
Phone (612)379-1558 • Fax (612)379-1559

TO: ALL DULUTH AREA CONTRACTORS

ATTN: PAYROLL DEPT

RE: 2015 WAGE RATES - BUILDERS DIVISION

This Agreement shall govern work done in the areas defined as follows: All of the following counties: Aitkin, Carlton, Cook, Lake and that part of Pine County north of the northern boundaries of Dell Grove, Sandstone and Danforth townships, and that part of St. Louis County south of Co Rd 967 which is two miles north of Cotton on Hwy #63, as well as the following counties in Wisconsin: Douglas, Bayfield, Washburn, Sawyer and Price.

EFFECTIVE MAY 1, 2015

<table>
<thead>
<tr>
<th>BASIC WAGE*</th>
<th>HEALTH &amp; WELFARE</th>
<th>HRA</th>
<th>PENSION</th>
<th>SAVINGS</th>
<th>TRAINING</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>30.61</td>
<td>7.23</td>
<td>1.25</td>
<td>7.94</td>
<td>(5.02)</td>
<td>.46</td>
<td>47.49</td>
</tr>
</tbody>
</table>

*The Basic Wage before the deduction of savings is the straight time wage used in determining overtime. (EXAMPLE: 1.5 X $30.61 = $45.92 TAXED, THEN MINUS $5.02 FOR SAVINGS EACH HOUR)

After all taxes are deducted from the Basic Wage rate, $5.02 per hour for each hour worked shall be deducted and applied to the Minnesota Cement Masons Savings Plan.

Foreman: $2.00 above basic wage

APPRENTICE RATES:

| UP TO 1000 HRS | 70% | 21.43 |
| 1001-2000 HRS | 75% | 22.96 |
| 2001-3000 HRS | 80% | 24.49 |
| 3001-4000 HRS | 85% | 26.02 |
| 4001-5000 HRS | 90% | 27.55 |
| 5001-6000 HRS | 95% | 29.08 |
Wage & Fringe Benefits: January 1, 2015

To: All Employers doing Business within the Jurisdiction of IUEC Local 9
Subject: Wage rates effective January 1, 2015 – IUEC Local 9

Minnesota, North Dakota and Western Wisconsin

In accordance with the provisions of Article V of the current labor agreement (2012-2017) between all signatory employers and the International Union of Elevator Constructors, the following rates shall be effective on January 1, 2015:

- Mechanic In Charge ........................................................................ (112.5%) $50.55
- Mechanic ......................................................................................... (100.0%) $44.93
- 4th Year Apprentice .......................................................................... (80.0%) $35.94
- 3rd Year Apprentice .......................................................................... (70.0%) $31.45
- 2nd Year Apprentice .......................................................................... (65.0%) $29.20
- 1st Year Apprentice .......................................................................... (55.0%) $24.71
- Probationary Apprentice ...................................................................(50.0%) $22.47
- Helper .............................................................................................. (70.0%) $31.45

The company will make fringe benefit contributions per hour worked in accordance with the following schedule:

- Health Benefit Plan ......................................................................... $13.575
- Pension ............................................................................................. $8.46
- Annuity ............................................................................................. $5.75
- Education .......................................................................................... $0.60
- Elevator Ind. Work Preservation Fund ................................................. $0.30

TOTAL .................................................................................................. $28.685

Vacation: 6% Hourly pay under 5 years
8% Hourly pay over 5 years
**Local 106 Glaziers Wage Rates**  
**Effective May 4, 2015**

**Journeyman Wage Rates:**

<table>
<thead>
<tr>
<th></th>
<th>Health &amp; Welfare</th>
<th>Pension</th>
<th>Annuity</th>
<th>Industry &amp; Appr</th>
<th>STAR</th>
<th>DC82/FCF</th>
<th>Total</th>
<th>Vac *</th>
<th>Dues **</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glaziers</td>
<td>$29.67</td>
<td>$6.85</td>
<td>$5.67</td>
<td>$3.65</td>
<td>$0.56</td>
<td>$0.10</td>
<td>$46.51</td>
<td>$2.30</td>
<td>$1.83</td>
</tr>
<tr>
<td>Auto Glass</td>
<td>$23.74</td>
<td>$6.85</td>
<td>$5.67</td>
<td>$3.65</td>
<td>$0.56</td>
<td>$0.10</td>
<td>$40.58</td>
<td>$2.30</td>
<td>$1.62</td>
</tr>
</tbody>
</table>

**Apprentices Indentured BEFORE May 1, 2014:**

<table>
<thead>
<tr>
<th>Hours</th>
<th>%</th>
<th>Base</th>
<th>Welfare</th>
<th>Pension</th>
<th>Annuity</th>
<th>Industry &amp; Appr</th>
<th>STAR</th>
<th>DC82/FCF</th>
<th>Total</th>
<th>Vac *</th>
<th>Dues **</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1000</td>
<td>50</td>
<td>$14.84</td>
<td>$6.85</td>
<td>$5.67</td>
<td>$3.65</td>
<td>$0.56</td>
<td>$0.10</td>
<td>$0.01</td>
<td>$31.68</td>
<td>$1.15</td>
<td>$1.31</td>
</tr>
<tr>
<td>1001-2000</td>
<td>55</td>
<td>$16.32</td>
<td>$6.85</td>
<td>$5.67</td>
<td>$3.65</td>
<td>$0.56</td>
<td>$0.10</td>
<td>$0.01</td>
<td>$33.16</td>
<td>$1.27</td>
<td>$1.36</td>
</tr>
<tr>
<td>2001-3000</td>
<td>60</td>
<td>$17.81</td>
<td>$6.85</td>
<td>$5.67</td>
<td>$3.65</td>
<td>$0.56</td>
<td>$0.10</td>
<td>$0.01</td>
<td>$34.65</td>
<td>$1.38</td>
<td>$1.42</td>
</tr>
<tr>
<td>3001-4000</td>
<td>70</td>
<td>$20.77</td>
<td>$6.85</td>
<td>$5.67</td>
<td>$3.65</td>
<td>$0.56</td>
<td>$0.10</td>
<td>$0.01</td>
<td>$37.61</td>
<td>$1.61</td>
<td>$1.52</td>
</tr>
<tr>
<td>4001-5000</td>
<td>80</td>
<td>$23.74</td>
<td>$6.85</td>
<td>$5.67</td>
<td>$3.65</td>
<td>$0.56</td>
<td>$0.10</td>
<td>$0.01</td>
<td>$40.58</td>
<td>$1.84</td>
<td>$1.62</td>
</tr>
<tr>
<td>5001-6000</td>
<td>90</td>
<td>$26.71</td>
<td>$6.85</td>
<td>$5.67</td>
<td>$3.65</td>
<td>$0.56</td>
<td>$0.10</td>
<td>$0.01</td>
<td>$43.55</td>
<td>$2.07</td>
<td>$1.73</td>
</tr>
</tbody>
</table>

**Apprentices Indentured on or AFTER May 1, 2014:**

<table>
<thead>
<tr>
<th>Hours</th>
<th>%</th>
<th>Base</th>
<th>Welfare</th>
<th>Pension</th>
<th>Annuity</th>
<th>Industry &amp; Appr</th>
<th>STAR</th>
<th>DC82/FCF</th>
<th>Total</th>
<th>Vac *</th>
<th>Dues **</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1000</td>
<td>50</td>
<td>$14.84</td>
<td>$6.85</td>
<td>$5.67</td>
<td>$1.83</td>
<td>$0.56</td>
<td>$0.10</td>
<td>$0.01</td>
<td>$29.86</td>
<td>$1.15</td>
<td>$1.25</td>
</tr>
<tr>
<td>1001-2000</td>
<td>55</td>
<td>$16.32</td>
<td>$6.85</td>
<td>$5.67</td>
<td>$2.01</td>
<td>$0.56</td>
<td>$0.10</td>
<td>$0.01</td>
<td>$31.52</td>
<td>$1.27</td>
<td>$1.31</td>
</tr>
<tr>
<td>2001-3000</td>
<td>60</td>
<td>$17.81</td>
<td>$6.85</td>
<td>$5.67</td>
<td>$2.19</td>
<td>$0.56</td>
<td>$0.10</td>
<td>$0.01</td>
<td>$33.19</td>
<td>$1.38</td>
<td>$1.37</td>
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<tr>
<td>3001-4000</td>
<td>70</td>
<td>$20.77</td>
<td>$6.85</td>
<td>$5.67</td>
<td>$2.56</td>
<td>$0.56</td>
<td>$0.10</td>
<td>$0.01</td>
<td>$36.52</td>
<td>$1.61</td>
<td>$1.48</td>
</tr>
<tr>
<td>4001-5000</td>
<td>80</td>
<td>$23.74</td>
<td>$6.85</td>
<td>$5.67</td>
<td>$2.92</td>
<td>$0.56</td>
<td>$0.10</td>
<td>$0.01</td>
<td>$39.85</td>
<td>$1.84</td>
<td>$1.60</td>
</tr>
<tr>
<td>5001-6000</td>
<td>90</td>
<td>$26.71</td>
<td>$6.85</td>
<td>$5.67</td>
<td>$3.29</td>
<td>$0.56</td>
<td>$0.10</td>
<td>$0.01</td>
<td>$43.19</td>
<td>$2.07</td>
<td>$1.72</td>
</tr>
</tbody>
</table>

*The Vacation Contribution is included in the taxable wage listed above, then deducted and remitted along with your Health & Welfare Contribution.*
### Duluth Apprentice Wage Rate Information

Subsidies for all jobs outside of 70 mile radius of Duluth Ave & Superior Stree in Duluth - $55.00

Subsidies for all jobs outside of 35 mile radius of Duluth Ave & Superior Stree in Duluth - $15.00

401k deduction - $1,000 $3,000 + $5,000 per hour (at employers discretion)

<table>
<thead>
<tr>
<th>1.10</th>
<th>1.08</th>
<th>1.05</th>
<th>1.01</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.22</td>
<td>0.23</td>
<td>0.21</td>
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<tr>
<td>0.40</td>
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<tr>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
</tr>
<tr>
<td>1.25%</td>
<td>1.25%</td>
<td>1.25%</td>
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</tr>
<tr>
<td>19%</td>
<td>19%</td>
<td>19%</td>
<td>19%</td>
</tr>
</tbody>
</table>

### 2019 Wage Rate Changes

- Admin. Medical Fund (906/hr), NLWMC (91 cent/hr) or LIMC (90 cent/hr)
- Local WC
- Admin. Medical Fund
- NLWMC (91 cent/hr) or LIMC (90 cent/hr)
- Service Change
- Apprenticeship

<table>
<thead>
<tr>
<th>Total Package %</th>
<th>70.3%</th>
<th>70.3%</th>
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<th>70.3%</th>
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<tbody>
<tr>
<td>Total Package</td>
<td>$62.70</td>
<td>$59.65</td>
<td>$58.05</td>
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</tr>
<tr>
<td>Employee</td>
<td>20%</td>
<td>20%</td>
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</tr>
<tr>
<td>NJWPF</td>
<td>$52.73</td>
<td>$50.18</td>
<td>$48.53</td>
<td>$48.53</td>
</tr>
<tr>
<td>NJWPF</td>
<td>16%</td>
<td>13.5%</td>
<td>13.5%</td>
<td>13.5%</td>
</tr>
<tr>
<td>NJP</td>
<td>13%</td>
<td>13%</td>
<td>13%</td>
<td>13%</td>
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<tr>
<td>NJA</td>
<td>1%</td>
<td>1%</td>
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<td>1%</td>
</tr>
<tr>
<td>NJWPF</td>
<td>$52.73</td>
<td>$50.18</td>
<td>$48.53</td>
<td>$48.53</td>
</tr>
<tr>
<td>NJWPF</td>
<td>16%</td>
<td>13.5%</td>
<td>13.5%</td>
<td>13.5%</td>
</tr>
<tr>
<td>NJP</td>
<td>13%</td>
<td>13%</td>
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<td>NJA</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
</tr>
</tbody>
</table>

**Effective Dates**

- 05/31/15
- 06/03/18
- 06/04/17
- 05/29/16
- 05/31/15
- Revised 5/4/15
May 28, 2015

To whom it may concern,

The allocation of the wage increase effective June 1st 2015 is as follows:

<table>
<thead>
<tr>
<th></th>
<th>$27.82</th>
<th>$21.18</th>
<th>$18.64</th>
<th>$16.14</th>
<th>$13.59</th>
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<tbody>
<tr>
<td>Base Wage</td>
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<td></td>
<td></td>
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<tr>
<td>Savings</td>
<td>$8.00</td>
<td>$6.00</td>
<td>$4.76</td>
<td>$3.50</td>
<td>$2.26</td>
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<tr>
<td>Union Dues</td>
<td>$3.49</td>
<td>$2.79</td>
<td>$2.44</td>
<td>$2.09</td>
<td>$1.75</td>
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<tr>
<td>Pension</td>
<td>$9.00</td>
<td>$7.20</td>
<td>$5.76</td>
<td>$4.30</td>
<td>$2.86</td>
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<tr>
<td>Local Training</td>
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<tr>
<td>Nat'l Training</td>
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<td>$0.05</td>
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<tr>
<td>Industry Fund</td>
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<td>$0.15</td>
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<td>LMCT</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>$55.71</strong></td>
<td><strong>$44.57</strong></td>
<td><strong>$39.00</strong></td>
<td><strong>$33.43</strong></td>
<td><strong>$27.86</strong></td>
</tr>
<tr>
<td><strong>Total Taxable</strong></td>
<td><strong>$39.31</strong></td>
<td><strong>$29.97</strong></td>
<td><strong>$25.84</strong></td>
<td><strong>$21.73</strong></td>
<td><strong>$17.60</strong></td>
</tr>
</tbody>
</table>

Please feel free to call the Local office with questions or concerns.

Sincerely,

[Signature]

David Cartwright
Business Manager
Attention: Payroll Department

Enclosed is the following wage information regarding Ironworkers Local No. 512 apprentices:

- Applicable wage and percentage rates for apprentices effective May 1, 2015.

- List of apprentices graduating to journeyperson status effective May 1, 2015.

- List of apprentices with the applicable pay and percentage rates for Regions A, B and C. Please use this updated list because there may be first year apprentices that have received credit for past work experience and education since the last mailing.

- Apprentice Performance Report – please have the foreman/superintendent complete one for each apprentice and email or fax back to the Training Center. This will enable us to ensure that the apprentices are receiving the necessary training for the job.

Please adjust your payroll records accordingly.

In addition, we would like to email the wage information to your company instead of via mail. Please email Lori at lori@iw512jac.com the email address you would like to use to receive information on apprentices’ wages. Thank you.

If you have any questions, please contact me.

Sincerely,

Larry Gilbertson
Director of Training
APPRENTICE WAGE SCALE

The wage scale listed below is effective 5/1/15 to 10/31/15.

Regions A, B & C wages are as follows:

<table>
<thead>
<tr>
<th>PERIOD</th>
<th>%</th>
<th>REGION A RATE EFFECTIVE 5/1/15</th>
<th>REGION B RATE EFFECTIVE 5/1/15</th>
<th>REGION C RATE EFFECTIVE 5/1/15</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st - 6 months</td>
<td>70</td>
<td>$24.85</td>
<td>$21.73</td>
<td>$20.86</td>
</tr>
<tr>
<td>2nd - 6 months</td>
<td>75</td>
<td>$26.63</td>
<td>$23.28</td>
<td>$22.35</td>
</tr>
<tr>
<td>3rd - 6 months</td>
<td>80</td>
<td>$28.40</td>
<td>$24.83</td>
<td>$23.84</td>
</tr>
<tr>
<td>4th - 6 months</td>
<td>85</td>
<td>$30.17</td>
<td>$26.38</td>
<td>$25.33</td>
</tr>
<tr>
<td>5th - 6 months</td>
<td>90</td>
<td>$31.95</td>
<td>$27.94</td>
<td>$26.82</td>
</tr>
<tr>
<td>6th - 6 months</td>
<td>95</td>
<td>$33.72</td>
<td>$29.49</td>
<td>$28.31</td>
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</table>

Apprentices receive all fringe benefits listed below:

<table>
<thead>
<tr>
<th></th>
<th>DEFINED BENEFIT PENSION</th>
<th>DEFINED CONTRIBUTION PENSION</th>
<th>HEALTH &amp; WELFARE</th>
<th>APPRENTICE TRAINING FUND IMPACT</th>
<th>FAIR CONTRACTING FOUNDATION</th>
<th>TOTAL PACKAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Region A</td>
<td>$9.75</td>
<td>$5.00</td>
<td>$7.90</td>
<td>$0.80</td>
<td>$0.27</td>
<td>$23.74</td>
</tr>
<tr>
<td>Region B</td>
<td>$9.75</td>
<td>$5.00</td>
<td>$7.90</td>
<td>$0.80</td>
<td>$0.27</td>
<td>$23.74</td>
</tr>
<tr>
<td>Region C</td>
<td>$9.75</td>
<td>$5.00</td>
<td>$7.90</td>
<td>$0.80</td>
<td>$0.27</td>
<td>$23.74</td>
</tr>
</tbody>
</table>

Region A Journeyman rate is $35.50 effective 5/1/15
Region B Journeyman rate is $31.04 effective 5/1/15
Region C Journeyman rate is $29.80 effective 5/1/15
May 1, 2015

The following seventy (70) graduating apprentices from Regions A, B and C will be upgraded to journeyperson status effective May 1, 2015.

**REGION A**

1. Arnal, Mike  
2. Bertelson, Jesse  
3. Blair, Nate  
4. Bourgel II, Tom  
5. Breitenbucker, Dan  
6. Buchanan, Robert  
7. Burke, Sam  
8. Conrad, Nick  
9. Cook, Brian  
10. Cooke, Cody  
11. Dalager, Dale  
12. DeMarre, Nick  
13. Dinsmore, William  
14. Downs, Megan  
15. Duscher, Brian  
16. Filipczak, Michael  
17. Haack, Nate  
18. Hackett, BillieRae  
19. Hellquist, Jon  
20. Hite, Jr., Todd  
21. Jochim, Michael  
22. Johnson, Ivan  
23. Justen, Tyler  
24. Linder, Glen  
25. Mangum, Matt  
26. Maull, Danell  
27. Mickle Van Sickle, Shawn  
28. Miskavige, Jacob  
29. Miskavige, Jr., Tim  
30. Monson, Neil  
31. Novotny, Dustin  
32. Pearson, Matt  
33. Pederson, Jordan  
34. Peters, Ben  
35. Rodeck, Ryan  
36. Roden, Derek  
37. Sanders, Andrew  
38. Sanders, Garrett  
39. Seidel, Buster  
40. Sigala, Alex  
41. Sozio, Chris  
42. Steffens, Alex  
43. Stellick, Kyle  
44. Tripp, Jeremiah  
45. Vieths, Stephen  
46. Warner, Joe  
47. West, Dakota

**REGION B**

1. Anderson, Isaac  
2. Asuma, Michael  
3. Bragee, Matt  
4. Buskala, Ashlee  
5. Fischer, Andrew  
6. Godbout, Jamie  
7. Johnson, Marcus  
8. Koivisto, Shay  
9. Landwehr, Matt  
10. Larson, Tyler  
11. Lyons II, James  
12. Olson, Dain  
13. Pearson, Ken  
14. Povhe, Ben  
15. Prentice, Grant  
16. Spindler, Cole  
17. Switzer, Tom  
18. Trader, Erik  
19. Vollmer, Jake

**REGION C**

1. Early, Sean  
2. Morris, Russell  
3. Roden, Tyler  
4. Gross, Kurtis
ST. PAUL, MN
REGION A APPELNTCES

48. Ziegler, Robert
47. Ziedel, Jeff
46. Zeng, Jerry
45. Zeman, Jeffrey
44. Wallack, Daniel
43. Walker, Victor
42. Twidt, Kelly
41. Telford, Reid
40. Tator, Michael
39. Strong, Brandon
38. Stoffers, Joe
37. Smith, Juan
36. Shultz, Brandon
35. Rosales, Miguel
34. Reharty, Randy
33. Recher, Jordan
32. Peterson, Seth
31. Peterson, Joeseph
30. Palacios, Cecilio
29. Neuhauser, Adam
28. Moore, J.R., Touissant
27. Meyer, Maxwell
26. McPartland, Ryan
25. Massie, Alonso
24. Martin, Christopher
23. Key, Tim
22. Kimstra, Travis
21. Kelt, Brandon
20. Kamp, Daniel
19. Kaczynski, Jordan
18. Johnson, Keth
17. Jackson, Jason
16. Hedican, Patrick
15. Hawken, Tim
14. Green, Lance
13. Folk, Doug
12. Drake, Alexander
11. Dovi, Dominic
10. Davis, Ashley
9. D'Ambros, Joseph
8. Clowe, Casey
7. Cavazos, Fernando
6. Carvalho, Adam
5. Burns, Joe
4. Blue, Sneea
3. Bliss, Jeremie
2. Anderson, Ryan
1. Anderson, Adam

85%=.30.17
ST. PAUL, MN
REGION A APERNTICES

55. Smith, Ivan
54. Scott, Sylvester
53. Schwaner, James
52. Zapp, Matthew
51. Ruhnke, Jared
50. Rosenbush, Nathan
49. Rodriquez, Chris
48. Feist, Justin
47. Poage, Jesse
46. Peerson, Matthew
45. Peck, Mollie
44. O'Dell, Jacob
43. Nowak, Nathaniel
42. Neumann, Sam
41. Neumann, Jesse
40. Wilmot, Berks
39. Billimont, Michael
38. Weeserstetm, Ryan
37. Weggen, velary
36. Mckee, John
35. Lysen, Andrew
34. Lustig, Torrey
33. Phanseby, Luke
32. Loper, Roger
31. Lindell, Luke
30. Lewis-Avery, David
29. Kuck, Jesse
28. Koster, Ryan
27. Korn, Anthony
26. Kolsrud, Cody
25. Kenessser, Wyatt
24. Johnson, Joseph
23. Johnson, Brandon
22. Hylton, Matthew
21. Hoelscher, Blake
20. Hillemeier, Tim
19. Hilde, Ryan
18. Hanrinnen, Cody
17. Hamm, Allen
16. Grady, Deon
15. Goocher, Adam
14. Geroen, Dan
13. Frank, Eric
12. Fritzpatrick, James
11. Danner, Joshua
10. Christianson, Cory
9. Christiansen, Chad
8. Casey, Sean
7. Carpenter, Daniel
6. Beck, Colin
5. Brown, Nashaw
4. Bleeker, Jared
3. Bridgall, Shawn
2. Bruegman, Christopher
1. Berg, Kyle

80% = 528.40
28. Pellegrino-Aquino, June
   27. Pochsel, Matthew
   26. Petry, Dennis
   25. Palmer, Brandon
   24. O'Malley, Jonathan
   23. Montgomery, Justin
   22. Morehead, Genny
   22. Morehead, Jennifer
   21. Metzler, Poykert
   20. Meeks, Zachary
   19. Marlin, Willard
   18. Maehaule, Stunt
   17. Maehaule, Nicholas
   16. Lasagna, Zachary
   15. Kopaykoldsky, Edward
   14. Kincheloe, Tarra
   13. Johnson, Justin
   12. Johnson, Andrew
   11. Hebscher, Jeffrey
   10. Howell, Marion
   9. Hecht, Jr., Keith
   8. Hansen, Wyatt
   7. Goosby, Jordan
   6. Gossman, Peter
   5. Garza, Joe
   4. Deschene, Adam
   3. Deese, Mark
   2. Cooper, Travis
   1. Barnes, Bert

ST. PAUL, MN
REGION A APRENTICES
1. Allen, Aaron
2. Amrinder, Wade
3. Anderson, Anthony
4. Anderson, Cody
5. Anderson, Jacob
6. Anderson, Zachary
7. Avers, Justin
8. Barnes, Nicholas
9. Barry, Garrett
10. Benge, Schizophrenia
11. Benneke, Bischoff
12. Benner, Andy
13. Biber, Tanner
14. Black, Nicholas
15. Bryant, Jared
16. Burnside, Jaye
17. Carlson, Daniel
18. Cardone, George
19. Cortese, Rodrigo
20. Couture, Joseph
21. Denny, Kendall
22. Decker, Michael
23. Desrochers, Beau
24. Dwyer, Michael
25. Fabini, Laura
26. Fanhouse, Joshua
27. Fath, Josph
28. Faust, Kyle
29. Farsman, Kenny
30. Faye, Jason
31. Gaal, Philip
32. Gavril, Ezekiel
33. Gundersen, Bruce
34. Harris, Zachary
35. Hart, Lucas
36. Hoffman, Joshua
37. Humphreys, Justice
38. Islam, William
39. Jackman, Tyler
40. Jackson, Tristan
41. Johnson, Zachary
42. Johnson, Christopher
43. Kohlman, Walker
44. Lamourieux, James
45. Laine, Peter
46. Lamoraux, James
47. Lamoraux, William
48. Larsen, Taylor
49. Larsen, Corey
50. LeBlanc, Taylor
51. LeFevre, Ben
52. LePage, Robert
53. Lincoln, Joseph
54. Linn, Brian
55. Little, Michael
56. Lucek, Kyle
57. Macken,batch, Jeremiah
58. Macken, Benjamin
59. Magee, Patrick
60. Manning, Kent
61. Martin, Gregory
62. McGregor, Robert
63. McGregor, Matthew
64. Melka, Scott
65. Meyer, Dero
66. Miller, Donro
67. Olson, Trent
68. Onturf, Bryce
69. Parson, Dustin
70. Perry, Jeremy
71. Peterson, Toner
72. Pietsch, Taylor
73. Pietsch, Joseph
74. Peterson, Kurt
75. Petersen, Joseph
76. Podgorski, Matthew
77. Poissant, Matthew
78. Poth, Brady
79. Quade, Daniel
80. Rassier, John
81. Rice, Taylor
82. Rosier, Shawn
83. Sari, Travis
84. Santola, Jeremy
85. Sanowski, Jeremy
86. Singewald, Brandon
87. Smagis, Nicholas
88. Stach, Nicholas
89. Sticman, Evan
90. Smirz, Mitchell
91. Soldo, David
92. Spolar, Cory
93. Stahl, Steve
94. Stoklosa, John
95. Tasson, William
96. Trunk, Luke
97. Trudy, Anthony
98. Turkula, Justin
99. Tuzyca, Cody
11. Zinke, Lane
10. Warren, Jeramy
9. Voegtle, Brandon
8. Snyder, Matt
7. Singleton, Matt
6. Salgado, Henry
5. Medina, Joe
4. Loken, Christopher
3. Haan, Michael
2. Bachelder, Jake
1. Augushin, Jacob

90% = 526.52

6. Salgado, Henry
5. Medina, Joe
4. Kaesebach, Marvel
3. Hayes, Joey
2. Fendel, William
1. Ackerman, John

80% = 523.84

MANDAN, ND
REGION C APPRENTICES
1. Airthart, Joseph
2. Bjorkness, Brandon
3. Estable-Mora, Juan
4. Grounds, Jon
5. Herbst, Jeff
6. Linstad, Cody
7. Lutter, Julian
8. Mittiteude, Matthew
9. Olson, Lee
10. Pavlick, Zach
11. Peltier, Wyatt
12. Pike, Zach
13. Pritchard, Jeremiah
14. Runge, Ryan
15. Runge, Ryan
16. Schweigert, Eric
APPRENTICE WORK PERFORMANCE REPORT

CONFIDENTIAL

Apprentice: _______________________________ Region A ___________________ Region B ___________________ Region C ___________________

Training Period 1st year, 2nd year or 3rd year (Circle applicable training period if known)

Employer: ________________________________

Scoring – 0 = poor……10 = best

ATTENDANCE & TARDINESS
RATING: 0 1 2 3 4 5 6 7 8 9 10
COMMENTS:

ON THE JOB PERFORMANCE (Reliability)
RATING: 0 1 2 3 4 5 6 7 8 9 10
COMMENTS:

ATTITUDE (Positive Attitude, Shows Leadership Ability)
RATING: 0 1 2 3 4 5 6 7 8 9 10
COMMENTS:

INITIATIVE & PRODUCTIVITY (Ambition & Effort)
RATING: 0 1 2 3 4 5 6 7 8 9 10
COMMENTS:

COMPREHENSION & ABILITY (Shows interest in learning job)
RATING: 0 1 2 3 4 5 6 7 8 9 10
COMMENTS:

COOPERATION & CONDUCT (Ability to work with others)
RATING: 0 1 2 3 4 5 6 7 8 9 10
COMMENTS:

SAFETY & AWARENESS
RATING: 0 1 2 3 4 5 6 7 8 9 10
COMMENTS:

QUALITY OF WORK & ACCURACY
RATING: 0 1 2 3 4 5 6 7 8 9 10
COMMENTS:

TOOLS: FEW SOME MANY CONDITION: POOR OK EXCELLENT
COMMENTS:

REVIEWED BY Forman/Supervisor ___________________ DATE: ___________________

PLEASE MAIL OR FAX THIS REPORT TO THE FOLLOWING:
Twin Cities Ironworkers Apprenticeship & Training Program
835 Butler Route – St. Paul, MN. 55104
JATC Office & Training Center Phone: 651-489-3829 – Fax: 651-489-1440
Pete Teigland, Training Coordinator – Region A
Brian Nelson – Training Coordinator – Region B
BUILDING WAGE RATES
Duluth/Cloquet Local #1091

Effective May 1, 2015:

<table>
<thead>
<tr>
<th>Class</th>
<th>Wages</th>
<th>Vacation</th>
<th>H &amp; W</th>
<th>Pension</th>
<th>Trng/Appr</th>
<th>LECET</th>
<th>SAFE</th>
<th>Total</th>
</tr>
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<tbody>
<tr>
<td>1</td>
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<td>$7.55</td>
<td>$6.40</td>
<td>$0.22</td>
<td>$0.08</td>
<td>$0.15</td>
<td>$40.04</td>
</tr>
<tr>
<td>2</td>
<td>$23.64</td>
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<td>$7.55</td>
<td>$6.40</td>
<td>$0.22</td>
<td>$0.08</td>
<td>$0.15</td>
<td>$40.14</td>
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<tr>
<td>3</td>
<td>$23.94</td>
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<td>$7.55</td>
<td>$6.40</td>
<td>$0.22</td>
<td>$0.08</td>
<td>$0.15</td>
<td>$40.44</td>
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<tr>
<td>4</td>
<td>$24.24</td>
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<td>$7.55</td>
<td>$6.40</td>
<td>$0.22</td>
<td>$0.08</td>
<td>$0.15</td>
<td>$40.74</td>
</tr>
<tr>
<td>5</td>
<td>$21.19</td>
<td>$2.10</td>
<td>$7.55</td>
<td>$6.40</td>
<td>$0.22</td>
<td>$0.08</td>
<td>$0.15</td>
<td>$37.69</td>
</tr>
</tbody>
</table>

Example: Apprentice at 80% of Class 1 ONLY

Class 1  $18.83  $2.10  $7.55  $6.40  $0.22  $0.08  $0.15  $35.33

Foreman/Leadman $1.50 above highest classification employed in.

Effective May 1, 2016 - $1.25 increase per hour

*** Vacation is a taxable wage and shall be paid for all hours worked and at 1 1/2 or 2 times the hourly rate when overtime is worked.

"All" Fringes are to be sent to:

Minnesota Laborers’ Fringe Benefits Fund
P. O. Box 124
Minneapolis, MN  55440-0124
(651) 256-1800
### HIGHWAY HEAVY WAGE RATES
District 2A - Duluth Local #1091

**Effective May 1, 2015:**

<table>
<thead>
<tr>
<th>Class</th>
<th>Wages</th>
<th>Vacation</th>
<th>H &amp; W</th>
<th>Pension</th>
<th>Trng/Appr</th>
<th>LECET</th>
<th>FCF</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$28.11</td>
<td>$2.30</td>
<td>$7.55</td>
<td>$6.50</td>
<td>$0.22</td>
<td>$0.08</td>
<td>$0.02</td>
<td>$44.78</td>
</tr>
<tr>
<td>2</td>
<td>$28.31</td>
<td>$2.30</td>
<td>$7.55</td>
<td>$6.50</td>
<td>$0.22</td>
<td>$0.08</td>
<td>$0.02</td>
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Increase May 1, 2016:  $1.57  Allocation of increase TBD

**Example:** Apprentice at 80% of Class 1 ONLY

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<tr>
<th>Class</th>
<th>Wages</th>
<th>Vacation</th>
<th>H &amp; W</th>
<th>Pension</th>
<th>Trng/Appr</th>
<th>LECET</th>
<th>FCF</th>
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Piplayer, Laser Beam (sewer, water, gas) Classification 6 rate.
Foreman/Leadman $1.50 above highest classification employed in.
General Foreman $2.25 above Foreman scale (appointed at employers discretion).

*** Vacation is a taxable fringe and part of the gross wage, it shall be paid for all hours worked and at 1 1/2 or 2 times the hourly rate when overtime is worked.

"All" Fringes are to be sent to:

Minnesota Laborers' Fringe Benefits Fund
P. O. Box 124
Minneapolis, MN  55440-0124
(651) 256-1800
### MILLWRIGHTS & MACHINE ERECTOR WAGE RATES

**Effective May 3, 2015**

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<thead>
<tr>
<th>Classification</th>
<th>Percent (%)</th>
<th>Gross Wages</th>
<th>Savings</th>
<th>Dues</th>
<th>Health</th>
<th>DB Pension</th>
<th>DC Pension</th>
<th>Apprentice/ Education</th>
<th>Industry Promo Fund</th>
<th>Total Package</th>
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<tbody>
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<td>General Foreman</td>
<td>100%</td>
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<tr>
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<td>$1.90</td>
<td>$0.60</td>
<td>$0.05</td>
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<td>$6.33</td>
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<td>$1.90</td>
<td>$0.60</td>
<td>$0.05</td>
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<tr>
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<td>90%</td>
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<tr>
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<tr>
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</table>

Covering the following Counties in the State of Minnesota, Aitkin, Becker, Beltrami, Carlton, Cass, Clearwater, Cook, Lake, Crow Wing, Hubbard, Itasca, Kittson, Koochiching, Lake of the Woods, Manomen, Marshall, Norman, Otter Tail, Pennington, Red Lake, Roseau, St. Louis, Wadena, Wilkin and that part of Clay County outside of a 5 mile radius of Moorhead and that part of Polk County outside of a 5 mile radius of East Grand Forks. In Wisconsin the County of Douglas and that portion of Bayfield County west of Highway 63, and west of a line drawn between Drummond and Herbster and the Lake Superior shore, including the cities of Drummond and Herbster.

**May 1, 2016 Increase:** $1.75 Allocation TBD  
**May 7, 2017 Increase:** $1.85 Allocation TBD
INTERNATIONAL UNION OF OPERATING ENGINEERS, LOCAL No. 49
FOR THE:

HIGHWAY AND HEAVY WAGES EFFECTIVE MAY 1, 2015

EASTERN METROPOLITAN ZONE-(ZONE 1) -See Wage District Map-

<table>
<thead>
<tr>
<th>Group</th>
<th>Wages</th>
<th>Fringes</th>
<th>H/W</th>
<th>HRA</th>
<th>Pension</th>
<th>Appren.</th>
<th>Totals</th>
<th>FCF $.02</th>
<th>IPF $.04</th>
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<tbody>
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<td>50.83</td>
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<tr>
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REMAINDER OF EASTERN ZONE-(ZONE 2) -See Wage District Map-

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WESTERN ZONE-(ZONE 3) -See Wage District Map-

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<th>Pension</th>
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INTERNATIONAL UNION OF OPERATING ENGINEERS, LOCAL NO. 49

RATES FOR THE:

BUILDERS AGREEMENT – MINNESOTA

WAGES EFFECTIVE MAY 1, 2015 - ZONE 1

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<th>Wages</th>
<th>Fringes</th>
<th>H&amp;W</th>
<th>HRA</th>
<th>Pension</th>
<th>Apprenticeship Training</th>
<th>Total</th>
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<th>C.A.F. $.04**</th>
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WAGES EFFECTIVE MAY 1, 2015 - ZONE 2

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<th>Total</th>
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<th>C.A.F. $.04**</th>
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Local 106 Painters & Drywall Wage Rates
Effective May 4, 2015

Journeyperson Wage Rates:

<table>
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<tr>
<th>Class</th>
<th>Base</th>
<th>Welfare</th>
<th>Pension</th>
<th>Annuity</th>
<th>FTI/UM</th>
<th>FTI/NT'L</th>
<th>FCF</th>
<th>LMCI</th>
<th>MPWEA</th>
<th>STAR</th>
<th>DC82/FCF</th>
<th>Total</th>
<th>Vac *</th>
<th>Check-off</th>
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<td>$0.01</td>
<td>$44.68</td>
<td>$2.70</td>
<td>$1.76</td>
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</table>

New Comm. & New Indus.

| Class I     | $29.36 | $6.85  | $5.15  | $3.50  | $0.37  | $0.10   | $0.01| $0.10| $0.03  | $0.10| $0.01   | $45.58 | $2.70 | $1.80     |
| Class II    | $29.96 | $6.85  | $5.15  | $3.50  | $0.37  | $0.10   | $0.01| $0.10| $0.03  | $0.10| $0.01   | $46.18 | $2.70 | $1.82     |

Foremen in charge of five (5) or more journeypersons shall be paid $1.00 per hour over the journeyperson rate.
Fair Contracting Foundation: $0.01 paid by employer, $0.01 paid by employee from Total Package.

Painter Apprentice

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<th>FTI/NT'L</th>
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Drywall Taper Appr

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<th>FTI/NT'L</th>
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*This Vacation Contribution is included in the taxable wage listed above, then deducted and remitted along with your Health & Welfare contribution.
WAGE & BENEFIT REVISION EFFECTIVE MAY 4, 2015

**BUILDING TRADES JOURNEYMAN**

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**Total package** $56.65

Foreman $2.50 over Base Pay
General Foreman $3.50 over Base Pay
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<th>90%</th>
<th>85%</th>
<th>80%</th>
<th>75%</th>
<th>70%</th>
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## Wages/Benefits Roofers Local Union 96 - Duluth Area

Effective July 1, 2014  
Through June 30, 2015

### Basic Rate Table

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<th>Vac. After</th>
<th>Assess. After</th>
<th>Taxable Wage</th>
<th>National Pension</th>
<th>Educ Fund Rate</th>
<th>Annuity Fund Rate</th>
<th>Health/H&amp;W Fund Rate</th>
<th>H&amp;W Fund Rate</th>
<th>Appr. HRA Rate</th>
<th>Roofing Training Rate</th>
<th>Industry Welfare Rate</th>
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<th>G 4001-4500</th>
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**Freeze Unless 144 Hours (Phase 1) of Related Training is Completed**

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<th>F 3501-4000</th>
<th>G 4001-4500</th>
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**Freeze Unless 288 Hours (Phase 2) of Related Training is Completed**

Due: July 1, 2015: $0.80  
Expiration date: June 30, 2016
DULUTH
COMMERCIAL & INDUSTRIAL
SHEET METAL WAGE RATES

EFFECTIVE MAY 4, 2015 - April 30, 2016

SOUTHERN ST. LOUIS, AITKIN, CARLTON, LAKE, COOK, AND DOUGLAS COUNTIES

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<th>Health</th>
<th>NATL PENSION</th>
<th>SUPP. PENSION</th>
<th>LOCAL 10 PENSION</th>
<th>FCF &amp; T.F.</th>
<th>SMOHI &amp; ITI TESTING</th>
<th>LOCAL I.F.</th>
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<th>SUPP. PENSION</th>
<th>LOCAL 10 PENSION</th>
<th>FCF &amp; T.F.</th>
<th>SMOHI &amp; ITI TESTING</th>
<th>LOCAL I.F.</th>
<th>TOTAL PACKAGE</th>
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*The Taxable Base Pay rate includes $2.58 Vacation and Organizing deduction for journeymen and $1.58 for apprentices. The Vacation Fund deduction is $2.00 per hour for journeymen ($1.00 per hour for apprentices) and $.58 per hour for Organizing for both Journeymen and apprentices. For classified workers, the Vacation Fund deduction is $.55 per hour and there is a $.23 deduction for Organizing for a total deduction of $.78.

SASMI NOTE: The SASMI rate for Foreman and General Foreman are the same as the rate for Journeymen and there is no longer a different SASMI rate for overtime hours on any classification. All SASMI hours are paid at the straight time rate.

The current IRS mileage rate is $.575

April 17, 2015          Contract expires May 1, 2016
Minnesota Breakdown of Wage and Benefit Package

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Foreman’s Rate: $2.75 above journeyman scale
General Foreman: $5.00 above journeyman scale (22+ men on job)
Local Union 669 has a 5% dues check-off; 2 1/2% for Apprentices Class 1-4

**Extended Benefit Fund:** $.25 per hour for all hours worked payable to Local Union 669

**Industry Advancement-State of Minnesota**
Class 5 and higher $.25 per hour for all hours worked payable to Local Union 669

**Benefit Package**
- Health & Welfare 4/1/13: $8.42 per hour for all hours worked
- Health & Welfare 1/1/14: $8.52 per hour for all hours worked
- Health & Welfare 1/1/15: <To be determined>
- Health & Welfare 1/1/16: <To be determined>
- Pension 4/1/13: $5.50 per hour for all hours worked
- Pension 1/1/14: $5.75 per hour for all hours worked
- Pension 1/1/15: $5.90 per hour for all hours worked
- Pension 1/1/16: $6.05 per hour for all hours worked
- Education 4/1/13: $.35 per hour for all hours worked
- International Training Fund 4/1/13: $.10 per hour for all hours worked
- Industry Promotion 4/1/13: $.25 per hour for all hours worked
- Supplemental Pension 4/1/13: $2.50 per hour for all hours worked

**Travel Expenses**

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<td>100+ miles</td>
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If you should have any additional questions, please feel free to contact Business Agent James Westby at (507) 493-5671 or this office.

Created June 2013
Road Sprinkler Fitters Local Union No. 669
7050 Oakland Mills Road • Suite 200 • Columbia, Maryland 21046
(410) 381-4300 • fax: (301) 621-8045 • www.sprinklerfitters669.org
SPECIAL PROVISIONS

Arrowhead Kenwood Signal and Roadway Improvements
SAP 118-151-012
SAP 118-160-023

City Project # 1468

City of Duluth, Minnesota
411 West 1st Street
Duluth, MN  55802
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<td>SP-3</td>
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DIVISION SS
DIVISION ST
DIVISION SZ

Appendix A  MN/DOT State Aid Tech Memo No.16-SA-01 /Specification 2360-Plant Mixed Asphalt Pavement- Design Guidelines
Appendix B  Permits
Appendix C  2016 SALT Schedule of Materials Control - Local Government Agency
The following forms and regulations/rules/statutes and interpretations, which are incorporated by reference in this contract, are available on the World Wide Web at the sites listed below. The City of Duluth will use its best efforts to ensure that the most recent, applicable forms and regulations/rules/statutes and interpretations are included on the web sites provided; however, if you are the successful bidder, prior to signing the contract, you are responsible for comparing the versions of the forms and regulations/rules/statutes and interpretations attached to the contract which you are signing with the versions on the web to ensure conformity. Hard copies of all forms are available at the Engineering Division.

**THE VERSIONS OF THE FORMS AND REGULATIONS/RULES/STATUTES and INTERPRETATION ATTACHED TO THE CONTRACT WILL BE CONTROLLING.**

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<tr>
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<th>FUND</th>
<th>WEB SITE</th>
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<td>Affidavit of Non-Collusion (required by awarded contractor only)</td>
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<td><a href="http://www.duluthmn.gov/engineering/standard-construction-specifications/construction-documents/">http://www.duluthmn.gov/engineering/standard-construction-specifications/construction-documents/</a></td>
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<td>Certified Payroll Form WH347</td>
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<td><a href="http://www.duluthmn.gov/engineering/standard-construction-specifications/construction-documents/">http://www.duluthmn.gov/engineering/standard-construction-specifications/construction-documents/</a></td>
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<td>Debarment/Suspension Notice (most current version)</td>
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<td>MN Rules 5200.1106</td>
<td>All</td>
<td><a href="https://www.revisor.mn.gov/rules/?id=5200.1106">https://www.revisor.mn.gov/rules/?id=5200.1106</a></td>
</tr>
<tr>
<td>MN Statutes 177.41 to 177.44</td>
<td>All</td>
<td><a href="https://www.revisor.mn.gov/statutes/?id=177">https://www.revisor.mn.gov/statutes/?id=177</a></td>
</tr>
<tr>
<td>One-Call Instructions</td>
<td>All</td>
<td><a href="http://www.duluthmn.gov/engineering/standard-construction-specifications/construction-documents/">http://www.duluthmn.gov/engineering/standard-construction-specifications/construction-documents/</a></td>
</tr>
<tr>
<td>Request to Sublet TP-21834</td>
<td>All</td>
<td><a href="http://www.dot.state.mn.us/const/labor/forms.html">http://www.dot.state.mn.us/const/labor/forms.html</a></td>
</tr>
<tr>
<td>Request to Sublet Summary</td>
<td>All</td>
<td><a href="http://www.dot.state.mn.us/const/labor/forms.html">http://www.dot.state.mn.us/const/labor/forms.html</a></td>
</tr>
<tr>
<td>Statement of Compliance Form (8-2013)</td>
<td>All</td>
<td><a href="http://www.dot.state.mn.us/const/labor/forms.html">http://www.dot.state.mn.us/const/labor/forms.html</a></td>
</tr>
<tr>
<td>Truck Rental Rates</td>
<td>State</td>
<td><a href="http://www.doli.state.mn.us/LS/PrevWageTR1.asp">http://www.doli.state.mn.us/LS/PrevWageTR1.asp</a></td>
</tr>
<tr>
<td>Contractor/Vendor Form</td>
<td>State</td>
<td><a href="http://www.dot.state.mn.us/const/labor/forms.html">http://www.dot.state.mn.us/const/labor/forms.html</a></td>
</tr>
<tr>
<td>Trucking Com/Vendor Form</td>
<td>State</td>
<td><a href="http://www.dot.state.mn.us/const/labor/forms.html">http://www.dot.state.mn.us/const/labor/forms.html</a></td>
</tr>
<tr>
<td>Month End Trucking Report Form A &amp; B</td>
<td>State</td>
<td><a href="http://www.dot.state.mn.us/const/labor/forms.html">http://www.dot.state.mn.us/const/labor/forms.html</a></td>
</tr>
<tr>
<td>(12-10)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Month-End Trucking Report Statement of Compliance (12-10)</td>
<td>State</td>
<td><a href="http://www.dot.state.mn.us/const/labor/forms.html">http://www.dot.state.mn.us/const/labor/forms.html</a></td>
</tr>
</tbody>
</table>
NOTICE TO ALL BIDDERS

The 2016 Edition of the City of Duluth Public Works & Utilities Department/Engineering Division “Construction Standards” book and any addendums or supplements is incorporated by reference and is deemed to be a part hereof as if fully incorporated and set forth herein. The ‘Construction Standards’ is available on the City website at: http://www.duluthmn.gov/engineering/standard-construction-specifications/.

SCOPE OF WORK

Arrowhead/Kenwood and Kenwood/Cleveland Signal Improvements, Mill and overlay of Kenwood Avenue, Concrete Pavement Repairs, Reconditioning of Arrowhead Road and Kenwood Avenue, Cleveland Street Reconstruction, watermain replacement, pavement marking, traffic control and turf establishment.

CONTACT INFORMATION

Questions regarding this project should be directed to: Nick Erpelding, SRF Consulting Group, Inc., 763-452-4820.

PRE-BID CONFERENCE

A Pre-Bid Conference will be held on Wednesday, June 29 at 3:00 pm at the west end of the Kenwood Shopping Center parking lot. This is the southeast corner of the Kenwood/Arrowhead intersection. Potential bidders are strongly encouraged to attend.

DELIVERY OF PROPOSALS

The provisions of MN/DOT 1209 and section 1209 of the City’s Construction Standard are modified with the following:

The Bidder shall return paper copies of the following with the submitted Proposal:

1. The Bid Proposal on the form attached to the proposal package, with signatures and all Addenda acknowledged;
2. The Schedule of Prices with all changes made in ink and initialed, plus initials on all sheets of the exhibit;
3. Bid Guaranty (certified check, bank draft, government bond, or bid bond);
4. Responsible Contractor Certification forms;

MAINTENANCE OF TRAFFIC

The provisions of MN/DOT 1404 and section 1404 of the City’s Construction Standards are supplemented with the following:

The traffic control plans were based on the contractor performing the work under the following sequencing requirements:

1. East Cleveland Street Reconstruction shall have the bituminous base completed prior to the start of Kenwood Avenue bituminous reconditioning.
2. Warren Street and the bank access drive shall have the bituminous base work complete prior to the removal of the Wells Fargo and US Bank driveways, and prior to bituminous pavement reconditioning of Arrowhead Road. Pond grading work shall occur prior to placement of the final lift of bituminous at US Bank.
3. Curb and gutter for the SE quadrant of Kenwood and Arrowhead shall be poured prior to the concrete pavement replacement work in the same quadrant.
4. Concrete pavement repair and replacement at the intersection of Kenwood and Arrowhead shall occur prior to bituminous reconditioning of either road.

5. New signal system poles, hand holes, and cable runs, shall be complete, and the new signal shall be operational for vehicular traffic prior to bituminous pavement reconditioning on either road. Contractor shall perform as much of this work as possible while the traffic control is set up for the concrete pavement repairs and pavement replacement in order to minimize the disruption to traffic. Temporary bituminous shall be placed in the pedestrian areas/curb ramps until the existing signal pole bases and hand holes are removed. Contractor shall bag signal heads that are not operational for each construction stage.

6. Contractor shall close only one lane of traffic on each intersection quadrant during the installation or removal of the signal pole foundations and poles/mast arms if this operation can’t be performed concurrently with the road closures shown by the traffic control plans.

7. Contractor shall draw in the new video detection zones depending on the lane configurations used during each construction stage to the satisfaction of the Engineer. The Contractor shall modify the signal indications to accommodate the City’s desired signal phasing for each construction stage to the satisfaction of the Engineer.

8. After the removal of the pole foundations and hand holes for the signal work is complete, the concrete sidewalk and truncated domes and APS pushbutton stations shall be installed.

9. Access to businesses must be maintained at all times. Construction shall not occur simultaneously on two sides of a business at the same time. If Arrowhead Road construction requires the closure of driveways along that street, then Kenwood Avenue driveways must remain accessible during that phase of work. If Kenwood Avenue construction requires the closures of driveways along that street, the driveways on Arrowhead or East Cleveland Street shall be accessible.

10. At Kenwood/Arrowhead intersection the activation and change over from the existing traffic signal system to the new system shall occur over the weekend between 7 pm Friday and 6 am the following Monday. The contractor shall provide temporary stop signs for 4-way stop control until the new system is operational.

11. Work will require three detour routes that will occur at different phases of construction. The detour routes were not intended for the overlay or reconditioning work, which is intended to be completed under traffic conditions.

**SP-7 (1505) COOPERATION BY CONTRACTORS**

Contractor will need to coordinate their work with the building development under construction located at the southwest corner of Arrowhead Road and Kenwood Avenue. Project Manager for the Kenwood Village development is Craig Koenen of Weis Builders, Inc who can be reached at 612-243-4670.

**SP-8 (1507) UTILITY PROPERTY AND SERVICE**

Minnesota Power is expected to do some utility work along Cleveland Street.

**SP-9 (1702) PERMITS, LICENSES, AND TAXES**

The Contractor shall obtain the City of Duluth “Erosion and Sediment Control Permit” available from the Construction Services & Inspections Department (Room 210) for the project. The permit fee will be waived.
(1707) PUBLIC CONVENIENCE AND SAFETY

The Duluth Transit Authority (DTA) has bus service in the Project area (Arrowhead Road and Kenwood Avenue) which will be affected by this construction. The Contractor shall notify the DTA representative prior to any road closures, or the start of milling and paving operations on this site: Rod Fournier, (218) 623-4336.

Summit Development runs a shuttle service in the project area when the colleges are in session. The Contractor shall notify the Summit Shuttle manager Jeff Richtman at 651-705-3313 prior to any road closures, or the start of milling and paving operations on this site.

(1803) LIMITATION OF OPERATIONS

The provisions of MN/DOT 1803 and section 1803 of the City’s Construction Standard are supplemented and/or modified with the following:

Work on West Cleveland Street and Warren Avenue shall not be performed during the period between 9:00 pm and 7:00 am Central Standard Time unless specified or authorized by the Engineer.

Work at the bank sites, East Cleveland Street, milling and paving, concrete pavement repair, and concrete replacement may be performed after 9:00 pm, unless the noise becomes a concern for the residents.

The Contractor will be required to attend weekly construction meetings on site with the Engineer’s representative, impacted businesses and residents.

HOLIDAY GAS STATION
Holiday requires multiple fuel deliveries each week and access must be provided off of Kenwood Avenue. Coordination of the deliveries and ensuring access for the fuel trucks will be required of the Contractor.

US BANK
US Bank has drive-up teller lanes that must be available to the customers at all times during normal business hours. After hours work at this site is recommended.

SUBWAY
Access for pedestrians will be critical at this site. Parking for the customers will be in the back of the store. After hours work at this site is recommended.

AUTO ACE/KENWOOD MUFFLER
The removal of the existing fence at the back will be required for access to this property for customers and employees while construction on West Cleveland occurs.

WEST CLEVELAND STREET
This residential street is a dead end that has alley access. The Contractor will need to maintain emergency access for the residents at all times, and allow for one lane of traffic at all times. This street is also a primary access point for the delivery of materials to the Kenwood Village Development site currently under construction. The Contractor will need to notify residents, Weis Builders, and the Engineer 2 working days in advance of any temporary road closures.
SP-12 (1806) DETERMINATION AND EXTENSION OF CONTRACT TIME

The Contract Time will be determined in accordance with the provisions of MN/DOT 1806 and the following:

1. Construction operations shall be started on or before July 19, 2016 or within ten (10) calendar days after the date of Notice to Proceed, whichever is later.

2. **Substantial Completion.** All work under this Contract shall be substantially complete on or before October 15, 2016. For this project, Substantial Completion shall be deemed to include ALL work in the Contract, except Signal System A and Signal System B.

3. **Final Completion.** ALL work required under this Contract shall be complete on or before December 31, 2016.

4. The third exemption listed under the second paragraph of the provisions of MN/DOT 1806.3 is modified to the extent that the phrase “(3) During the inclusive period from November 15 through April 15, except as specified in 1806.1...” is deleted.

5. No work which will restrict or interfere with traffic shall be performed between 12:00 noon on the day preceding and 6:30 a.m. on the day following any consecutive combination of a Saturday, Sunday, and legal holiday without written permission from the Engineer.

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

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

   (C) In addition to the Labor Day Holiday limitation listed above, the Contractor will not be allowed to work Thursday, September 1.

6. When all, or a portion, of the Contract Time is specified as a calendar completion date, the time is presumed to have been determined by considering the Proposal quantities, normal weather for the locality and season of the year, and the necessity of having the work completed by the specified date. The time may be extended by the Engineer only if the delay is considered “Excusable” in accordance with MN/DOT 1806.2 Types of Delays.

SP-13 (1807) FAILURE TO COMPLETE WORK ON TIME

The provisions of MN/DOT 1807 shall apply in full to both the Substantial Completion Date and the Final Completion Date.

SP-14 (2011) AS-BUILTS

**REVISED 01/15/16**  
**SP2016-56 modified**

This work shall consist of providing MnDOT with as-built electronic data and mark-up drawings, as described below, for the following asset classes that are part of the construction project:

1) Fiber Optic Interconnect  
2) Drainage/Stormwater Systems  
3) Signing  
4) Lighting
As-buils shall capture all new asset features and shall capture existing features if they are connected to by new features and/or run through existing conduits (new communication or power cables). The work shall occur in accordance with MnDOT Standard Specifications, MnDOT Standard Plans/Plates, the Plans, and the following:

**SP-14.1 ELECTRONIC DATA COLLECTION AND SUBMITTAL**

The following provisions shall apply to the data collection and submittal requirements for As-buils:

(A) Contractor shall utilize the following two methods for the collection of data. Unless otherwise specified in the Plan, Method (1) shall be used for data collection associated with drainage work, including but not limited to, storm sewer, culverts, catch basins, manholes, and appurtenances. Unless otherwise specified in the Plan, Method (2) shall be used for data collection associated with all other items requiring as-built data.

(1) Method (1) All coordinates shall be sub-foot accurate x, y and one-tenth-foot accurate z. Data shall be collected using County Coordinate System.

(2) Method (2) All coordinates shall be sub-meter accurate x, y. Contractor shall have no more than 10% error in attribute accuracy for Method 2. Unless otherwise specified, the coordinates shall be collected in the 1996 adjustment to the UTM15N North American Datum (NAD83).

(B) The locating of underground facilities for the purpose of this pay item shall be done by the contractor or their sub-contractor and the contractor shall not utilize Gopher State One-call for this work.

(C) Data collector shall coordinate with facility installer to exchange information on placement changes or the addition of any items and on the timing of the work. Some feature locations should be collected as they are installed.

(D) Refer to website (http://www.dot.state.mn.us/metro/gisspec/) for feature specific collection guidance and submittal procedure.

(E) The Contractor shall acquire MnDOT approval of the electronic tabular format prior to collection of the data and submission to MnDOT. Data dictionaries shall be used and will be provided by Mn/DOT.

(F) Electronic formats shall be made in American Standard Code for Information Interchange (ASCII) Comma Separated Value file and/or Environmental Systems Research Institute (ESRI) shapefiles.

(G) The Contractor will gain approval no later than 15 working days after initial submittal of the final package to MnDOT. Any discrepancies will be resolved by the Contractor prior to final approval and/or acceptance by MnDOT.

**SP-14.2 MARK-UP DRAWINGS**

The following provisions shall apply for regional traffic management systems, lighting, watermain, and drainage/stormwater features:

(A) The original “as-designed” contract plan set should be marked-up to show all additions, deletions, and other changes made during construction.
(1) Track any plan note modifications
(2) Two copies of the marked up plans must be submitted to the Construction Project Engineer in .pdf format at the time of initial submittal of the electronic data as specified in Section S-14-1.G.
(3) As-built drawings shall be accurate and are an official record of the project at the time of construction completion.

SP-14.3 MEASUREMENT AND PAYMENT
No measurement will be made of the various Items that constitute As-built drawings but all such work will be construed to be included in the single Lump Sum payment under Item 2011.601 (As Built). Payment will be made under Item 2011.601 (As Built) which shall be compensation in full for all costs incidental thereto, including but not limited to data collection, electronic formats, required features, as-built drawings, and all materials and labor necessary.

SP-15 (2105) GEOTEXTILE FOR SEPARATION (STABILIZATION)
The provisions of Section 2105 of the City of Duluth ‘Construction Standards’ are supplemented with the following:

Geotextile shall conform to the requirements of MN/DOT 3733, Type I, IV, or V, and be non-woven. The specific type used shall be as noted on the plan.

Measurement will be made of the number of square yard of satisfactorily installed geotextile approved by the Engineer. No allowance will be made for seams. Payment will be made under Item 2105.604 Geotextile Fabric Type I, IV or V at the Contract bid Price per square yard, and shall include but not be limited to, geotextile, seaming, placement, anchoring, and any needed repairs.

SP-16 (2123) EQUIPMENT RENTAL (MOTOR GRADER)
The provisions of MN/DOT 2123 are supplemented with the following:

This item includes all work associated with reshaping and compacting the reclaimed base if in the opinion of the Engineer, the grade requires reshaping after it has been opened to traffic prior to paving operations. Compacting the base prior to reshaping shall be considered incidental to the Motor Grader bid item. Initial compaction, grading and shaping after reclamation of the road shall be incidental to the Full Depth Reclamation bid item and shall not be paid for separately. The motor grader shall be a minimum 200 HP with a 14 foot moldboard and have carbide tipped cutters.

SP-17 (2215) RECLAMATION
The provisions of MN/DOT 2215 are supplemented and/or modified with the following:

1. STEEL-WHEELED ROLLER
In addition to the pneumatic-tired roller, contractor will be required to use a double drum vibratory roller meeting the requirements of 2360.3.b.2.e(1) and is equipped with a water spray system.

2. EXISTING BITUMINOUS THICKNESS
Due to the watermain work this spring on Arrowhead Road, the bituminous pavement thickness in the area that was temporarily patched, varies, and is approximately 4” thick. This area should not require milling prior to reclamation. The contractor should account for this and adjust their operations to ensure there is sufficient material to build the final pavement section as indicated on the cross sections.
SP-18  **(2232) MILL PAVEMENT SURFACE**

The provisions of MN/DOT 2232 are supplemented with the following:

Contractor shall dispose of excess milled material not required for use on the project. Coordinate and deliver the material to the City of Duluth Tree Farm which is located on Riley Road off of Jean Duluth Road. Contact Bruce Kellerhus for placement location at the site at 218-730-4463. The area that was patched for the watermain work should not require milling. In addition, the portion south of the patch along the curb line should not require milling. Payment for the hauling will be incidental to Item 2232.501 Mill Bituminous Surface.

SP-19  **(2301/2521/2531) CONCRETE PLACEMENT RESTRICTION (EXPOSURE TO SALT)**

In addition to the pertinent provisions of MN/DOT and the City of Duluth Construction Standards, the following restriction applies to all concrete “flatwork” (i.e. curb, curb and gutter, sidewalk, driveways, pavement) that is typically exposed to road salt and/or deicing chemicals:

The Contractor shall not place concrete flatwork after October 15th without the written approval of the City’s Chief Engineer of Transportation.

SP-20  **(2301) CONCRETE PAVEMENT**

REVISED 11/20/15
SP2016-115

MnDOT 2301 is hereby modified as follows:

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SP-20-1 Table 2301-3 of MnDOT 2301.2.B.3 shall be deleted and replaced with the following:
## Table 2301-3
**Intermediate Aggregate for Use in Concrete**

<table>
<thead>
<tr>
<th>If the gradation meets the following:</th>
<th>Classify material type as:</th>
<th>Gradation Test Procedures</th>
<th>Quality Test Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intermediate Aggregate</td>
<td>Coarse Aggregate (+4 Portion)</td>
<td>Spec. 3137.2.D.3 except 3137.2.D.3(c) modified to maximum 40% carbonate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fine Aggregate (-4 Portion)</td>
<td>3126 Shale in Sand (-4 Portion)</td>
</tr>
<tr>
<td>100% passing the 1/2” and ≤90% passing #4</td>
<td>Intermediate Aggregate</td>
<td>Fine Aggregate * (Minimum 1000 g sample)</td>
<td>Shale Content Test by AASHTO T113 MnDOT Modified (+4 Portion)</td>
</tr>
<tr>
<td>100% passing the 1/2” and &gt;90% passing #4</td>
<td>Intermediate Aggregate</td>
<td>Fine Aggregate * (Minimum 1000 g sample)</td>
<td>3126 Shale in Sand (-4 Portion)</td>
</tr>
<tr>
<td>100% passing the 3/8” and ≤90% passing #4</td>
<td>Coarse Sand</td>
<td>Fine Aggregate</td>
<td>Shale Content Test by AASHTO T113 MnDOT Modified (+4 Portion)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3126 Shale in Sand (-4 Portion)</td>
</tr>
</tbody>
</table>

* Include a ½” sieve in the fine aggregate sieve stack. If a ½” sieve is not available, test the +4 portion as a coarse aggregate and the -4 portion as a fine aggregate.

**SP-20.2 MnDOT 2301.2.C shall be modified to include the following:**

### C.5 Ternary Mixes

Ternary mixes are defined as portland cement and two other supplementary cementitious materials, or blended cement and one other supplementary cementitious material with a maximum replacement of 40% by weight.

**SP-20.3 Table 2301-5 of MnDOT 2301.2.L.1 shall be deleted and replaced with the following:**
## Table 2301-5
Concrete Mix Design Requirements

<table>
<thead>
<tr>
<th>Concrete Grade</th>
<th>Estimated Concrete Contract Quantity (yd³)</th>
<th>Mix Number</th>
<th>Maximum w/c ratio</th>
<th>Minimum Cement Content (lbs/ yd³)</th>
<th>Cementitious Content (lbs/ yd³)</th>
<th>Air Content %</th>
<th>Gradation Requirement</th>
<th>Minimum Aggregates Size Required</th>
<th>Maximum %SCM (Fly Ash/ Slag/ Ternary)</th>
<th>Slump Range</th>
<th>3137 Spec.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>≥ 3,500</td>
<td>3A21</td>
<td>0.40</td>
<td>0.42</td>
<td>385</td>
<td>530 – 615</td>
<td>7.0</td>
<td>Job Mix Formula</td>
<td>33/35/40</td>
<td>½ - 3” †</td>
<td>2.D.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3A41</td>
<td>0.40</td>
<td>0.42</td>
<td>385</td>
<td>530 – 615</td>
<td>7.0</td>
<td>Job Mix Formula</td>
<td>33/35/40</td>
<td>2 – 5”</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>&lt; 3,500 and Minor work and fill-ins not provided by the primary paving plant</td>
<td>3A21</td>
<td>0.42</td>
<td>0.42</td>
<td>385</td>
<td>530 – 615</td>
<td>7.0</td>
<td>3126 and Table 3137-4 Or Job Mix Formula</td>
<td>33/35/40</td>
<td>½ - 3” †</td>
<td>2.D.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3A41</td>
<td>0.42</td>
<td>0.42</td>
<td>385</td>
<td>530 – 615</td>
<td>7.0</td>
<td>3126 and Table 3137-4 Or Job Mix Formula</td>
<td>33/35/40</td>
<td>2 – 5”</td>
<td></td>
</tr>
<tr>
<td>Engineer Approved or Plan Allowed High-Early</td>
<td>3AHE ‡</td>
<td>0.40</td>
<td>0.42</td>
<td>385</td>
<td>&gt; 615 – 750</td>
<td>7.0</td>
<td>3126 and Table 3137-4 Or Job Mix Formula</td>
<td>33/35/40</td>
<td>½ - 5”</td>
<td>2.D.3</td>
<td></td>
</tr>
</tbody>
</table>

* Provide additional cementitious material to meet requirements in accordance with this section at no additional cost to the Department.

‖ Refer to Table 2301-2 and Table 2301-4 for ASR mitigation requirements.

† Adjust slump in accordance with 2461.3.G.7.a for slipform concrete placement.

‡ The Contractor may use 100% Portland cement for High Early Concrete, provided no mitigation is required for the fine aggregate in accordance with Table 2301-2 or the coarse aggregate in accordance with Table 2301-4. If mitigation is required, the Contractor is required to use a minimum of 15% of any supplementary cementitious material when designing High Early Concrete.
SP-20.4 Table 2301-16 of MnDOT 2301.3.F.2.a shall be deleted and replaced with the following:

<table>
<thead>
<tr>
<th>Air Content Before Consolidation, %</th>
<th>Adjusted Contract Unit Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 9.0</td>
<td>The Engineer, in conjunction with the Concrete Engineer will determine the concrete suitability for the intended use in accordance with 1503, “Conformity with Contract Documents,” and 1512, “Unacceptable and Unauthorized Work,”</td>
</tr>
<tr>
<td>6.0 – 9.0</td>
<td>The Department will pay 100 percent of the Contract unit price for the concrete represented and placed as approved by the Engineer</td>
</tr>
<tr>
<td>&gt; 5.0 – &lt; 6.0</td>
<td>The Department will pay 75 percent of the Contract unit price for the concrete represented and placed as approved by the Engineer</td>
</tr>
<tr>
<td>&gt; 4.0 – ≤ 5.0</td>
<td>The Engineer, in conjunction with the Concrete Engineer will determine the concrete suitability for the intended use in accordance with 1503, “Conformity with Contract Documents,” and 1512, “Unacceptable and Unauthorized Work,”</td>
</tr>
<tr>
<td>≤ 4.0</td>
<td>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 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 epoxy penetrant sealer from the Approved/Qualified Products List.</td>
</tr>
</tbody>
</table>

SP-20.5 MnDOT 2301.3.K.1 and 2301.3.K.1.a shall be deleted and replaced with the following:

### K.1 Pavement Texture

Pull the carpet drag longitudinally over the finished surface to produce a uniform final finish textured surface. Provide a texture depth of at least 1.00 mm in accordance with ASTM E 965-87, “Test Method for Measuring Surface Macrotexture Depth Using a Sand Volumetric Technique.”

Provide artificial grass type carpeting for the carpet drag meeting the following characteristics and requirements:

- Molded polyethylene pile face,
- Blade length from \( \frac{3}{8} \) in to 1 in [15 mm to 25 mm], and
- Total weight of at least 70 oz per sq. yd [2.35 kg per sq. m].
Mount the drag on a bridge having external alignment control. Provide a drag as wide as the concrete placed without causing edge slump. Maintain continual contact between the drag and the pavement surface at all times during texturing. Apply down pressure on the pavement surface as necessary to achieve uniform texturing.

The Contractor may use manual methods including brooms to achieve similar results on the edges of the pavements and ramps, and other locations as approved by the Engineer.

The Contractor may use other texturing equipment to obtain an equivalent texture as approved by the Engineer, in conjunction with the Concrete Engineer.

For concrete pavements with a posted vehicle speed less than or equal to 35 mph [56 km/hr], use either a carpet drag or broom drag longitudinally to achieve a uniform final finish textured surface.

K.1.a Texture Testing
The Engineer will identify the texture testing locations in accordance with 2301.3.I, “Definition of Lot and Sublot for Concrete Field Testing,” and the following:

1. Use the MnDOT Probing Coring Texture MIT-SCAN-T2 Workbook to determine the random testing locations.
2. Provide the Concrete Texture Report generated from the MnDOT Probing Coring Texture MIT-SCAN T2 Workbook to the Contractor prior to the start of paving.
3. Offset the texture test at a point located transversely in the outside wheel path.

Perform surface texture testing of the concrete pavement and provide the test results to the Engineer no later than 48 h after pavement placement unless otherwise approved by the Engineer.

SP-20.6 The fourth paragraph of MnDOT 2301.3.O shall be deleted and replaced with the following:

Perform operations on new pavement as approved by the Engineer and in accordance with the following:

1. When moving on and off the pavement, construct a ramp to prevent damage to the pavement slab.
2. Operate the paving equipment on protective mats to prevent damage to the pavement surface and joints. Before placing the protective mats, keep the pavement surface free of debris by sweeping or other methods as approved by the Engineer.
3. Operate equipment on a slab without causing damage. If damage results, suspend operations and take corrective action as approved by the Engineer. Do not operate the equipment wheels or tracks within 4 in [100 mm] of the slab edge.
When hauling aggregate and other materials across newly constructed joints, keep the pavement surface free of debris by sweeping or other method as approved by the Engineer to prevent spalling of the pavement joints.

SP-21 (2301) DRILL AND GROUT REINFORCEMENT BAR (EPoxy COATED)
SP2016-116

This work shall consist of drilling, grouting, and inserting No. 4 epoxy coated reinforcement bars in accordance with the provisions of MnDOT 2301 and the following:

The Engineer will measure by the number of epoxy coated reinforcement bars that are furnished, installed, and grouted in place as specified. The Engineer will make payment under Item 2301.602 (Drill and Grout Reinforcement Bar (Epoxy Coated)) at the Contract bid price per each, which shall be payment in full for all costs incidental thereto.

SP-22 (2302) CONCRETE PAVEMENT REHABILITATION (CPR)
REVISED 4/8/16
SP2016-122

2302.1 DESCRIPTION

This work shall consist of performing concrete pavement repairs, load transfer restoration, and joint/crack sawing and sealing in accordance with the Concrete Pavement Rehabilitation (CPR) Standard details, and the following.

2302.2 MATERIALS

A Structural Concrete ................................................................. 2461

A.1 Partial Depth Repairs, Type B, Mix No. 3U18 ........................................... 3105

A.1.a Pre-bagged Grade 3U18 or 3U18M Concrete Patch Mix

Provide a dry, bagged MnDOT Grade 3U18 concrete patch mix, in accordance with 3105. The Engineer will allow 75 lb [34.1 kg] or 3000 lb [1364 kg] bags.

A.1.b Field-Proportioned Grade 3U18 Concrete Patch Mix

Provide Grade 3U18 concrete mix by mass in accordance with Table 2302-1.

<table>
<thead>
<tr>
<th>Table 2302-1 Mix Proportions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
</tr>
<tr>
<td>Type I Cement</td>
</tr>
<tr>
<td>Coarse Aggregate, ASTM #89</td>
</tr>
<tr>
<td>Fine Aggregate</td>
</tr>
</tbody>
</table>
A.1.c  Coarse Aggregate Gradation Requirements, ASTM #89 or CA-80

Provide either an ASTM #89 or CA-80 Gradation in accordance with Table 3137-4 for use in Grade 3U18 concrete patch mix or Dowel Bar Retrofit Repairs. Provide coarse aggregate meeting the quality requirements of 3137.2.D.3, “Coarse Aggregate for Concrete Pavement.”

A.2 Full Depth Repairs, Type C and Type CX, Mix No. 3R52 and 3RHE52 ............................ 2461
B Reinforcement Bars.................................................................................................................. 3301
C Dowel Bars............................................................................................................................ 3302

D  Curing Materials
D.1 Poly-Alpha Methylstyrene (AMS) Membrane Curing Compound................................. 3754
D.2 Linseed Oil Membrane Curing Compound ....................................................................... 3755
D.3 Plastic Curing Blankets ....................................................................................................... 3756
D.4 Insulation Board .................................................................................................................. 3760

E Joint Sealant .......................................................................................................................... 3725
F Preformed Joint Filler ............................................................................................................ 3702

G Form Coating Material ......................................................................................................... 3902

H Dowel Bar Retrofit (DBR) Repair Materials ................................................................. 2302

H.1 Approved Non-Shrink Rapid Set Concrete for Dowel Bar Retrofit Repairs

Provide a Packaged, Dry, Non-Shrink, Rapid-Hardening Concrete Material for backfilling Dowel Bar Retrofits repairs from the MnDOT Approved/Qualified Product List.

The Engineer will allow on site addition (extension) of coarse aggregate in accordance with the following:

(a) Limit coarse aggregate extension to same source/same percent mass extension as was utilized in the AMRL certified laboratory trial-batch testing.
(b) Limit the coarse aggregate extension to the manufacturer’s recommended maximum or to a maximum of 50 percent by mass, whichever is less
(c) Meets aggregate quality requirements of Standard Specification 3137.2.D.3

H.1.a DBR Project Submittal Requirements
At least 21 days prior to performing DBR repairs, submit the following information to the MnDOT Concrete Engineering Unit for review:

(a) A concrete mix design including the coarse aggregate source at the proposed extension percentage.
(b) A signed letter from the Rapid-Hardening Cementitious Material manufacturer stating the means and methods specified in both MnDOT Special Provision 2302 and outlined on the Dowel Bar Retrofit detail sheets are acceptable procedures.
(c) Any field testing requirements recommended by the manufacturer of the Rapid-Hardening Cementitious Material.

The Engineer in conjunction with the Concrete Engineer will determine final acceptance of the DBR repair backfill material based on satisfactory field placement and performance, in accordance with 2302.3.F.4 “Test Section” and 2302.3.G “Repair Warranty.”

H.2 End Caps

Provide tight fitting, nonmetallic non-organic end caps that will allow for a ¼ inch [6 mm] expansion movement of the dowel bar at each end.

H.3 Compressible Foam Core Board

Provide at least 3/8 inch [9 mm] thick, compressible foam core board material constructed of rigid Styrofoam or closed cell foam faced with poster board material or plastic faced material on each side to reestablish the crack/joint the full width and depth of the slot, as shown in the Plan detail. The Engineer will not permit multiple pieces to obtain the proper thickness or height. Preformed Joint Filler conforming to 3702 is not allowed.

H.4 Dowel Bar Support Chairs

Provide two, nonmetallic support chairs that are either epoxy coated steel in accordance with ASTM A 884/A 884M or fabricated of commercial quality nonmetallic, non-organic material to support each dowel bar. The chairs when placed shall press securely against the slot face to firmly hold the dowels in the proper position while the backfill material is placed and consolidated.

H.5 Caulking Filler

Provide any commercial caulk that is designed as a crack sealant that is compatible with the proposed patching material. Use the caulking filler for sealing the existing joint or crack at the bottom and sides of the slot as shown in the Dowel Bar Retrofit detail.

2302.3 CONSTRUCTION REQUIREMENTS

A 3U18 Concrete Mixture Requirements for Partial Depth Repairs
Incorporate concrete into the concrete pavement rehabilitation repairs in accordance with Specification 2302, the Plan, Concrete Pavement Rehabilitation (CPR) Standard details, and the following.

Mix all dry pre-bagged grade 3U18 concrete patch mix on site, in a paddle type mixer for at least 5 minutes.

The Engineer may also allow batching by volume in a mobile type mixer to produce grade 3U18 concrete patch mix. Proportion the cement, coarse and fine aggregate by volume (±2 percent) in accordance with 2404.3.E.1, “Mixer Requirements” and 2461.3.D.2 “Batching by Volume.”

Make batch water adjustments to achieve a maximum slump of 1 inch [25mm] 5 minutes after batching.

Do not accelerate concrete strength gain to facilitate early strength of pavement repairs solely for construction traffic unless approved by the Engineer.

Because of the increased rate of hardening of concrete that incorporate accelerating type admixtures, take extra precautions as necessary to ensure satisfactory finishing, curing, and protection of the concrete repairs. The Contractor assumes full responsibility for the performance of the concrete. The Engineer will determine final acceptance of the Type B repair concrete based on satisfactory field placement and performance, in accordance with 2302.3.G “Repair Warranty.”

Refer to Table 2302-2, “MnDOT Mix 3U18 Opening Times”, to determine the allowable mix adjustments to Grade 3U18 concrete. When anticipated time to opening for construction equipment or general traffic is less than 7 calendar days, and the ambient temperatures are anticipated to remain at or above 60°F [15°C] during the curing time, provide approved admixture as outlined in Table 2302-2. The mix design will include the admixtures solution as part of the total recommended mixing water.

<table>
<thead>
<tr>
<th>Anticipated Minimum Time to Opening *</th>
<th>Concrete Mix Grade</th>
<th>Admixture Dosage &amp; Type</th>
<th>Mix Design Responsibility</th>
<th>Testing and Strength Required for Opening</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 7 calendar days</td>
<td>3U18</td>
<td>None Required</td>
<td>2302</td>
<td>None *</td>
</tr>
<tr>
<td>72 hours to 7 calendar days</td>
<td>3U18</td>
<td>Type A ‡</td>
<td>2302</td>
<td>None *</td>
</tr>
<tr>
<td>36 hours to &lt; 72 hours</td>
<td>3U18</td>
<td></td>
<td>Type A ‡</td>
<td>2302</td>
</tr>
<tr>
<td>------------------------</td>
<td>--------</td>
<td>----------</td>
<td>------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>12 hours to &lt; 36 hours</td>
<td>3U18 †</td>
<td>As Needed §</td>
<td>2302</td>
<td>Control Cylinders as per 2302.3.B.4(c) # π</td>
</tr>
</tbody>
</table>

* If at any time the ambient temperature falls below 60°F [15°C] during the curing time, use control specimens to determine opening times in accordance with 2302.3.B.4.

** The maximum slump for 3U18 mixes measured after 5 minutes is 1 inch [25 mm].

† Accelerating admixtures are not allowed when the ambient air temperature exceeds 80°F [27°C] without the approval of the Concrete Engineer.

‡ Use manufacturer’s recommended dosage rate to achieve 3000 psi [20.6 MPa] minimum compressive strength or 500 psi [3.4 MPa] flexural strength at the time of opening.

# The Contractor may request to the Engineer a reduction in the number of control specimens based on control specimen strengths and site conditions.

§ Use a Type A, C or E admixture in accordance with 2302.3.A and the manufacturer’s recommended dosage rate to achieve 3000 psi [20.6 MPa] minimum compressive strength or 500 psi [3.4 MPa] flexural strength at the time of opening.

π Do not allow construction vehicles or general traffic on Type B repairs unless a minimum of 12 hours have elapsed and control cylinders achieve a minimum compressive strength of 3000 psi [20.6 MPa] or 500 psi [3.4 MPa] flexural strength.

** A.1 3R52 or 3RHE Concrete Mixture Requirements for Full Depth Repairs **

Provide a contractor designed concrete in accordance with Specification 2461, the Plan, Concrete Pavement Rehabilitation (CPR) Standard details, and the following.

Design either a concrete grade 3R52 or 3RHE to be incorporated into Type C Repairs in accordance with specification 2461 “Structural Concrete.”

Refer to Table 2302-3, “Mix 3R52 and 3RHE52 Opening Requirements,” to determine the criteria for opening 3R52 and 3RHE concrete to traffic.

Do not accelerate concrete strength gain to facilitate early strength of pavement repairs solely for construction traffic unless approved by the Engineer.

Because of the increased rate of hardening of concrete that incorporates accelerating type admixtures, take extra precautions as necessary to ensure satisfactory finishing, curing, and protection of the concrete repairs. The Contractor assumes full responsibility for the performance of the concrete. The Engineer will determine final acceptance of the Type C repair concrete based on satisfactory field placement and performance, in accordance with 2302.3.G. “Repair Warranty.”
TABLE 2302-3
Mix 3R52 and 3RHE52 Opening Requirements

<table>
<thead>
<tr>
<th>Anticipated Minimum Time to Opening *</th>
<th>Concrete Mix Grade</th>
<th>Admixture Dosage &amp; Type</th>
<th>Mix Design Responsibility</th>
<th>Testing and Strength Required for Opening</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 7 calendar days</td>
<td>3R52</td>
<td>2461† ‡</td>
<td>Contractor</td>
<td>None</td>
</tr>
<tr>
<td>&lt; 7 calendar days to ≥ 12 hours</td>
<td>3R52 3RHE52</td>
<td>2461† ‡</td>
<td>Contractor</td>
<td>Control Cylinders as per 2302.3.8.4(c) # π</td>
</tr>
</tbody>
</table>

† Accelerating admixtures are not allowed when the ambient air temperature exceeds 80°F [27°C] without the approval of the Concrete Engineer.
‡ Use manufacturer’s recommended dosage rate to achieve 3000 psi [20.6 MPa] minimum compressive strength or 500 psi [3.4 MPa] flexural strength at the time of opening.
# The Contractor may request to the Engineer a reduction in the number of control specimens required based on the results of the control specimen strengths and site conditions.
π Do not allow construction vehicles or general traffic on Type C repairs unless a minimum of 12 hours has elapsed and control cylinders achieve a minimum compressive strength of 3000 psi [20.6 MPa] or 500 psi [3.4 MPa] flexural strength.

A.2 Placement Limitations

For (Type A) Repairs:

(a) Do not place joint sealant when the ambient temperature is below 40°F [5°C], nor when the joint faces show signs of frost or moisture.
(b) Do not perform Type A repairs until the concrete grinding operations are completed.
(c) If the pavement joints are widened, seal the joints before traffic is placed on the repairs.
(d) Do not place joint sealant outside of the manufacturer’s temperature recommendations.

For (Type B) Repairs:

(a) Do not place concrete at ambient temperatures less than 50°F [10°C]
(b) Do not place concrete when in-place pavement temperatures are below 50°F [10°C].
(c) Do not place any concrete mixture after October 15th.
(d) Do not place epoxy resin adhesive or non-shrink grout for bonding reinforcement bars to in place concrete outside of the manufacturer’s temperature recommendations.

(e) Do not use accelerating admixtures (Types C and E) when the ambient air temperature exceeds 80°F [27°C] without the approval of the Concrete Engineer.

For (Type C) Repairs:

(a) Installation of the Dowel Bar Anchoring Test Section in accordance with 2302.3.E.3 is required prior to anchoring any additional dowel bars. If the Contractor performs additional anchoring of dowel bars prior to Engineer approval, the Engineer will consider those repairs as unauthorized in accordance with 1512, “Unacceptable and Unauthorized Work.”

(b) Place concrete in accordance with 2461 and 2302.3.B.3.c in these provisions.

(c) Do not place any concrete mixture after October 15th, unless approved by Concrete Engineer, in conjunction with the Engineer, and an approved cold weather protection plan is in place.

(d) Do not place epoxy resin adhesive or non-shrink grout for bonding reinforcement bars or dowel bars in place concrete outside of the manufacturer’s temperature recommendation.

For Dowel Bar Retrofits:

(a) Do not place pre-blended Non-Shrink Rapid Set Concrete Material when the pavement temperatures are above 90°F [30°C].

(b) Maintain pre-blended Non-Shrink Rapid Set Concrete Material temperature at or below 90°F [30°C].

For Concrete Grinding:

(a) Do not grind the concrete unless the openings times and minimum strengths established in either Table 2302-2, Table 2302-3 or, 2302.3.B.5.a of these provisions have been met.

(b) The Engineer will schedule a pre-grinding meeting at the project site. At the pre-grinding meeting, submit to the Engineer in writing the proposed Slurry Management Plan the grinding contractor will utilize to remain in conformance with Specification 1717. At the pre-grinding meeting, the Engineer and Contractor will review the site to identify the environmentally sensitive areas.

B General

Establish traffic control 1-day in advance of the beginning of the rehab operation for rehab surveys and locations.

B.1 Removals
Dispose of all removals outside the right of way in accordance with Specification 2104 to the satisfaction of the Engineer.

Repair any damage to any in-place pavement, roadway structure, joints, shoulders or appurtenance caused by the Contractor’s operations as directed by the Engineer prior to final acceptance at no cost to the Department. Replace bituminous shoulder pavement, as directed by the Engineer, as an incidental cost to performing adjacent concrete repairs.

To prevent concrete pavement blow ups, saw full-depth relief cuts in the adjacent lanes and remove a transverse section 4 inches [100 mm] wide by full-width of the slab as the Contractor determines necessary to protect the existing concrete pavement. If the Contractor chooses not to saw a relief cut and damage is caused to the remaining concrete pavement, the Contractor shall make repairs as directed by the Engineer, at no cost to the Department. Prior to opening to traffic, backfill the void formed after concrete removal with Class 5 or other material as approved by the Engineer at no cost to the department. Maintain the backfill material flush within a tolerance of +/- 1/2 inch [+/- 13 mm] with adjacent concrete.

B.2 Placing and Finishing Concrete

Use concrete placing and finishing procedures that do not result in rounding of the surface at any joints or headers.

Reestablish longitudinal and transverse joints and cracks according to Joint Repair (Type A1) detail.

Edging is required adjacent to all inserts and forms in fresh concrete.

Fill overlaps in saw cuts from removal operations with an approved hot pour joint sealant at no cost to the Department.

Assure that concrete repairs do not protrude beyond the original cross-section of the pavement by more than 3/8 inch [10 mm] by forming or sawing the edges.

Provide surface texturing for skid resistance to all repairs consisting of brooming in the long dimension of the repair including when concrete grinding is to take place. Tine Type C repairs that abut existing concrete surfacing in the same manner that they were tined during the original construction. When concrete grinding is required, tining is not required.

B.3 Concrete Curing and Protection

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

(1) For Type B Repairs, place the membrane curing compound conforming to 3754 or 3755 within 10 minutes of concrete placement or once the bleed water has dissipated unless otherwise directed by the Engineer in accordance with 2302.3.B.3.a.1.
For Type C Repairs, place the membrane curing compound conforming to 3754 or 3755 within 30 minutes of concrete placement or once the bleed water has dissipated unless otherwise directed by the Engineer in accordance with 2302.3.B.3.a.1. Place the membrane-curing compound on the edges within 30 minutes after permanent removal of the forms or curing blankets unless otherwise specified in the Contract.

Place plastic curing blankets or completely saturated burlap curing blankets as soon as practical without marring the surface in accordance with 2302.3.B.3.a.2.

Whenever weather conditions are such as to cause unusual or adverse placing and finishing conditions or equipment failures occur, 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, remove the covering for the minimum time required to complete that work.

Failure to comply with the above provisions will result in the Engineer, in conjunction with the Concrete Engineer, applying a monetary deduction in accordance with 1503 and 1512 and the following:

1. For Type B Repairs, the Department will apply a monetary deduction of 100% of the unit bid price for the concrete in question.
2. For Type C Repairs, the Department will apply a monetary deduction of $50.00 per cu. yd [$65.00 per cu. m] or 50% of the Contractor-provided invoice amount for the concrete in question, whichever is less.

The Contractor may remove and replace the Type B or Type C Repairs at their own expense in lieu of the monetary deduction.

B.3.a Curing Methods

B.3.a.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 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 curing compound homogeneously to provide a uniform, solid, white opaque coverage on all exposed concrete surfaces (equal to a white sheet of typing paper). If using a Department-approved curing compound with a non-white base color, apply the compound to provide a uniform, solid, opaque consistency meeting the intent of the requirement in this section.
3. If the curing compound is damaged during the curing period, immediately repair the damaged area by re-spraying.
(4) If the Engineer determines that the initial or corrective spraying result in unsatisfactory curing, the Engineer may require the Contractor to use the blanket curing method at no additional cost to the Department.

Use an airless spraying machine for applying the curing compound on the concrete that complies 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.

B.3.a.2 Blanket Curing 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.

B.3.b 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 corrective action is taken and may subject the rain-damaged concrete to 1503 and 1512.

B.3.c Protection Against Cold Weather for Full Depth (Type C) Repairs

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.

B.3.c.1 Cold Weather Protection Plan

Submit a 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. Include a method of monitoring the concrete temperatures. Ensure concrete pavement repair temperatures remain above 32° F [0° C] for the entire cure time as defined in 2302.3.B.4 (c). Do not place concrete until the Engineer accepts the Contractor’s cold weather protection plans.

B.4 Opening to Construction Equipment and Traffic
The Engineer will not allow the Contractor to open concrete pavement repairs to construction equipment / vehicles, concrete grinding equipment, cleanup equipment or, public traffic unless one of the following requirements has occurred:

(a) When MnDOT designed 3U18 concrete or Contractor designed 3R52 / 3RHE52 concrete attains a minimum age of 7 calendar days, or

(b) When MnDOT designed 3U18 concrete attains a minimum age of 72 hours and the admixture type, dosage rate, and minimum ambient temperature requirements outlined in Table 2302-2 are met, or

(c) MnDOT designed 3U18 concrete or Contractor designed 3R5 / 3R5 HE concrete attains a minimum age of 12 hours and control strength specimens obtain minimum compressive strength of 3000 psi [20.6 Mpa] or minimum flexural strength of 500 psi [3.44 Mpa]

(d) For dowel bar retrofits repairs, reached a minimum age of 4 hours and control strength specimens obtain minimum flexural strength of 500 psi [3.44 Mpa] or minimum compressive strength of 3000 psi [20.6 Mpa].

(e) For both c) and d) above, the Contractor will cast and cure the control specimens in accordance with 2461. The Engineer will test the control specimens in accordance with ASTM C39. If the Engineer is unable to test the control specimens the Contractor will test the control specimens in accordance with the following:

(i) Supply and operate (in the presence of the Engineer) a calibrated mechanical or hydraulic concrete cylinder testing machine, in accordance with ASTM C39;

(ii) Perform testing at a distance no greater than 30 miles from the control specimen fabrication site; and

(iii) At no additional cost to the Department.

When opening times are less than 3 days, provide the Engineer with a letter from the manufacturer stating the required minimum cure times of the Epoxy Resin Adhesive (ERA) or Non-Shrink Grout (NGS) used to anchor either the dowel bars or reinforcement bars comply with the early opening times. Do not open to construction equipment or traffic until the manufacturer’s recommended minimum cure times are met.

Once one of the above conditions has been met, sweep the portion of the closed traffic lane with a power pick-up broom prior to opening. Use water to control dust at the discretion of the Engineer.

C Type A Repairs

Type A repairs include: Variable Width Joint Crack Repair / Joint Repair (Type A1) and Variable Width In place Joint or Crack Repair / Joint Repair (Type A2).

Saw and clean transverse and longitudinal joints or cracks as specified below, in preparations for sealing, seal joints or cracks.

C.1 Removals
When performing Variable Width Joint Crack Repair / Joint Repair (Type A1):

Remove the in place joint sealer if applicable. The Contractor may remove the in place joint sealer in conjunction with widening of the in place joint or crack.

Widen in place or newly constructed transverse or longitudinal joint or crack by saw cutting and to a depth shown on the Variable Width Joint Crack Repair / Joint Repair (Type A1) detail. Freshly saw both joint faces. Do not widen the in place joint or crack greater than 1/4 inch [6 mm] from its existing width.

When performing the Variable Width In Place Joint or Crack Repair / Joint Repair (Type A2):

Remove all of the existing joint seal material from the in place joint insofar as possible with ripping teeth, wire brush, sawing or other reasonable equipment to the satisfaction of the Engineer.

Do not use equipment that will cause spalling of the pavement surface.

C.2 Preparation

Thoroughly clean all joints and cracks by water flushing immediately after sawing.

After joint has dried, sandblast then air blast.

Assure that the joints or cracks are clean, dry, and free of all incompressible material before applying sealant.

C.3 Repair

Install a closed cell backer rod when joints or cracks are 1/4 inch [6 mm] or greater. Install backer rod of a diameter and to the depth shown on the Joint Repair (Type A) details.

Use a MnDOT Approved hot pour joint sealer meeting the requirements of Specification 3725.

Apply joint sealer in accordance with the Manufacturer’s recommendations.

Fill joints or cracks to 1/16 inch [1.6 mm] below the pavement surface. Any overfilling of hot pour joint sealer will require removal and replacement by the Contractor at no cost to the Department.

D Type B Repairs

Type B Repairs include: Partial Depth Repair (Type BA), Partial Depth Repair Special (Type BE), and Joint and Crack Repair (Type B3).
Remove deteriorated concrete at designated (Type B) repair areas, reestablish joints and cracks, furnish, place, and cure 3U18 concrete to the original slope and grade, saw and seal newly reestablished joints.

D.1 Removals

The Engineer will not allow “Jackhammers” for partial depth concrete removals. Removal chipping hammers are limited to a maximum rated weight of 35 pounds [15.9 kg].

Equip milling machines used for concrete removal with a device for stopping at preset depths to prevent damage to the dowel bars.

Remove the concrete surface and all deteriorated concrete in the designated repair areas to a minimum depth of 2 inches [50 mm].

Do not damage the dowel bars during the removal process. Any damage is the responsibility of the Contractor.

Remove the concrete surface in the designated repair area by either of the following:

(a) Milling transversely or longitudinally. Chip-out secondary spalling resulting from the contractor’s removal operations at no cost to the Department.

(b) Delineate the repair area by saw cuts and chipping back the saw cuts to a 30°-60° angle.

D.2 Preparation

If dowel bar or reinforcement bars cross-sectional loss due to corrosion is slight, place duct tape over the dowel bar, or another bond breaking material approved by the Engineer. Cut or burn-off the bar if the dowel bars are misaligned, exhibit corrosion to a greater degree or if the end of the dowel is exposed. If this involves more than three adjacent dowels, remove and replace the entire joint with a Full Depth Repair (Type CD).

Sandblast then air blast Type B Repairs clean.

Drill and grout No.4 epoxy coated reinforcement bars for Partial Depth Repair Special (Type BE). Maintain a minimum of 2 in [50 mm] concrete cover around bar. Install additional drill and grout No.4 epoxy coated bars at 6 in [150 mm] center-to-center while maintaining the minimum concrete cover.

The installation of the preformed joint filler is required before concrete placement in order to reestablish the joint or crack within the repair and to prevent the infiltration of the concrete into the crack or joint that runs through the repair. Allowing concrete to infiltrate into the joint or crack may cause the repair to fail. In some instances (mainly when concrete is removed under dowel bars), the preformed joint filler will not completely plug the joint or crack within the repair. If this circumstance is encountered, remove a section of the dowel to allow the placement of the preformed joint filler or place clean concrete sand to fill the void below the joint filler.
The practice of using sand in places where joint filler installation is impractical may result in a reduced repair life and is meant to be used on an occasional basis. Therefore, the Engineer should make an early determination of the extent of this type of fix and may want to use a Full Depth Repair (Type CD) in lieu of the Crack and Joint Repair (Type B3).

D.2.a Application of Bonding Agent

The Contractor will choose a method for bonding the 3U18 mix to the in-place concrete in accordance with the following:

(1) Bonding Grout Method
   (1.1) Provide and place bonding grout to the prepared concrete repair surface consisting of 2 parts of Type I or Type I/II portland cement and 1 part sand, mixed with sufficient water to form a slurry with the consistency of cream.
   (1.2) Mix the grout mechanically and apply by brushing or scrubbing (with a stiff bristle broom) on to the in-place concrete surface and then immediately placing concrete after grouting.
   (1.3) If the grout dries or whitens, sandblast again and reapply grout.
   (1.4) The life of the grout shall not exceed one (1) hour.

(2) Water Bonding Method
   (2.1) Apply clean potable water to the Type B repair surface to achieve a saturated surface dry condition prior to concrete (3U18) backfilling.
   (2.2) Do not allow standing water within the Type B repair limits.
   (2.3) Apply bonding grout around the outside edge of the Type B repairs immediately after texturing in accordance with 2302.3.D.3, “Repair”.

D.3 Repair

Furnish, place, finish and cure MnDOT Grade 3U18 as replacement concrete for all Type B repairs.

Provide a repaired surface tolerance that does not vary by more than 1/8 in [3 mm] from the existing pavement surface as measured with a straight edge placed over the joint. Replace or grind the repair as necessary to correct deficiencies.

Apply surface texture; immediately after surface texturing place cement/sand slurry (bonding grout) around the outside edges of the Type B repair; cure and protect the concrete repair.

Saw and seal reestablished joints and cracks within Type B repairs in accordance with the Variable Width Joint Crack Repair / Joint Repair (Type A1).

E Type C Repairs
Type C Repairs include: Full Depth Repair (Type CD-LV), Full Depth Repair (Type CD-HV), Pavement Replacement (Type CX), Full Depth Repair (Type CA-LV), Spot Full Depth Repair (Type C1-LV) and Utility Trench Full Depth Repair (Type C2).

All repairs with the designation LV are intended for use on non-state designated roadways only. The Full Depth Repair (Type C1-LV, Type C2-LV and CA-LV) are for use on projects with small quantity of repairs. Contact the Concrete Engineering Unit for recommendations.

Saw cut concrete full depth and perform full-depth concrete removal; restore and compact the grade; install reinforcement bars, dowel bars, or both; and furnish, place, finish, and cure concrete and saw and seal joints.

E.1 Removals

Saw cut the concrete pavement full depth.

Remove in place concrete pavement. Removal of the concrete pavement must take place within 48 hours of the full depth saw cutting, unless otherwise allowed by the Engineer.

Repair or replace any damage to the adjacent pavement that occurs during the removal process to the satisfaction of the Engineer and at no cost to the Department.

E.2 Preparation

Furnish and install 18 in x 1.25 inch [460 mm x 31 mm] diameter dowel bars in conformance with Specification 3302 and details, or when the Full Depth Repair is used in the longitudinal direction furnish and install 18 in [460 mm] No. 8 epoxy coated reinforcement bars, in lieu of the dowel bars, in conformance with Specification 3301 and details. Provide dowel bars or reinforcement bars that are free of dirt, grease, oil or other foreign material.

Use drill bit(s) 1/8 inch or greater than the nominal outside diameter of the dowel bar or epoxy coated reinforcing steel that are anchored to the in place concrete pavement.

Provide a drill assembly or gang drill assemblies capable of drilling straight and true holes, to the required penetrating depth, drilling at mid concrete pavement thickness, and to the tolerances shown below.

Install dowel bars in Full Depth Repair (Type CD-LV), Full Depth Repair (Type CD-HV) and if applicable the Spot Full Depth Repair (Type C1-LV) in accordance with the following tolerances:

(a) The final placement of the dowel bars is 9 in [225 mm] into the face of the in place concrete slab.
(b) Parallel to the top of the pavement within +/- 1/4 in [3 mm] in 9 in [225 mm].
(c) Parallel to the other dowel bars within +/- 1/8 in [1.5 mm] in 9 in [225 mm].
(d) Parallel to the roadway centerline +/- ⅛ in [6 mm] in 9 in [225 mm].
Place dowel bar baskets assemblies as outlined in the Pavement Replacement (Type CX) and Full Depth Repair (Type CA-LV) details.

Use either the Epoxy Resin Adhesive (ERA) or Non-Shrink Grout (NSG) Installation Method to anchor the dowel bars and reinforcement bars into the concrete. Clean and prep the drilled holes in accordance with adhesive manufacturer’s recommendations.

E.2.a Epoxy Resin Adhesive (ERA) Installation Method

From the approved products list furnish an ERA material with a stated application of anchoring dowel bars or reinforcement bars. Provide to the Engineer an installation data sheet from the manufacturer. The ERA will meet AASHTO M 235 Type IV (Load Bearing Applications), Grade 3 (Non-sagging consistency) and of a Class (Temperature Range) to match the pavement temperature at the time of application. ERA Class (Temperature Range) designations are as follows:

(a) Class A, for use below 40°F [4°C].
(b) Class B, for use between 40°F and 60°F [4°C and 15°C].
(c) Class C, for use above 60°F [15°C] the highest allowable temperature to be defined by the manufacturer of the ERA.

When pavement temperatures are below 40°F [4°C] use Class A, when pavement temperatures are between 40°F and 60°F [4°C and 15°C] use either Class A or B, when pavement temperatures are above 60°F [15°C] use Class A, B or C.

ERA injection can be by either a mechanical caulking apparatus or a pneumatic injection system and have a nozzle capable of reaching and filling the back of the drill hole. Fill drill hole and insert dowel or reinforcement bars in accordance with the manufacturer’s recommendations.

Final approval of the injection system and methods used to anchor dowels or reinforcement bars is based on actual field performance as verified by random coring.

E.2.b Non-Shrink Grout (NSG) Installation Method

From the approved products list furnish a NSG material with a stated application of anchoring horizontal dowel bars or reinforcement bars. Provide to the Engineer an installation data sheet from the manufacturer of NSG material.

Provide either self-contained grout capsule or pre bagged NSG utilizing an injection system capable of reaching and filling the back of the drill hole.

Final approval of the methods used to anchor dowels or reinforcement bars is based on actual field performance as verified by random coring.

E.3 Prior to Concrete Placement
When placing concrete adjacent to in place concrete pavement joints, protect all ends of transverse joints to the satisfaction of the Engineer to prevent concrete mortar from infiltrating into the existing joints, resulting in compression spalls.

Do not remove any preformed joint filler used in the re-establishment of joints in Type C repairs, except by sawing or as allowed by the Engineer.

**E.4 Repair**

Furnish, place, finish, and cure Grade 3R52 or 3RHE52 concrete for all Type C repairs.

In accordance with full depth repair details Types CD-HV, CD-LV, and CA-LV, furnish, and place transverse No. 4 epoxy coated reinforcing steel.

In accordance with the full depth repair detail Type C2-LV, furnish and install both transverse and longitudinal No. 4 epoxy coated reinforcing steel.

Provide a repaired surface tolerance that does not vary by more than 1/8 in [3 mm] from the existing pavement surface as measured with a straight edge placed over the joint. Replace or grind the repair as necessary to correct deficiencies.

Restore contraction joints by green sawing to a depth of 1/3 of the pavement thickness.

Construct L2KT longitudinal joints unless otherwise directed by the Engineer.

Saw and seal joints and cracks involving Type C repairs in accordance with Joint Repair (Type A1) detail.

**E.5 Dowel Bar Anchoring Test Section**

Provide a dowel bar anchoring test section consisting of a complete Full Depth Repair (Type CD) at a site directed by the Engineer at least one (1) day prior to startup of major Full Depth Repair (Type CD) operations. Perform the dowel bar anchoring test section as follows:

(a) Saw cut and remove in place pavement to the dimensions shown on the Full Depth Repair (Type CD) detail.
(b) In the test section drill and install either 6 or 11 dowels in accordance with appropriate Full Depth Repair (Type CD).
(c) Use either an MnDOT approved Epoxy Resin Adhesive or Non-Shrink Grout as an adhesive to secure the dowel bars to the in place concrete pavement.
(d) Cure the dowel bar anchoring adhesive at least 4 hours before coring.
(e) **DO NOT PLACE CONCRETE IN THE DOWEL BAR TEST SECTION.**
(f) The Engineer will identify and mark three (3) core locations on a single side of the Full Depth Repair (Type CD).
(g) Take three (3) – 6 inch [150 mm] diameter full depth cores centered on the dowel and 1 1/2" from the sawed vertical face.
The Engineer in conjunction with the Concrete Engineer will determine if the anchoring of the dowels is acceptable. All cores will become the property of the Engineer.

If the Engineer determines the anchoring of the dowels is acceptable:

(a) The Engineer will notify the Contractor to begin production operations.
(b) The Engineer’s continued acceptance is based on satisfactory placement and performance.
(c) Place a full depth saw cut offset 1 foot from the vertical face of the test section.
(d) Completely remove the cored side of the dowel bar test section.
(e) Drill and anchor a new set of dowels as shown on the Full Depth Repair (Type CD).
(f) The Engineer will pay for the work in this paragraph at the unit bid price of Full Depth Repair (Type CD) and Pavement Replacement (Type CX).
(g) The working days for the test section are built into the total Contract Time.

If the Engineer determines the anchoring of the dowels is not acceptable:

(a) The Engineer will require the removal of the first test section.
(b) The Engineer will require another test section at the contractor’s expense.
(c) The Engineer will not extend the contract time for the additional test section.

The Engineer will consider the work in this section as incidental to the unit bid price for Full Depth Repair (Type CD) and Pavement Replacement (Type CX).

Provide traffic control for the test section in accordance with “Temporary Traffic Control Zone Layouts” or as shown in the Plans.

E.6 Dowel Bar Anchoring Assurance

At the Engineer’s discretion, the Contractor will take additional cores to confirm consistent dowel bar or reinforcing steel anchoring. For each 1500 Lineal Feet of Full Depth Repair (Type CD), the Engineer will randomly choose two separate repairs and mark two dowel bars for assurance coring. The Engineer will review the cores to determine if the anchoring operations remain acceptable. If the dowel bars show excessive air voids exist in the dowel bars adhesive, take additional cores as directed by the Engineer to determine the severity.

The Engineer will suspend Full Depth Repair operations if dowel bars are anchored improperly. Operations will not resume until the Contractor has demonstrated to the Engineer that the problem which caused the air voids is corrected.

If the cores show proper anchoring, back fill core holes with concrete mix 3U18.

When the coring operations have shown no problems with the Contractor’s dowel bar anchoring operations, the Engineer may decrease the frequency to two (2) assurance cores for every 3000 lineal feet of Full Depth Repair (Type CD).
The Engineer will consider the work in this section as incidental to the unit bid price for Full Depth Repair (Type CD) and Pavement Replacement (Type CX).

F Dowel Bar Retrofit

Retrofit dowel bars in mainline joints and/or mid panel cracks as shown on the Plans. Perform Dowel Bar Retrofits only after all other repairs are completed on the joint or crack.

F.1 Removal

Schedule operations so that all concrete removed during any work shift is replaced with dowel bars and backfill material prior to the time the lane is re-opened to traffic.

Employ saws equipped with gang mounted diamond blades capable of cutting the required amount of slots in each wheel path simultaneously. Vacuum up and remove water and saw residue from the pavement surface. Skewed joints or cracks may require slots longer than that specified in the details. The Engineer will not provide compensation for the additional sawing or any component of the dowel bar retrofit beyond the limits shown on the detail required to ensure at least 7 inches [175 mm] of dowel bar is placed on each side of the joint or crack. Limit traffic to five (5) days on sawn slots prior to completing the retrofit operation. For smaller projects (100 bars or less), the Engineer may allow walk-behind saws instead of slot saws as long as a template is used to ensure the slot locations are within the tolerances specified on the Dowel Bar Retrofit detail and below.

Make two saw cuts in the pavement to outline the longitudinal sides of each dowel bar slot. Saw the slots to the depth and length that allows placing the dowel at mid-depth in the pavement slab. Place the slot saw cuts:

(a) Parallel to the top of the pavement within +/- ¼ in [6 mm] in 18 inches [225 mm].
(b) Parallel to the other slots within +/- 1/8 in [3 mm] in 18 inches [225 mm]
(c) Parallel to the roadway centerline +/- ½ in [13 mm] in 18 inches [225 mm].

Always measure dowel bar offsets from the roadway centerline.

Remove the concrete between the parallel saw cuts with a chipping hammer. Do not punch through the bottom of the slot or dislodge the pavement that is to remain in place. During concrete removal operations, use a small brush hammer as necessary to produce a flat, level surface within the slot for placing the bar in the proper location. Dispose of the removal debris on a daily basis, unless otherwise approved by the Engineer.

F.2 Preparation

F.2.a Slot Cleaning and Preparation

Sufficiently clean the bottom of the slots with a chipping or brush hammer to allow the dowel bar assembly to sit parallel to the pavement surface.

If needed dry the slot before sandblasting with a high pressure air blasting heat lance.
Sandblast the vertical sides and bottom of the slot after the concrete removal operations to remove all loose debris and saw residue. Continue to sandblast until all the sawing residue is removed and the vertical sawed faces are rough to the touch. The Contractor may recommend alternative methods of roughening for approval by the Engineer. The Engineer will require additional sandblasting if the slots become wet from any source after initial sand and air blasting other than 2302.F.3.

Immediately before beginning sealing of the joint or crack inside the slot, further clean all exposed surfaces and cracks with a “moisture and oil free” high pressure air blasting of 150 psi [1035 kPa] minimum.

Protect traffic from sand and air blasting in a manner approved by the Engineer.

F.2.b Sealing Joints and Cracks in Slot

After sand and air blasting the slot, seal the bottom and sides of the crack with caulking material to keep the patching material from leaking into the joint or crack. Cure caulking material for a minimum of 2 hours or until tack free or according to the manufacturer’s recommendations, whichever is longer, prior to placing the approved rapid set non-shrink concrete. The caulking filler shall not extend 3/8 in [9 mm] beyond each side of the existing joint or crack. The Contractor may complete sealing of the cracks in conjunction with furnishing and installing the dowel assembly.

F.2.c Placing Dowel Assembly into Slot

Supply dowel bar chairs that provide a minimum of 1/2 in [13 mm] clearance between the bottom of the dowel and the bottom of the slot and with sufficient rigidity to hold the dowel bar in place during concrete placement and vibratory consolidation.

Furnish and install compressible foam core board at least 3/8 in [9 mm] thick and a minimum of 1/8 in [3 mm] thicker than the joint / crack to ensure no leakage of patching material into the crack. The compressible foam core board is to maintain the transverse joint / crack as through the slot. The compressible foam core board will remain in position and tight to all edges during placement of the concrete. If the compressible foam core board shifts during construction operations, remove and replace the dowel bar retrofit at the Contractor’s expense.

Apply form release agent as a bond breaker on dowel bars prior to their placement in the slots.

Install dowel assembly that has the bond breaker applied and is fitted with the compressible foam core board material, the support chairs, and the ¼ in [6 mm] expansion caps on both ends into the slot in accordance with the following:

(a) Parallel to the top of the pavement within +/- ¼ in [6 mm] in 18 inches [225 mm].
(b) Parallel to the other slots within +/- 1/8 in [3 mm] in 18 inches [225 mm].
(c) Parallel to the roadway centerline +/- ½ in [13 mm] in 18 inches [225 mm].  
(Always measure dowel bar offsets from the roadway centerline)

(d) Minimum of 1/2 in [13 mm] clearance between the bottom of the dowel and the bottom of the slot.

F.3 Repair

Thoroughly moisten (with potable water) all surfaces of the slot immediately prior to filling with backfill material. The Engineer will not allow standing water in the slot.

Fill each prepared slot with an approved rapid set non-shrink concrete for dowel bar retrofit repairs. Ensure the compressible foam core board remains upright over the existing joint or crack during the backfill operation. Vibrate the rapid set non-shrink concrete with a small 1 inch [25 mm] diameter hand-held vibrator capable of thoroughly consolidating the concrete around the dowel bar and support chairs and without segregation.

Finish the concrete flush to within a tolerance of 1/16 in [1.5 mm] above the adjacent concrete surface. When concrete grinding is part of the Contract, leave the surface of the backfill material 1/4 in [6 mm] above the adjacent concrete surface.

Immediately after final finishing, coat concrete with a membrane curing compound in accordance with 2302.3.B.3.

F.4 Test Section

Provide a test section consisting of complete dowel bar retrofit at a site directed by the Engineer at least three (3) days prior to startup of major operations as follows:

(a) Install 24 retrofit dowels in the test section.
(b) The Engineer will identify and mark three (3) locations for coring.
(c) Take three (3) – 6 in [150 mm] diameter full depth cores at least 4 hours after completion of the test section.

The Engineer will determine if the retrofitting operation is acceptable.

If the Engineer allows the retrofitting operation to continue:

(a) The Engineer will notify the Contractor to begin production operations.
(b) The Engineer’s continued acceptance is based on satisfactory placement and performance.
(c) Completely remove and replace the dowel installation where the core samples were taken.
(d) The Engineer will pay for the work in this paragraph at the unit bid price for Dowel Bar Retrofit.
(e) The working days for the test section are built into the total Contract Time.

If approval of the retrofitting operation is not given:
(a) The Engineer will require the removal of the first test section.
(b) The Engineer will require another test section.
(c) The Engineer will not extend the contract time for the additional test section.

Provide traffic control for the test section in accordance with “Temporary Traffic Control Zone Layouts” or as shown in the Plans.

The Engineer will consider the work in this section as incidental to the unit bid price for Dowel Bar Retrofit.

F.5 Opening to traffic

The Engineer will not permit traffic by the public or Contractor on the newly placed concrete patching material until adequate strength is achieved, according to the manufacturer’s recommendations or 3000 psi [20.6 MPa] whichever is greater.

F.6 Dowel Placement Alignment Assurance

At the Engineer’s discretion, the Contractor will take additional cores to confirm consistent dowel placement and proper consolidation for each 600 bars placed. The Engineer will randomly mark two retrofit locations for assurance coring. The Engineer will review the cores to determine if the retrofitting operation is acceptable. If the dowels are located incorrectly or air voids exist around the dowel bars, take additional cores, as directed by the Engineer, to determine the severity.

The Engineer will suspend dowel retrofitting operations if dowels are installed improperly. Dowel retrofitting operations will not resume until the contractor has demonstrated to the Engineer that the problem which caused the improper dowel positions or air voids is corrected. Replace any individual Dowel Bar Retrofit not functioning or damaged at the expense of the Contractor.

The Engineer will not allow water from the coring operation to flow across lanes occupied by public traffic or flow into closed drainage facilities.

After removal of the cores, completely remove and replace the dowel installation where the core samples were taken.

When the coring operations have shown no problems with the Contractor’s placement operations, the Engineer may decrease the frequency of assurance cores to every 1200 bars placed or more at the discretion of the Concrete Engineer.

Provide traffic control for the coring in accordance with “Temporary Traffic Control Zone Layouts” or as shown in the Plans.

The Engineer will consider the work in this section as incidental to the unit bid price for dowel bar retrofit.

G Repair Warranty
Remove and replace areas of failure that appear within thirty (30) calendar days at no cost to the Department. The 30 calendar day warranty will commence after all Type B, Type C, Dowel Bar Retrofits repair and Concrete Grinding (when required) are completed in a single traffic lane. The continuity of a single traffic lane is not broken by either staging or project exceptions unless otherwise authorized by the Engineer. Any subsequent warranty repairs are subject to the 30 calendar day specification at no cost to the Department.

Failures include (but are not limited to) the loss of bonding to the in place concrete or crack apparent in the repair other than the desired crack in the newly constructed joint or re-established crack.

Supply traffic control as requested by the Department for inspection of repairs within the 30 calendar day warranty period and for the repair of failures.

2302.4 METHOD OF MEASUREMENT

The Engineer will:

(A) Not measure extra width to accommodate the Contractor’s equipment. Any extra width to accommodate the Contractor’s equipment is at the Contractor’s expense.

(B) Measure Variable Width Joint or Crack Repair / Joint Repair (Type A1) by the lineal length. The Engineer will not take separate measurements for varying widths. The Engineer will not measure and pay the restoration of joints and cracks through or alongside any Type B, Type C or Dowel Bar Retrofit repairs under this item.

(C) Measure Variable Width In Place Joint or Crack Repair / Joint Repair (Type A2) by the lineal length. The Engineer will not take separate measurements for varying widths.

(D) Measure Partial Depth Repair (Type BA) by the actual area of the repair. Take the measurements for the area calculations at the pavement surface; include the 30 to 60 degree tapers in the measurements for the area calculations.

(E) Measure Joint and Crack repair (Type B3) by the lineal length. The Engineer will take additional measurements for payment under this or other Type B repairs only when the following requirement are met:

(1) In isolated areas the typical width of the repair is exceeded and the measured quantity is equal to or greater than 1 square foot [0.10 square meters]. This is not a cumulative quantity within a single Type B3 repair.

(2) A full width pass with the mill is taken on both sides of the joint or crack as directed by the Engineer.

(3) The Type B3 repair is placed on only one side of the joint or crack, and the opposite side of the joint or crack requires an additional repair when directed by the Engineer, regardless of the size of the repair preformed.
Measure Partial Depth Repair Special (Type BE) by the area of the repair. Take the measurements for the Partial Depth Repair Special (Type BE) area calculation at mid depth of the concrete pavement. Pay in conjunction with the Partial Depth Repair (Type BA) or Joint and Crack repair (Type B3). The Engineer will take measurements for the Partial Depth Repair Special (Type BE) only when the following requirements are met:

1. When the in place concrete pavement is removed full depth, when the grade below the concrete pavement is visible and
2. When reinforcement bars are furnished and installed as shown in Partial Depth Repair Special (Type BE) detail and at least one reinforcement bar is installed per unit of measure.

When the above requirements are not met the Engineer will only take measurements for payment on the Partial Depth Repair (Type BA) or Joint and Crack repair (Type B3) regardless of the depth of the repair.

Provide measurement for payment for overlapping Type BA and Type B3 repairs for the most expensive repair only.

Measure the Full Depth Repair (Type CD) by the lineal width. Take a single lineal measurement of the repair at a right angle from the standard dimension of 4 feet [1.22 m] as shown on the Full Depth Repair (Type CD) detail. Unless the repair is placed at a skew to the roadway center line, then take the single lineal measurement along the skewed saw cut.

Measure the Pavement Replacement (Type CX) by the area of the repair. Pay Pavement Replacement (Type CX) in conjunction with the Full Depth Repair (Type CD) or the Full Depth Repair (Type CA-LV). When the standard dimension of 4.0 feet [1.22 m] as outlined on the Full Depth Repair (Type CD) or Full Depth Repair (Type CA-LV) detail is exceeded, measure the area that is outside the 4.0 feet [1.22 m] dimension as Pavement Replacement (Type CX).

Measure the Spot Full Depth Repair (Type C1-LV) by area of the repair.

Measure the Utility Trench Full Depth Repair (Type C2-LV) by area of the repair.

Measure the Full Depth Repair (Type CA-LV) by the lineal width. Take a single lineal measurement of the repair at a right angle from the standard dimension of 4 feet as shown on the Full Depth Repair (Type CA-LV) detail. Unless the repair is placed at a skew to the roadway centerline, then take the single lineal measurement along the skewed saw cut.

Measure individual Dowel Bars per each, as supplied in dowel bar basket assemblies for Pavement Replacement (Type CX) repairs.

Measure Drill and Grout Reinforcement bars per each, as furnished and installed as tie bars for Pavement Replacement (Type CX) of 75 feet [22.9 m] or greater in length.
(O) Measure Dowel Bar Retrofit per each dowel bar successfully installed.

(P) Measure Supplemental Reinforcement (Epoxy Coated) used for supplemental pavement reinforcement by mass.

2302.5 BASIS OF PAYMENT

The Engineer will pay for the various types of pavement, crack, joint and surface repairs in accordance with the schedule set forth below at the corresponding Contract unit bid price for each separate item of work. Which is compensation in full for costs of all materials, equipment, and labor required to complete the work as specified in the repair detail, to the satisfaction of the Engineer. Concrete mixes are considered incidental to the work in which they are incorporated.

(A) Payment for Variable Width Joint or Crack Repair / Joint Repair (Type A1) at the contract price per unit of measure is full compensation for all cost including but not limited to the cost of removing and disposing of the in place joint sealer, sawing cutting both faces of the joint or crack to the proper depth and width, cleaning, sandblasting. Furnishing and installing backer rod of the proper size and to the proper depth. Furnishing and installing (hot poured) Joint and Crack Sealer (3725). Cleanup, and any other materials, labor, or equipment necessary to complete the work as specified.

(B) Payment for Variable Width In Place Joint or Crack Repair / Joint Repair (Type A2) at the contract price per unit of measure is full compensation for all cost including but not limited to: Removing of the in place joint sealer, cleaning, sandblasting, furnishing and installing backer rod of the proper size and to the proper depth. Furnishing and installing (hot poured) Joint and Crack Sealer (3725). Cleanup, and any other materials, labor, or equipment necessary to complete the work as specified.

(C) Payment for Partial Depth Repair (Type BA) at the contract price per unit of measure is full compensation for all cost including but not limited to: Removing and disposing of the in place concrete pavement as marked by the Engineer, tapering the edges of the repair back at 30 to 60 degrees, cleaning and sandblasting, furnishing and installing preformed joint filler to reestablish the joint or crack within or along the repair. Furnishing and placing concrete within the repair, vibrating, screeding, finishing, applying surface texture, placing cement and sand slurry around the edges, curing and protecting the concrete. Sawing and sealing reestablished joints and cracks in accordance with the Joint Repair (Type A1) detail. Cleanup, and any other materials, labor, or equipment necessary to complete the work as specified.

(D) Payment for Joint and Crack repair (Type B3) at the contract price per unit of measure is full compensation for all cost including but not limited to: Removing and disposing of the in place concrete pavement as marked by the Engineer, tapering the edges of the repair back at 30 to 60 degrees, cleaning and sandblasting, furnishing and installing preformed joint filler to reestablish the joint or crack within or along the repair, furnishing and installing bonding grout. Furnishing and placing concrete within the repair, vibrating, screeding, finishing, applying surface texture, placing cement and sand
slurry around the edges, curing and protecting the concrete. Sawing and sealing reestablished joints and cracks in accordance with the Joint Repair (Type A1) detail. Cleanup and any other materials, labor, or equipment necessary to complete the work as specified.

(E) Payment for partial Depth Repair Special (Type BE) at the contract price per unit of measure is full compensation for all cost including but not limited to: Removing and disposing of the in place concrete pavement as marked by the Engineer, cleaning, sandblasting and air blasting, furnishing and grouting reinforcement bars (epoxy coated), furnishing and installing bonding grout, furnishing and installing preformed joint filler to reestablish the joint or crack within or along the repair. Furnishing and placing concrete within the repair and vibrating.

(F) If after removal the Engineer changes the initial Partial Depth Repair (Type BA) or Joint and Crack Repair (Type B3) to a Full Depth Repair (Type CD), the Department will pay the Contractor at a measured quantity of 40% of the Type B repair item plus the full cost for the Type C repair.

(G) Payment for full Depth Repair (Type CD) at the contract price per unit of measure is full compensation for all cost including but not limited to: Saw cutting the pavement full depth, removal and disposal of the in place pavement, restoring and compacting the base, furnishing and installing preformed joint filler, furnishing, drilling and anchoring dowel bars, coring both the dowel bar anchoring test section and the random assurance cores, and backfilling the assurance core holes with concrete mix 3U18. If the repair is used in the longitudinal direction, furnishing, drilling and anchoring reinforcement bars in lieu of dowel bars. Furnishing and placing concrete within the repair, vibrating, screeding, finishing, applying surface texture, curing and protecting the concrete. Sawing and sealing reestablished joints, cracks and saw cuts in accordance with the Joint Repair (Type A1) repair detail. Cleanup and any other materials, labor, or equipment necessary to complete the work as specified.

(H) Payment for Pavement Replacement (Type CX) at the contract price per unit of measure is full compensation for all cost including but not limited to: Saw cutting the pavement full depth, removing and disposal of the in place pavement, restoring and compacting the base, furnishing and installing preformed joint filler. Furnishing and placing concrete within the repair, vibrating, screeding, finishing, applying surface texture, curing and protecting the concrete. Sawing and sealing reestablished crack, joints and saw cuts in accordance with the Joint Repair (Type A1) repair detail. Cleanup and any other materials, labor, or equipment necessary to complete the work as specified.

(I) Payment for Spot Full Depth Repair (Type C1-LV) at the contract price per unit of measure is full compensation for all cost including but not limited to: Saw cutting the pavement full depth, removal and disposal of the in place pavement, restoring and compacting the base, furnishing and installing preformed joint filler, furnishing, drilling and grouting dowel bars, epoxy coated reinforcement bars or both. Furnishing and placing concrete within the repair, vibrating, screeding, finishing, applying surface texture, curing and protecting the concrete. Sawing and sealing reestablished joints,
cracks and saw cuts in accordance with the Joint Repair (Type A1) detail. Cleanup and any other materials, labor, or equipment necessary to complete the work as specified.

(J) Payment for Utility Trench Full Depth Repair (Type C2-LV) at the contract price per unit of measure is full compensation for all cost including but not limited to: Saw cutting the pavement full depth, removal and disposal of the in place pavement, restoring and compacting the base. Furnishing and installing preformed joint filler, furnishing, drilling and grouting epoxy coated reinforcement bars. Furnishing and placing concrete within the repair, vibrating, screeding, finishing, applying surface texture, curing and protecting the concrete. Sawing and sealing reestablished joints, cracks and saw cuts in accordance with the Joint Repair (Type A1) detail. Cleanup, and any other materials, labor, or equipment necessary to complete the work as specified.

(K) Payment for Full Depth Repair (Type CA-LV) at the contract price per unit of measure is full compensation for all cost including but not limited to: Saw cutting the pavement full depth, removal and disposal of the in place pavement, restoring and compacting the base, furnishing and installing preformed joint filler and dowel bar baskets assemblies, drilling and grouting reinforcement bars. Furnishing and placing concrete within the repair, vibrating, screeding, finishing, applying surface texture, curing and protecting the concrete. Sawing and sealing reestablished joints, cracks and saw cuts in accordance with the Joint Repair (Type A1) detail. Cleanup, and any other materials, labor, or equipment necessary to complete the work as specified.

(L) Payment for Drill and Grout Reinforcement Bars at the contract price per unit of measure is full compensation for all cost including but not limited to, drilling concrete and furnishing reinforcement bars (epoxy coated) and installing reinforcement bars with an approved grout or epoxy bonding agent.

(M) Payment for Dowel Bar Retrofit at the contract price per unit of measure is full compensation for all cost including but not limited to: Sawing the slot, removal of the concrete within the slot, removing and vacuuming debris, sandblasting and air blasting, sealing the crack inside of the slot, the dowel bar and expansion caps, chairs, release agent, compressible Styrofoam or cardboard material. Furnishing and placing non-shrink rapid setting concrete mixture, finishing, curing and protecting the concrete. Sawing and sealing reestablished joints and cracks in accordance with the Joint Repair (Type A1) detail. Cleanup, and any other materials, labor, or equipment necessary to complete the work as specified.

(N) Payment for Supplemental Reinforcement Bars (Epoxy Coated) at the contract price per unit of measure is full compensation for all cost including but not limited to, furnishing and installing reinforcement bars (Epoxy Coated) as specified.

(O) Payment for Dowel Bars at the contract price per unit of measure is full compensation for all cost including but not limited to, furnishing and installing dowel bars in dowel bar baskets assemblies.

(P) The Engineer will modify the provisions of MnDOT 1907 to the extent that when the actual usage of joint sealer material is less than specified, the surplus material shall
remain the property of the Contractor. The Contractor is paid 15% of the material cost in lieu of handling and transportation costs, unless otherwise directed by the Engineer.

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Description</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>2302.602</td>
<td>Dowel Bar Retrofit</td>
<td>Each</td>
</tr>
<tr>
<td>2302.602</td>
<td>Dowel Bar</td>
<td>Each</td>
</tr>
<tr>
<td>2302.602</td>
<td>Drill and Grout Reinforcement Bar (Epoxy Coated)</td>
<td>Each</td>
</tr>
<tr>
<td>2302.603</td>
<td>Joint Repair (Type A1)</td>
<td>linear foot</td>
</tr>
<tr>
<td>2302.603</td>
<td>Joint Repair (Type A2)</td>
<td>linear foot</td>
</tr>
<tr>
<td>2302.603</td>
<td>Joint and Crack Repair (Type B3)</td>
<td>linear foot</td>
</tr>
<tr>
<td>2302.603</td>
<td>Full Depth Repair (Type CA-LV)</td>
<td>linear foot</td>
</tr>
<tr>
<td>2302.603</td>
<td>Full Depth Repair (Type CD-LV)</td>
<td>linear foot</td>
</tr>
<tr>
<td>2302.603</td>
<td>Full Depth Repair (Type CD-HV)</td>
<td>linear foot</td>
</tr>
<tr>
<td>2302.604</td>
<td>Pavement Replacement (Type CX)</td>
<td>square yard</td>
</tr>
<tr>
<td>2302.604</td>
<td>Utility Trench Full Depth Repair (Type C2-LV)</td>
<td>square yard</td>
</tr>
<tr>
<td>2302.608</td>
<td>Supplemental Reinforcement Bars (Epoxy Coated)</td>
<td>pound</td>
</tr>
<tr>
<td>2302.618</td>
<td>Partial Depth Repair (Type BA)</td>
<td>square foot</td>
</tr>
<tr>
<td>2302.618</td>
<td>Partial Depth Repair Special (Type BE)</td>
<td>square foot</td>
</tr>
<tr>
<td>2302.618</td>
<td>Spot Full Depth Repair (Type C1-LV)</td>
<td>square foot</td>
</tr>
</tbody>
</table>

SP-23 (2360) ASPHALTIC CONCRETE PAVEMENT

The provisions of MN/DOT 2360 and section 2360 of the City’s Construction Standard shall apply in full as supplemented and modified by the provisions in Appendix A.

SP-24 (2451) EXCAVATION, BACKFILL AND COMPACTION FOR UTILITIES – TRENCH BACKFILL

Trench backfill above the top of encasement zone and below subgrade shall be accomplished with a combination of both suitable salvaged on-site select grading materials and imported granular backfill materials meeting the City’s Construction Standards.

The Engineer will determine if any material is suitable for use as trench backfill.

Where enough acceptable material is found to be available within the site, the Engineer may direct the Contractor to utilize suitable salvaged on-site select grading materials for trench backfill to the maximum extent practical instead of imported backfill.

Where the Engineer determines that acceptable material is not available within the site, the Contractor shall provide additional imported granular backfill at the Contract unit price.

No adjustment will be made to the Contract unit price for increased or decreased quantities, except as provided in MN/DOT 1402.3.

All costs for placing and compacting backfill (regardless of type: select grading material, common or granular) shall be considered incidental to relevant Contract bid items.
MnDOT 2461 is hereby modified as follows:

**SP-25.1** MnDOT 2461.2.A shall be modified to include the following:

**A.5 Ternary Mixes**
Ternary mixes are defined as portland cement and two other supplementary cementitious materials, or blended cement and one other supplementary cementitious material with a maximum replacement of 40% by weight.

**SP-25.2** MnDOT 2461.2.E shall be modified to include the following:

For all Concrete Grades shown in Table 2461-7, use any admixtures on the MnDOT Approved/Qualified Products list.

**SP-25.3** MnDOT 2461.2.F.1.d shall be deleted and replaced with the following:

**F.1.d Coarse Aggregate Designation**
Select the appropriate coarse aggregate gradation designation in accordance with Table 2461-3 based on the intended use and the gradation requirements in 3137, “Coarse Aggregate for Portland Cement Concrete.”

<table>
<thead>
<tr>
<th>Designation</th>
<th>Coarse Aggregate Gradation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Job Mix Formula (JMF) combination of fine and coarse aggregate</td>
</tr>
<tr>
<td></td>
<td>Table 3137-4, “Coarse Aggregate Designation for Concrete”</td>
</tr>
<tr>
<td>1</td>
<td>ASTM #467</td>
</tr>
<tr>
<td>2</td>
<td>ASTM #67</td>
</tr>
<tr>
<td>3</td>
<td>ASTM #7</td>
</tr>
<tr>
<td>4</td>
<td>ASTM #89</td>
</tr>
<tr>
<td>7</td>
<td>CA-70</td>
</tr>
<tr>
<td>8</td>
<td>CA-80</td>
</tr>
</tbody>
</table>

**SP-25.4** MnDOT 2461.2.F.1.e shall be deleted and replaced with the following:

**F.1.e Additional Concrete Mix Designation Digits**
The Contractor may add additional digits to the right of the required digits in the concrete mix number.

**SP-25.5** Table 2461-6 of MnDOT 2461.2.F.2.a shall be deleted and replaced with the following:
The Contractor may choose to use the Coarse Aggregate Designation “1” for the 4th digit in accordance with Table 2461-3. Mix 3Y47 requires the use of Coarse Aggregate Designation “7” or “3” for the 4th digit in accordance with Table 2461-3.

If the intended use is not included elsewhere in the Specification or Special Provisions, use mix 3G52, unless otherwise directed by the Engineer.

<table>
<thead>
<tr>
<th>Concrete Grade</th>
<th>OLD Mix Number</th>
<th>NEW Mix Number</th>
<th>Intended Use</th>
<th>Maximum w/c ratio †</th>
<th>Maximum Cementitious Content (lbs/yard³)</th>
<th>Maximum %SCM (Fly Ash/Slag/Ternary)</th>
<th>Slump Range</th>
<th>Minimum 28-day Compressive Strength, f’c</th>
<th>3137 Spec.</th>
</tr>
</thead>
<tbody>
<tr>
<td>B Bridge Substructure</td>
<td>3Y43</td>
<td>3B52 *</td>
<td>Abutment, stems, wingwalls, paving brackets, pier columns and caps, CIP wall stems, pier struts</td>
<td>0.45</td>
<td>750</td>
<td>30/35/40</td>
<td>2 - 5”</td>
<td>4000 psi</td>
<td>2.D.1</td>
</tr>
<tr>
<td>F Flatwork</td>
<td>3A22 3Y22</td>
<td>3F32 *</td>
<td>Slipform curb and gutter</td>
<td>0.42</td>
<td>750</td>
<td>30/35/0</td>
<td>½ - 3” ‡</td>
<td>4500 psi</td>
<td>2.D.1</td>
</tr>
<tr>
<td>G General Concrete</td>
<td>3A43 3B42 3Y43</td>
<td>3G52 *</td>
<td>Footings, pilecap, walls, cast-in-place manholes and catch basins, fence posts, signal bases, light pole foundations, erosion control structures, cast-in-place box culverts, culvert headwalls, open flumes</td>
<td>0.45</td>
<td>750</td>
<td>30/35/40</td>
<td>2 - 5”</td>
<td>4500 psi</td>
<td>2.D.1</td>
</tr>
<tr>
<td>M Median Barrier</td>
<td>3Y12 3M12</td>
<td>Slipform Median barrier, non-bridge</td>
<td>0.42</td>
<td>750</td>
<td>30/35/40</td>
<td>½ - 1” ‡</td>
<td>4500 psi</td>
<td>2.D.1</td>
<td></td>
</tr>
<tr>
<td>P Piling</td>
<td>3A32 3B42</td>
<td>3R52 *</td>
<td>Piling, leveling pads</td>
<td>0.60</td>
<td>750</td>
<td>30/35/40</td>
<td>3 - 6”</td>
<td>3000 psi</td>
<td>2.D.1</td>
</tr>
<tr>
<td>R Rehabilitation</td>
<td>3Y16</td>
<td>3S12</td>
<td>Slipform bridge barrier, parapets, end post</td>
<td>0.42</td>
<td>750</td>
<td>30/35/40</td>
<td>½ - 1” ‡</td>
<td>4000 psi</td>
<td>2.D.2</td>
</tr>
<tr>
<td>S Bridge Superstructure</td>
<td>3A32 3A42 3Y43 3Y46 3Y46A</td>
<td>3S52</td>
<td>Modern barrier, raised median, pilaster, curb, sidewalk, approach panel, formed bridge barrier, parapet, end post, collar</td>
<td>0.45</td>
<td>750</td>
<td>30/35/40</td>
<td>2 - 5”</td>
<td>4000 psi</td>
<td>2.D.2</td>
</tr>
<tr>
<td>X Miscellaneous Bridge</td>
<td>1X62 1X46</td>
<td>Cofferdam seals, rock sockets, drilled shafts</td>
<td>0.45</td>
<td>750</td>
<td>30/35/40</td>
<td>3 - 6”</td>
<td>5000 psi</td>
<td>2.D.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3X46</td>
<td>Drilled shafts above frost line</td>
<td>0.45</td>
<td>750</td>
<td>30/35/40</td>
<td>3 - 6”</td>
<td>5000 psi</td>
<td>2.D.1</td>
<td></td>
</tr>
<tr>
<td>Y Bridge Deck #</td>
<td>3Y33 3Y33A 3Y36 3Y36A</td>
<td>3Y42-M 3Y42-S</td>
<td>Bridge decks, integral abutment diaphragms, pier continuity diaphragms, expansion joint replacement mix</td>
<td>0.45</td>
<td>750</td>
<td>30/35/40</td>
<td>2 - 4”</td>
<td>4000 psi</td>
<td>2.D.2</td>
</tr>
<tr>
<td></td>
<td>3YHPC-M 3YHPC-S 3YLCHPC-M 3YLCHPC-S</td>
<td>Bridge decks, integral abutment diaphragms, pier continuity diaphragms, expansion joint replacement mix</td>
<td>See Special Provisions of Contract</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3A37 3Y37</td>
<td>3Y47 *</td>
<td>Deck patching mix</td>
<td>0.45</td>
<td>750</td>
<td>30/35/40</td>
<td>2 - 4”</td>
<td>4000 psi</td>
<td>2.D.2</td>
</tr>
</tbody>
</table>

* The Contractor may choose to use the Coarse Aggregate Designation “1” for the 4th digit in accordance with Table 2461-3. Mix 3Y47 requires the use of Coarse Aggregate Designation “7” or “3” for the 4th digit in accordance with Table 2461-3.
† If the intended use is not included elsewhere in the Specification or Special Provisions, use mix 3G52, unless otherwise directed by the Engineer.
‡ The minimum water/cement (w/c) ratio is 0.30.
§ Adjust slump in accordance with 2461.3.G.7.a for slipform concrete placement.
# The “-M” indicates a bridge deck with a structural slab and “-S” indicates a monolithic bridge deck.
F.2.b High-Early Concrete Mix Design Requirements
The Department defines High-Early (HE) concrete as concrete designed to achieve the minimum strength to opening at 48 hours. Unless otherwise included in the plans, all HE concrete requires approval of the Engineer prior to incorporation into the work.

Control cylinders are required for determining strength; in lieu of control cylinders the Contractor may use the maturity method in accordance with 2461.3.G.6, “Estimating Concrete Strength by the Maturity Method.”

The Department defines the concrete mix design requirements for High-Early concrete in accordance with Table 2461-7.

<table>
<thead>
<tr>
<th>OLD Mix Number</th>
<th>NEW Mix Number</th>
<th>Concrete Grades Allowed</th>
<th>Minimum Time to Opening</th>
<th>Maximum w/c ratio</th>
<th>Maximum Cementitious Content (lbs/ yd^3) *</th>
<th>Slump Range</th>
<th>Minimum Strength to Opening</th>
<th>Minimum 28-day Compressive Strength, f’c</th>
<th>3137 Spec.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3A22HE</td>
<td>3HE32</td>
<td>F</td>
<td>48 hrs</td>
<td>0.42</td>
<td>750</td>
<td>1 – 3”</td>
<td>3000 psi</td>
<td>4500 psi</td>
<td>2.D.1</td>
</tr>
<tr>
<td>3A32HE, 3Y43HE</td>
<td>3HE52</td>
<td>B, F, G</td>
<td>48 hrs</td>
<td>0.42</td>
<td>750</td>
<td>2 – 5”</td>
<td>3000 psi</td>
<td>4500 psi</td>
<td>2.D.1</td>
</tr>
<tr>
<td>3Y33HE, 3Y46HE, 3Y37HE</td>
<td>3YHE52</td>
<td>Y (Repairs Only)</td>
<td>48 hrs</td>
<td>0.42</td>
<td>750</td>
<td>2 – 5”</td>
<td>3000 psi</td>
<td>4000 psi</td>
<td>2.D.2</td>
</tr>
<tr>
<td>3A32HE</td>
<td>3RHE52</td>
<td>R (Repairs Only)</td>
<td>48 hrs</td>
<td>0.42</td>
<td>750</td>
<td>2 – 5”</td>
<td>3000 psi</td>
<td>4000 psi</td>
<td>2.D.3</td>
</tr>
</tbody>
</table>

* Supplementary Cementitious Materials allowed.
[ ] Adjust slump in accordance with 2461.3.G.7.a for slipform concrete placement.

SP-25.7 The second paragraph of MnDOT 2461.2.F.3 shall be deleted and replaced with the following:

Design the concrete mix to an absolute volume of 27.00 – 27.27 cu. ft [1.0 – 1.01 cu. m].

SP-25.8 MnDOT 2461.2.F.3.a, 2461.2.F.3.a(1) and 2461.2.F.3.a(2) shall be deleted and replaced with the following:

F.3.a Preliminary Test Data Requirements for Level 2 Mixes
For Level 2 Mixes, submit the proposed Mix Design Proportions on the Contractor Mix Design Submittal based upon either a suitable experience record or conventional trial mixtures not to exceed the limits specified in Table 2461-6 or 2461-7.

F.3.a(1) Suitable Experience Record
A suitable experience record consists of at least 30 consecutive tests, or two groups of consecutive tests totaling at least 30 tests, within the previous 18 months. If the Contractor does not have 30 tests, the Concrete Engineer will consider a minimum of 10 test results representing a time period of at least 45 days.

The Concrete Engineer considers a suitable experience record to have the following characteristics as compared to the proposed mix:

(a) Average compressive strength (f'cr) meeting the required 28-day compressive strength and no greater than 1000 psi above the required 28-day compressive strength,
(b) Same type or grade of cementitious materials,
(c) Same class of coarse aggregate,
(d) Proportions of coarse and fine aggregate within 10% of the proposed,
(e) Water/Cement ratio no greater than the maximum allowed,
(f) Supplementary cementitious material contents within 5%, and
(g) Batching conditions and testing procedures similar to those expected for the proposed work.

Submit all test results on the Strength Test Data sheet as part of the Contractor Mix Design Submittal.

The Concrete Engineer reserves the right to request batching data representing the suitable experience record submittal.

F.3.a(2) Conventional Trial Mixtures

If the Contractor does not have a suitable experience record as required in 2461.2.F.3.a(1) above, establish concrete proportions from trial mixtures, utilizing an AMRL accredited laboratory in accordance with the following:

(a) Use proportions and consistencies required for proposed work at the w/c ratios or cementitious materials content that will produce a strength meeting or exceeding the required 28-day compressive strength (f'c) in accordance with Table 2461-6 or 2461-7;
(b) Design trial mixtures to produce slump within ± 0.75 in. of maximum permitted;
(c) For air-entrained concrete, design trial mixtures to produce air content within ± 0.5 percent of maximum allowable air content;
(d) For each w/c ratio or cementitious materials content, make and cure at least three test cylinders for 28-day breaks in accordance with ASTM C 192. For HE concrete mixes, in addition to the 28-day cylinders, make a set of three test cylinders for 48-hour breaks in accordance with ASTM C 192.

Submit all test results for the trial mixtures, certified by the AMRL accredited laboratory, in addition to the Contractor Mix Design Submittal.

SP-25.9 MnDOT 2461.2.G shall be deleted and replaced with the following:

G.................................................................................................................. Department Designed Concrete Mixes
The Department will provide the mix proportions for the following concrete uses in accordance with Table 2461-10, “Department Designed Concrete Mixes”:

<table>
<thead>
<tr>
<th>Type of Concrete</th>
<th>Mix Number</th>
<th>Specification</th>
<th>Mix Design Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Batched Patching Mix</td>
<td>3U18</td>
<td>2302</td>
<td>Table 2302-1</td>
</tr>
<tr>
<td>Low Slump Concrete</td>
<td>3U17A</td>
<td>2404</td>
<td>Weekly Report of Low Slump Concrete</td>
</tr>
<tr>
<td>Grout</td>
<td>1AGrout and 3AGrout</td>
<td>2461</td>
<td>Table 2461-11</td>
</tr>
<tr>
<td>Lean Mix Backfill</td>
<td>Lean-Mix</td>
<td>2520</td>
<td>Table 2520-1</td>
</tr>
<tr>
<td>Random Riprap (Matrix)</td>
<td>3AGrout</td>
<td>2511</td>
<td>Special Provisions</td>
</tr>
<tr>
<td>Bagged Patching Mix</td>
<td>3U18 and 3U18M</td>
<td>3105</td>
<td>Table 3105-1</td>
</tr>
</tbody>
</table>

Table 2461-10
Department Designed Concrete Mixes

Table 2461-11
Concrete Mix Design Requirements for Grout Mixes

<table>
<thead>
<tr>
<th>Grout Mix Number *</th>
<th>Maximum w/c ratio</th>
<th>Water Content (pounds)</th>
<th>Cement Content (pounds)</th>
<th>Fine Aggregate Calculation (pounds)</th>
<th>% Air Content</th>
<th>Maximum Slump</th>
<th>Minimum 28-day Compressive Strength, f’c</th>
</tr>
</thead>
<tbody>
<tr>
<td>1AGROUT</td>
<td>0.50</td>
<td>379</td>
<td>758</td>
<td>1031 x Specific Gravity</td>
<td>3.0%</td>
<td>As needed</td>
<td>4000 psi</td>
</tr>
<tr>
<td>3AGROUT</td>
<td>0.44</td>
<td>379</td>
<td>865</td>
<td>878 x Specific Gravity</td>
<td>10.0%</td>
<td>As needed</td>
<td>4000 psi</td>
</tr>
</tbody>
</table>

* Do not provide grout containing coarse aggregate or fly ash.

SP-25.10  MnDOT 2461.3.F.1.a(3) shall be deleted and replaced with the following:

(3) Include a site map showing stockpile locations identified with the MnDOT pit number.

SP-25.11  MnDOT 2461.3.F.1.b shall be deleted and replaced with the following:

F.1.b........................................... Maintaining Plant Certification

The Producer will maintain plant certification by:

(1) Notifying the Department of any upcoming cementitious or admixture changes;
(2) Updating the Contact Report with any material or equipment changes and submitting to the Department;
(3) Sampling and testing the materials in accordance with this section and the requirements of the Schedule of Materials Control;
(4) Documenting the production and testing of the materials used in the certified ready-mix concrete.

Any procedural changes that cause non-compliance with this program may result in de-certification of the plant and cessation of further production of Department concrete as determined by the Concrete Engineer in accordance with 2461.3.F.4.h, “Decertification.”

SP-25.12 MnDOT 2461.3.F.4.g shall be deleted and replaced with the following:

F.4.g Signing the Certificate of Compliance

The Producer’s MnDOT Certified Plant Level 1 or Level 2 technician will:

(1) Review the first Certificate of Compliance for each mix type, each day, for accuracy; and

(2) Legibly hand sign the Certificate of Compliance at a location designated for Producer signature signifying agreement to the terms of this program and to certify that the materials comply with the requirements of the Contract; and

(3) Write their MnDOT Technical Certification Number next to their signature.

SP-25.13 Delete the Title of Table 2461-17 of MnDOT 2461.3.G.5.e and replace with the following:

<table>
<thead>
<tr>
<th>Table 2461-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptance Criteria for Standard 28-day Cylinders</td>
</tr>
</tbody>
</table>

SP-25.14 Delete MnDOT 2461.3.G.5.e(4) and replace with the following:

G.5.e(4) Non-Conforming Material

If the Contractor inadvertently places concrete not meeting the strength requirements into the work, the Engineer will not accept nonconforming concrete at the contract unit price. For concrete not meeting the moving average of three (3) consecutive strength tests, the Engineer will adjust the contract unit price for the contract item of the concrete in accordance with Tables 2461-19 for Concrete Grades F, G, M, P and R.

For Concrete Grades B, S, X and Y strength failures the Engineer, in conjunction with the Concrete Engineer, will determine adjusted contract unit prices in accordance with 1503, “Conformity with Contract Documents,” and 1512, “Unacceptable and Unauthorized Work.”

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 2461-19
Concrete Grades F, G, M, P, and R

<table>
<thead>
<tr>
<th>Moving average of 3 consecutive strength tests</th>
<th>Adjusted Contract Unit Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 93.0% of f’c</td>
<td>The Department will pay 87.5 percent of the relevant contract unit price for materials placed as approved by the Engineer.</td>
</tr>
<tr>
<td>≥ 87.5% and ≤ 93.0% of f’c</td>
<td>The Department will pay 75 percent of the relevant contract unit price for materials placed as approved by the Engineer.</td>
</tr>
<tr>
<td>&lt; 87.5% of f’c</td>
<td>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.</td>
</tr>
</tbody>
</table>

SP-25.15 MnDOT 2461.3.G.6.a and 2461.3.G.6.a(1) shall be deleted and replaced with the following:

**G.6.a Development of Maturity-Strength Relationship**

The Engineer will allow development of the maturity curve in either the laboratory or in the field, provided the precautions for field curing and testing are followed, as described in the MnDOT Concrete Manual. Test the concrete strength specimens for development of the maturity curve.

Determine the strength development criteria based on the type of concrete in accordance with the following:

1. For concrete pavement: 2301.3.O, “Opening Pavement to Traffic,”
4. For sidewalks, driveway entrances and curb and gutter, a minimum of 3000 psi [20.6 MPa] is required.

Until an acceptable strength-maturity relationship is established, verify strength using concrete beams or cylinders.

**G.6.a(1) Procedure**

Estimate the in-place concrete strength using the maturity method as described in ASTM C 1074, except as noted in this specification as follows:

1. Using 15 beams or 17 cylinders;
2. The Nurse-Saul method of computing maturity;
3. A datum temperature of -10°C (14°F);
4. Maintain specimens at temperatures greater than 50°F for the duration of the maturity curve development.
Test three (3) strength specimens at five different ages specified in Table 2461-20 for the type of concrete work.

<table>
<thead>
<tr>
<th>Type of Concrete</th>
<th>Testing Ages *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Pavement as defined in 2301</td>
<td>Determined by the Contractor</td>
</tr>
<tr>
<td>Normal Strength Concrete as defined in 2461</td>
<td>1, 2, 3, 7 and 28 days</td>
</tr>
<tr>
<td>High-Early (HE) Concrete as defined in 2461</td>
<td>12 hours, 1, 2, 7 and 28 days</td>
</tr>
<tr>
<td>Ultra High-Early (UHE) Concrete as defined in 2302</td>
<td>3, 4 and 8 hours, 1 and 14 days</td>
</tr>
</tbody>
</table>

* The Contractor may adjust the testing ages if approved by the Engineer, in conjunction with the Concrete Engineer.
|| Test at least two (2) sets of strength specimens before the anticipated opening strength.

SP-25.16 The first paragraph of MnDOT 2461.3.G.6.c shall be deleted and replaced with the following:

Perform a verification strength test to ensure the in-place concrete strength correlates with the maturity-strength relationship as follows:

(1) Notify the Engineer at least 24 hours in advance of the time and location of both the verification specimen’s casting and strength testing.
(2) When the maturity curve is developed prior to the start of construction or in a laboratory, perform a verification strength test on the first day of concrete placement.
(3) Perform a verification strength test at least once every seven (7) calendar days during normal plant production.
(4) If the plant has not supplied concrete to the project for a period of greater than thirty (30) calendar days, perform a verification strength test.
(5) Cast 3 beams or 4 cylinders for each verification strength test.
(6) The Engineer will test the concrete strength specimens for verification of the maturity curve as close to the maturity value determined to represent the opening, loading or form removal strength criteria in accordance with section 5-694.500 of the Concrete Manual.
(7) Record the results of verification test on the Concrete Maturity-Strength Verification form and submit an updated copy with the newest test result to the Engineer the day that the verification test is completed.
(8) The Engineer may direct additional verification testing as necessary.
(9) Submit electronic data from the maturity meters or temperature loggers in a comma-delimited (.txt or .csv) file format to the Engineer, which includes at least the project number, date and location of the meters or loggers.

SP-25.17 MnDOT 2461.3.G.6.d(2) shall be deleted and replaced with the following:

(2) Increase in the water-cementitious materials ratio by more than 0.02,
SP-25.18 Delete the Title of Table 2461-23 of MnDOT 2461.3.G.7.b and replace with the following:

<table>
<thead>
<tr>
<th>Table 2461-23</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Concrete Grades (Excludes Grade Y)</td>
</tr>
</tbody>
</table>

SP-25.19 Delete the Title of Table 2461-24 of MnDOT 2461.3.G.7.b and replace with the following:

<table>
<thead>
<tr>
<th>Table 2461-24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridge Deck Concrete, Grade Y</td>
</tr>
</tbody>
</table>

SP-25.20 Delete the Title of Table 2461-27 of MnDOT 2461.3.G.8.a and replace with the following: Table 2461-27

<table>
<thead>
<tr>
<th>Table 2461-27</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Concrete (Target Air Content 6.5%)</td>
</tr>
</tbody>
</table>

SP-26 (2504) WATER SERVICE DISRUPTION

The provisions of MN/DOT 2504 and section 2504 of the City’s Construction Standard are supplemented and/or modified with the following:

This work shall consist of planning for and executing interruption of water service to residences served by the water main to be replaced. All work shall be performed in accordance with these Special Provisions and the City of Duluth Standard Specifications.

The existing water main to be replaced consists of 6-inch cast iron pipe installed in 1949.

Provide a minimum 48 hours’ notice to City of Duluth and affected homeowners prior to any service interruption. Several residences will be affected by shutdowns required to connect the new water main to the existing water main.

All service connection interruptions on the project shall be limited to a maximum of 8 hours for any single working day.

The Contractor shall submit an outage plan to the City Engineer for review and approval fourteen (14) days prior to any outage to public water distribution system.

The Contractor’s Outage Plan shall include:

a) Contact information for the City of Duluth Plumbing Inspector and Emergency Response.
b) 24-hour emergency contact information for all Contractor key personnel including on-site foreman or superintendent.
c) Scheduled date, time and duration of the planned outage or outages.
d) Drawings indicating existing water mains, services and hydrants to be shut down during the outage, and proposed piping and connectors to be installed during the outage.
e) A written description of the sequence of the work.
f) Drawings and written description of any temporary water service connection to be utilized during an outage (if applicable or in an emergency situation).
g) A list of required materials including pipe, fittings and other miscellaneous materials.
h) A list of equipment that will be present on-site during the outage.
i) A list of the manpower to be utilized during the outage.

SP-27 (2511) STONE RETAINING WALL

SP-27.1 DESCRIPTION

This work consists of the furnishing and installing locally sourced stone for the construction of a dry stack landscape retaining wall.

A Definitions

Stone shall be sourced locally, within a 50 mile radius of the project site, and be representative of the native bedrock. The native stone of the site is from the geologic formation Duluth Complex Gabbroic Rock. The rock shall be free of fractures, flaking, and spalling and be suitable for its use as a stacked landscape retaining wall.

SP-27.2 MATERIALS

A Submittals

Submit photographic samples at least 7 working days before starting the work for color selection.

B Quality Assurance (QA)

1. Qualifications

The contractor and laborers performing the work shall be able to document at least 3 past successful projects of similar nature performed in past 5 years. Qualifications and experience demonstrating satisfaction of these requirements shall be submitted at the preconstruction meeting.

SP-27.3 CONSTRUCTION REQUIREMENTS

Compact native subgrade and provide 12-inches minimum of compacted granular bedding at bottom of course of wall (95% standard Proctor) as setting. The bottom course of stone shall be set minimum 6inches below finish grade at the wall face. Stone shall be carefully picked and arranged so that adjacent rock surfaces match within two (2) inches in top elevation and two (2) inches along the vertical exposed face or channel side of rock. Stone shall be placed to achieve uniform joints of (0.5-inches max.). Minimize voids between stone. In no case shall voids exceed one (1) inch unless approved by engineer. Stone to be dry set with joints uniform in appearance and stoned edges and faces aligned to tolerances indicated. Use stone shims if needed to create uniform and level stone courses. Construct wall with a batter of 2-inches to 3-inches per vertical foot.

SP-27.4 SIZE

Minimum: 12” THICK X 18” WIDTH X 18” DEPTH
Maximum: 18” THICK X 30” WIDTH X 30” DEPTH
SP-27.5 **METHOD OF MEASUREMENT**

The Engineer will measure the stone retaining wall by the square yard of exposed face.

SP-27.6 **BASIS OF PAYMENT**

Payment will be made under Item 2511.602 (Construct Stone Retaining Wall) at the contract bid price per square yard which shall be payment in full for all work and materials necessary including but not limited to the delivery, unloading, placement, excavation, granular setting bed and backfilling required to furnish and install stone retaining wall complete in place and approved as specified and in accordance with the details in the plan.

SP-28 **(2511) LANDSCAPE BOULDERS**

SP-28.1 **DESCRIPTION**

This work consists of the salvaging and installing of on-site landscape boulders.

A  **Definitions**

Landscape Boulders shall consist of a natural stone salvaged and stockpiled on site for re-use.

SP-28.2 **MATERIALS**

B  **Quality Assurance (QA)**

1. **Qualifications**

The contractor and laborers performing the work shall be able to document at least 3 past successful projects of similar nature performed in past 5 years. Qualifications and experience demonstrating satisfaction of these requirements shall be submitted at the preconstruction meeting.

SP-28.3 **CONSTRUCTION REQUIREMENTS**

Salvage existing landscape boulders on site for reuse.

Boulder locations and individual bolder placement shall be verified by the Engineer prior to the placement of landscape boulders. Boulders shall be placed into an excavation to present the most favorable side of the boulders as determined by the Engineer. Backfill shall be placed to bury a minimum of 30% and maximum 50% of the landscape boulder. Groupings of boulders shall be placed to best fit rock edges and avoid maintenance issues in turf locations. The boulders are to be placed and backfilled to create the look of boulders emerging from the landscape rather than boulders set on the landscape.

SP-28.4 **METHOD OF MEASUREMENT**

The Engineer will separately measure each landscape boulder salvaged.
The Engineer will separately measure each salvaged landscape boulder installed per the plans or as directed by engineer.

**SP-28.5 BASIS OF PAYMENT**

Payment will be made under Item 2104.523 (Salvage Boulder) at the contract bid price per each which shall be payment in full for all work and materials necessary including but not limited to the salvaging, stockpiling, and backfilling required as specified and in accordance with the plan. Payment will be made under Item 2511.602 (Place Boulder) at the contract bid price per each which shall be payment in full for all work and materials necessary including but not limited to the placement, excavation, and backfilling required to install boulders complete in place and approved as specified and in accordance with the plan.

**SP-29  (2531) CONCRETE CURB DESIGN V (ADA)**

**SP2016-246**

This work shall consist of constructing Concrete Curb Design V of varying heights up to 8 inches as detailed in the Plan and in accordance with the provisions of MnDOT 2531, other Contract provisions, and the following:

**CONSTRUCTION REQUIREMENTS**

The Concrete Curb Design V shall be constructed as detailed in the Plan. Concrete Curb Design V may be constructed independent of or integral to the adjacent sidewalk. The bottom elevation of the Concrete Curb Design V shall match the bottom elevation of the adjacent sidewalk slab. When the Concrete Curb Design V is constructed independent of the sidewalk, the portion of the Concrete Curb Design V that will have new concrete walk placed against it shall be clean so as to maximize bonding between the walk and Concrete Curb Design V. The joint locations in the curb shall align with the joint locations in the adjacent concrete walk.

The locations requiring the use of Concrete Curb Design V will solely be determined in the Plans or in the field by the Engineer. Any Concrete Curb Design V that is constructed without pre approval of the Engineer will be considered unauthorized work for which no compensation will be made and may be removed at the Engineer’s discretion. The height and length of the Concrete Curb Design V to be constructed shall be recommended by the Contractor and approved by the Engineer before the Concrete Curb Design V is constructed.

**METHOD OF MEASUREMENT**

Measurement will be by the linear foot of Concrete Curb Design V constructed measured at the face of curb. Curb height shall be measured from the top of the adjacent concrete walk to the top of the curb.

**BASIS OF PAYMENT**

Payment will be made under Item 2531.603 (Concrete Curb Design V-ADA) at the Contract bid price per linear foot, which shall be compensation in full for all costs of performing the work as specified. All concrete approach noses will be paid as 2 feet of Concrete Curb Design V and 2 feet of roadway curb and gutter design adjacent to the approach nose. Any additional Concrete Curb Design V beyond the quantity provided in the Plan, will be paid for at $20 per linear foot. Lengths of Concrete Curb Design V that never reach 3 inch height will be paid for as Concrete Walk.
SP-30  (2571) PLANT INSTALLATION

The provisions of Mn/DOT 2571 are hereby modified as follows:

SP-30.1 MnDOT 2571.2A.2 is hereby modified as follows:

A.2  Plant Stock and Materials Documentation

(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.

SP-30.2 MnDOT 2571.3A.1 is hereby modified as follows:

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 Environmental Planning and Design and Roadside Vegetation Management 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.

SP-30.3 MnDOT 2571.3C is hereby modified as follows:

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 in front of traffic signs; and
(2) Clear zones and safety sight corners and lines shown on the plans free of plants with ultimate growth diameter of 4” or greater.

SP-30.4 MnDOT 2571.3G is hereby modified as follows:

G Watering
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.

SP-30.5 MnDOT 2571.3J is hereby modified as follows:

J Cleanup and Restoration Work
(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 2574.3 “Construction Requirements;”
   (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 lbs/acre;
   (2.3) Lay sod, or uniformly broadcast seed at 1.5 times the rate specified in Table 3876-1 “State Seed Mixes”. Provide seed in accordance with the requirements of 3876 “Seed and Perform seeding in accordance with Table 2575-1, “Season of Planting;”
   (2.4) Rake and firm seeded areas to ensure seed contact with the soil; and
   (2.5) Broadcast or disc anchor Type 1 mulch in all seeded areas;
(3) Install erosion control measures to prevent erosion:

SP-30.6 MnDOT 2571.K.2.a is hereby modified as follows:

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 email 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) Engineers 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;
(2.9) Soil moisture assessments;
(2.10) Disease problems;
(2.11) Treatment recommendations;
(2.12) Assessment of overall plant conditions including weed competition and control.

(3) Maintain soil moisture in accordance with 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 [1524 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 [1524 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 operation 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.

SP-30.7 MnDOT 2571.K.2.b is hereby modified as follows:
K.2.b Replacement Requirements

A Plant Establishment Period (PEP), of at least 1 (one) calendar year, begins on the date on which all of the initial planting operations on the Project have been satisfactorily completed and continues until final acceptance of the Project, unless specified otherwise. At the end of the one-year plant establishment period, the Contractor is responsible for determining which plants need to be replaced based upon compliance with the Project requirements. 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 or September, based on the start 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 MnDOT Certificate of Compliance for Plant Stock, Landscape Material, and Equipment, in the report. Using brightly colored paint, mark on site plants requiring replacement.

The following items are deleted from the Payment Schedule:

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Item</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>2571.501</td>
<td>Coniferous tree (size &amp; root category)</td>
<td>tree</td>
</tr>
<tr>
<td>2571.503</td>
<td>Ornamental tree (size &amp; root category)</td>
<td>tree</td>
</tr>
<tr>
<td>2571.504</td>
<td>Coniferous shrub (size &amp; root category)</td>
<td>shrub</td>
</tr>
<tr>
<td>2571.506</td>
<td>Vine (age or size &amp; root category)</td>
<td>vine</td>
</tr>
<tr>
<td>2571.541</td>
<td>Transplant tree (spade size (1))</td>
<td>tree</td>
</tr>
<tr>
<td>2571.544</td>
<td>Transplant shrub</td>
<td>shrub</td>
</tr>
<tr>
<td>2571.546</td>
<td>Transplant vine</td>
<td>vine</td>
</tr>
<tr>
<td>2571.547</td>
<td>Transplant perennial</td>
<td>plant</td>
</tr>
</tbody>
</table>

SP-31 (2575) SITE RESTORATION (ADA)

SP2016-246

This work consists of site grading adjacent to pedestrian facilities and the establishment of a perennial vegetative cover as detailed in the Plans and in accordance with the provisions of MnDOT 2575 and 3878 Site restoration shall also include the re-establishment of turf in all areas disturbed by Contractor operations and any cleanup of eroded soil. This provision only pertains to grading, topsoil, and turf establishment operations.

This Special Provision is intended for areas where pedestrian ramps are being constructed, thus resulting in multiple site specific disturbed areas throughout the project corridor, typically in a quadrant of two intersecting roadways.

CONSTRUCTION REQUIREMENTS

(A) Site Grading – All areas adjacent to newly constructed walk and top of curb shall be graded flush with the top of walk and top of curb. All stockpiled topsoil must be replaced within
the same quadrant from which it was stripped. The minimum depth of topsoil shall be 4 inches which shall be achieved using select topsoil borrow if necessary.

If not otherwise detailed in the Plan, all cut section side slopes shall be finished graded flush from the top of concrete surface at a maximum 1:6 slope up to 5 feet from the edge of walk or back of curb, or straight graded to the existing ground elevation 5 feet from the edge of the walk or back of curb. At the Engineer’s sole discretion, Concrete Curb Design V may be utilized along with the above stated grading techniques to reduce excessive ground slopes and better match adjacent surface terrain within the 5 foot incidental grading area.

All sites shall be restored to as good or better condition than the pre-construction condition.

(B) Turf Establishment – All areas that are disturbed as a result of concrete walk and curb and gutter construction including but not limited to curb ramp, curb and gutter, and sidewalk/trail construction shall be sodded and stabilized in accordance with the Plans, Specifications, and Special Provisions. Each site must be stabilized in accordance with the requirements of MnDOT 1717. Seed bed preparation shall be performed in accordance with MnDOT 2574 utilizing appropriate methods, to include handwork as necessary.

METHOD OF MEASUREMENT
Measurement will be made by each site that is restored in accordance with the Plans, Specifications, and Special Provisions. Each site consists of the area that is disturbed as a result of the adjacent walk, trail and/or curb and gutter construction.

BASIS OF PAYMENT
Payment will be made under Item 2575.602 (Site Restoration) at the Contract bid price per EACH, which shall be compensation in full for all work described in this Special Provision. Any topsoil borrow that is required and not accounted for in the Plan shall be screened and pulverized Select Topsoil Borrow paid at $40/CY (LV).

SP-32 (2580) INTERIM PAVEMENT MARKINGS
SP2016-247
SP-32.1 This work shall consist of placing interim pavement markings on those pavements, prior to opening them to traffic, where the in place surface is to be covered by a subsequent paving course or the permanent lane markings are to be placed at a future date. The Contractor has the option of furnishing the following material, unless the material type is indicated in the Plan:

(A) Removable Preformed Plastic Pavement Marking (4 inch wide) Tape Mn/DOT 3355.

(B) Traffic Marking Paint in accordance with Mn/DOT 3591 and 3592, and the following specifications:

• THREE MINUTE DRY ALKYD TRAFFIC PAINTS
• APPLICATION SPECIFICATION FOR CONVENTIONAL TRAFFIC MARKING PAINT

The above specifications can be accessed on the Mn/DOT Office of Traffic, Safety, and Operation website.

(C) Temporary Raised Pavement Markers in accordance with the following specification:
• TEMPORARY RAISED PAVEMENT MARKERS (TRPMs)

The above specifications can be accessed on the Mn/DOT Office of Traffic, Safety, and Operation website.

SP-32.2 When centerline or lane markings (excluding edge lines) are removed, interim pavement markings shall be provided prior to opening the roadway to traffic. The markings shall be applied to a clean, dry surface in accordance with the manufacturer’s recommendation or as approved by the Engineer.

SP-32.3 The Contractor will be required to use primer prior to the installation of all tape regardless of weather or pavement conditions or Manufacturer’s specifications. All other installation procedures and materials used shall follow the manufacturer’s specifications. Application of the primer shall be incidental to the cost of installing the tape.

SP-32.4 The Contractor shall place all centerline and lane markings prior to ending work each day. Edge lines shall be placed within 14 calendar days.

SP-32.5 Interim markings shall consist of center line markings including no passing zone markings, center lines and lane lines (excluding edge lines) in accordance with the Minnesota Manual on Uniform Traffic Control Devices (MN MUTCD). Interim markings for skip stripes shall be 4 inch wide plus or minus 1/4 inch and cycle lengths as indicated in the Plan. The Markings shall be placed parallel to the direction of traffic flow. Solid lines used to make no passing zones and lanes shall be 4 inch in width, plus or minus 1/4 inch. Lateral placement of the markings from centerline shall be as directed by the Engineer.

If the Contractor is negligent in adhering to the above provisions, he/she shall be subject to an hourly charge assessed at a rate of $250.00 per hour for each hour or any portion thereof which the Engineer determines that the Contractor has not complied.

SP 32.6 When temporary raised pavement markings are used as interim markings, they shall be installed as per the TRPM specification or as indicated in the Plan. Removal of TRPM’s shall be incidental to the bid price.

SP-32.7 The interim markings shall be maintained and replaced by the Contractor without additional compensation until they are covered by the next paving course, are replaced with permanent pavement markings, or final acceptance of the Project is made. The Contractor will be required to remove all Temporary Raised Pavement Markings used as Interim Pavement markings. Any solid line delineations on the final pavement surface marked with Pavement Marking Tape must also be removed prior to placing the Permanent Pavement Markings. The Engineer may require the removal of any Interim Pavement Markings that will interfere with the placement of the permanent markings or could cause confusion to the traveling public if left in place. Removal of interim pavement Markings, if required, shall be incidental to the Contract bid price for the Item, and shall be in accordance with Mn/DOT 2102.

SP-32.8 Interim pavement markings will be measured by the actual length in linear feet of each line marked as indicated in the Plan and will not include the gap between skip stripes. No additional quantity will be included for repair or renewal work. Measurement for raised pavement markings will be made according to the length of line being simulated.
SP-32.9 Payment for Interim Pavement Marking at the Contract price per unit of measure shall be compensation in full for all costs of furnishing and placing the marking, removal if required, and all necessary maintenance and renewal work. Payment for Interim Pavement Marking will be made on the basis of the following schedule:

Item No. Item Unit 2580.603 Interim Pavement Marking ......................... linear foot

SP-33 (3137) COARSE AGGREGATE FOR PORTLAND CEMENT CONCRETE
REVISED 01/08/16
SP2016-252

MnDOT 3137 is hereby modified as follows:

SP-33.1 The first paragraph of MnDOT 3137.2.D.2 shall be deleted and replaced with the following:

Provide coarse aggregate in accordance with 3137.2.D.1, “Coarse Aggregate for General Use,” except as modified by Table 3137-2.

SP-33.2 Table 3137-2 (h) of MnDOT 3137.2.D.2 shall be deleted and replaced with the following:

| h) | Absorption for Class B aggregate for all concrete bridge decks and bridge barrier | ≤ 1.10 |

SP-33.3 Table 3137-4 of MnDOT 3137.2.E shall be deleted and replaced with the following:

<table>
<thead>
<tr>
<th>Sieve Sizes</th>
<th>Coarse Aggregate Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASTM #467</td>
<td>ASTM #67</td>
</tr>
<tr>
<td>2 in [50 mm]</td>
<td>100</td>
</tr>
<tr>
<td>1½ in [37.5 mm]</td>
<td>95 – 100</td>
</tr>
<tr>
<td>1 in [25.0 mm]</td>
<td>-</td>
</tr>
<tr>
<td>¾ in [19.0 mm]</td>
<td>35 – 70</td>
</tr>
<tr>
<td>5/8 in [16.0 mm]</td>
<td>-</td>
</tr>
<tr>
<td>½ in [12.5 mm]</td>
<td>-</td>
</tr>
<tr>
<td>⅜ in [9.5 mm]</td>
<td>10 – 30</td>
</tr>
<tr>
<td>No.4 [4.75 mm]</td>
<td>0 – 5</td>
</tr>
<tr>
<td>No.8 [2.36 mm]</td>
<td>-</td>
</tr>
<tr>
<td>No.16 [1.18 mm]</td>
<td>-</td>
</tr>
<tr>
<td>No.50 [300 µm]</td>
<td>-</td>
</tr>
</tbody>
</table>

*ASTM #67 and ASTM #7 Gradations are MnDOT Modified.
MnDOT 3138 is modified as follows:

**SP-34.1** Add the following to MnDOT 3138.2D Surfacing Aggregates:

(5) Provide aggregate with a minimum clay content of 3% and a Plasticity Index (PI) of 5 – 12. The requirements for PI and minimum clay content are met, if the bitumen content is 1% or greater, the material is composed of at least 25% recycled materials or is composed of at least 50% crushed quarry aggregate.

**SP-34.2** Add the following to MnDOT 3138.3:

G Particle Size Analysis Laboratory Manual Method ................................................................. 1302

H Liquid Limit Determination Laboratory Manual Method .................................................... 1303

I Plastic Limit Determination Laboratory Manual Method .................................................... 1304

**SP-35 (3861) PLANT STOCK**

The provisions of Mn/DOT 3861 are modified as follows:

Delete the 4th paragraph of Mn/DOT Provision 3861.3 and insert:

During the spring planting season, coniferous plants that have candled out (put out new growth) while being stored in a holding bin may be planted; however, coniferous plants that are dug after candling out will be rejected. Coniferous trees not fully branched from bottom to top will be rejected. Only coniferous trees with buds or new growth at the terminal ends of branches shall be accepted if tree meets the dimensional requirements defined in Mn/DOT’s Inspection and Contract Administration Manual for Mn/DOT Landscape Projects. Pine trees shall have a terminal leader bud and terminal leaders shorter than 500 mm (18 inches) in length. A new central leader must be trained in conifers delivered with multiple or missing leaders.

- END -
INDEX TO DIVISION SS

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<td>2-SS</td>
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<td>SS-2 (2104)</td>
<td>REMOVE SIGNAL SYSTEM</td>
<td>3-SS</td>
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<td>SS-3 (2565)</td>
<td>TRAFFIC CONTROL SIGNALS</td>
<td>6-SS</td>
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<tr>
<td>SS-4 (2565)</td>
<td>EMERGENCY VEHICLE PREEMPTION SYSTEM</td>
<td>34-SS</td>
</tr>
</tbody>
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Appendix A
CITY OF DULUTH MINIMUM SPECIFICATIONS
FOR TS2 TYPE 1 SIGNAL CONTROLLER CABINET & CONTROLLER (DULUTH SPECIFICATION NO. 550-80A3, DATED APRIL 21, 2015) 35-SS

I hereby certify that the Specifications for Division SS contained in this proposal were prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Scott C. Poska
Signature: [Signature]
Date: 06/09/2016 License No. 47068

This specification was prepared specifically for this project, and any reuse of details or specifications on other projects is not intended or authorized by the designer. Liability for any reuse on other projects is the responsibility of the person, agency or corporation using plan or specification data from this project.
SPECIAL PROVISIONS
DIVISION “SS”

SS-1  (1802) QUALIFICATION OF WORKERS

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

Required Signal and Lighting Certification 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 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.

Provide certified Contractor personnel 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  (2104) REMOVE SIGNAL SYSTEM

This work consists of removing, salvaging, or disposing of items of the existing traffic control signal system at the intersection of KENWOOD AVENUE and ARROWHEAD ROAD in DULUTH, ST LOUIS COUNTY, MINNESOTA in accordance with the applicable provisions of MnDOT 2565; current edition of the National Electrical Code; Plans; and as follows:

The existing signal system at Kenwood Avenue and Arrowhead Road shall remain operational during the construction of SYSTEM “A”. The existing signal system shall only be removed when approved by the Engineer after SYSTEM “A” is operational.

When directed by the Engineer, remove and salvage, or dispose of all items of the existing traffic control signal system in accordance with the applicable provisions of MnDOT 2565.3U; the applicable provisions of MnDOT 2104; and the following:

1. Except under roadway surfaces, remove and dispose of all underground conduit as specified herein unless otherwise directed by the Engineer. Under roadway surfaces, abandon conduit in place, unless otherwise directed by the Engineer.

2. After the traffic control signal cabinet and control equipment is de-energized and power conductors disconnected, prevent damage to the cabinet and control equipment as follows:

   (2.1) Unplug and remove all removable control equipment (i.e., controller unit, detector amplifier units, conflict monitor, load switches, etc.) from the cabinet. Suitably pack the control equipment removed from the cabinet to prevent damage to the equipment during transportation.

   (2.2) Coil and group together connecting harnesses for the equipment and secured to a shelf in the cabinet. Tape, wire, or tie wrap the harnesses by a method that prevents the harnesses from being pinched in the door when the door is closed or from dropping below the bottom of the cabinet when it is lifted off the foundation.

   (2.3) Secure the cabinet in an upright position at all times (removing from foundation, transporting, loading, and unloading) to insure that the cabinet will not tip and be damaged.

3. After the battery backup service cabinet is de-energized and power conductors disconnected, remove the batteries and uninterrupted power supply (UPS) from the cabinet for shipping. Prevent damage to the cabinet, UPS and batteries for shipment to the City of Duluth. Notify the City of Duluth at least three (3) normal working days in advance of the time the Contractor intends to deliver the salvaged materials.
4. Remove entirely and dispose of outside the Right-of-Way all items not salvaged, in any manner that the Contractor may elect, subject to the provisions of MnDOT 2104.3, and as follows:

(4.1) Remove and dispose of the mast arm pole standards and pedestal shafts as specified herein.

(4.2) After removal, disassemble and cut-up the mast arm pole standards (transformer base, pole shafts, mast arms, and luminaire extensions), or other method that renders the mast arm pole standards unusable, to the satisfaction of Engineer. After the mast arm pole standards have been prepared for disposal, dispose of the mast arm pole standards and traffic control signal pedestals as follows:

a) The mast arm pole standards and the traffic control signal pedestals (pedestal shafts and pedestal bases) may have lead-based paint. If this is the case, the Contractor is responsible for the proper handling, transportation, and disposal of the mast arm pole standards and traffic control signal pedestals as hazardous waste and the handling, transportation, and disposal of these items in accordance with Occupational Safety & Health Administration (OSHA) and the Minnesota Pollution Control Agency (MPCA) regulations.

b) The Contractor certifies that he or she is familiar with, and will comply with, the applicable requirements in OSHA 29 CFR 1926.62 and Minnesota Rules Chapter 5206, 7025, 7035, 7045 relating to disposal and/or the removal of these lead painted mast arm pole standards and traffic control signal pedestals as hazardous waste.

c) Provide to the Engineer a completed “Contractor Certification of Disposal" form included elsewhere in these Special Provisions.

d) Backfill and compact all resulting excavation with like in kind material to approximately the same density as the adjoining ground. Replace in kind any roadway surfacing (concrete pavement, bituminous surface, or gravel surface, including underlying base courses), sidewalks, curb and gutters, sod, etc., removed by the construction operations at no expense to the City of Duluth.

5. Salvage all handhole steel rings and covers to the City of Duluth.

All removals of materials of the existing signal system and salvaging as required, the disposal of non-salvable materials, and backfilling, all in accordance with the foregoing, is considered incidental work.
Removing, salvaging, and disposing of parts of the existing traffic control signal system at the intersection of **KENWOOD AVENUE** and **ARROWHEAD ROAD** in **DULUTH, ST LOUIS COUNTY, MINNESOTA** as contained in these Special Provisions will be measured as an integral unit and will be paid for under Item No. 2104.509 (REMOVE SIGNAL SYSTEM) at the Contract price per EACH, which price will be compensation in full for all costs incidental thereto.
SS-3 (2565) TRAFFIC CONTROL SIGNALS

This work consists of providing and installing materials and electrical equipment; installing City provided materials as specified herein, all to provide two (2) complete operating new interconnected full-traffic-actuated traffic control signal systems as follows ---

1. **SYSTEM "A"** - at the intersection of KENWOOD AVENUE and ARROWHEAD ROAD in DULUTH, ST LOUIS COUNTY, and

2. **SYSTEM "B"** - at the intersection of KENWOOD AVENUE and CLEVELAND STREET in DULUTH, ST LOUIS COUNTY,

In accordance with MnDOT 2565; with the current edition of the National Electrical Code; with the Plans, and as follows:

SS-3.1 GENERAL

(NONE)

SS-3.2 MATERIALS

3.2.1 City Furnished Materials

A. Pole and Mast Arms

The City of Duluth will furnish to the Contractor (at no expense to the Contractor) the following materials for the Contractor to install as shown in the Plan for SYSTEM “A”:

1. One (1) type PA85-A-25-D40-9 signal pole / mast arm / luminaire extension with two swing away mast arm hinges and four (4) anchor rods.
2. One (1) type PA90-A-30-D40-9 signal pole / mast arm / luminaire extension with two swing away mast arm hinges and four (4) anchor rods.
3. One (1) type PA90-A-35-D40-9 signal pole / mast arm / luminaire extension with two swing away mast arm hinges and four (4) anchor rods.
4. One (1) type PA100-A-45-D40-9 signal pole / mast arm / luminaire extension with two swing away mast arm hinges and four (4) anchor rods.

The signal poles shall be in accordance with MnDOT Standard Plate 8123. For SYSTEM “A”, in addition to the 8 Type “A” signal hub couplings, each pole shall have 1 additional signal hub coupling at 135 degrees 9 feet 6 inches from the bottom of the transformer base.

The City of Duluth will furnish to the Contractor (at no expense to the Contractor) the following materials for the Contractor to install as shown in the Plan for SYSTEM “B”: 6-SS
2. One (1) type PA85-A-20-D40-9 signal pole / mast arm / luminaire extension with four (4) anchor rods.
3. One (1) type PA90-A-30-D40-9 signal pole / mast arm / luminaire extension with two swing away mast arm hinges and four (4) anchor rods.
4. One (1) type PA90-A-40-D40-9 signal pole / mast arm / luminaire extension with two swing away mast arm hinges and four (4) anchor rods.

The signal poles shall be in accordance with MnDOT Standard Plate 8123.

B. Warning Stickers

The City of Duluth shall provide to the Contractor (at no expense to the Contractor) the following materials and electrical equipment for the Contractor to install:

1. Warning stickers on new sign panels, which shall be in accordance with MnDOT 2564.3H.2

3.2.2 Contractor Furnished Materials

A. Video Detection

1. Video Camera and Detection

The Contractor shall install and make operational all video detection devices as shown in the Plans and as follows:

Cameras to be furnished and installed shall be Autoscope Encore as manufactured by Econolite Control Products Inc. or Engineer approved equal.

The Contractor shall provide and install all cables, conductors, mounting hardware and all other equipment necessary to make operational each video detection device as per the Plans and to the satisfaction of the Engineer and the City of Duluth.

All other equipment necessary in each traffic signal cabinet to operate each video detection system shall be furnished and installed by the Contractor, and shall be new and fully compatible with "Autoscope Encore" cameras.

The Contractor shall, to the satisfaction of the Engineer and the City of Duluth, affix to the back of each video detection camera a permanent label indicating the date of installation.
2. Video Cable

The video cable shall be Autoscope Branch Cable. The cable is comprised of power limited tray cable as follows: 3 conductor #18 AWG (19X#30) extruded polyethylene insulation, overall beldfoil shield with an 18 AWG tinned copper drain wire. Overall polyethylene jacket with nylon ripcord and color coded or approved equal by the Engineer.

3. Cabinet

The Contractor shall install the following equipment in the cabinet:

a. Modular Cabinet Interface Unit.
b. One 6 ft. SDLC cable with 15 pin one each end in the cabinet.
c. One Communication Interface Panel.
d. One Tip to Tap Interface Cable Kit in the Cabinet / RJ45 Connector for communication to and between the Modular Cabinet Interface Unit and the MPV Sensors.
e. Video monitor.

The Contractor shall also install galvanized steel junction boxes. These junction boxes will be compatible with the "Autoscope Encore" system and will contain the following:

a. A terminal block for terminating power.
b. Twisted pair wiring to the image sensor.

4. Video System Installation

The Contractor shall install the Autoscope cameras on mast arms and inplace column at the location as shown in the plans, as directed by the Engineer; in accordance with the Manufacturer's Guidelines; and to the satisfaction of the City of Duluth.

Autoscope junction box locations and corresponding camera cable shall be labeled as V-1, V-2, V-3, V-4, etc. as indicated in the Plan.

Drip loops shall be provided for the camera power and video cables between each camera junction box and camera housing using a ¾ inch strain relief fitting.

Camera power cable from each Autoscope camera and the traffic signal cabinet shall be terminated at the 12-position terminal strip in the Autoscope camera junction box. The Contractor shall terminate the Cable in the base and must use a Raychem Splice Kit. The Cable Splice shall be supported a minimum of 12” above the concrete using a 1/2” PVC conduit to prevent moisture from penetrating the Splice.

The cameras shall be aimed and secured in an aimed position by the Contractor. The Contractor shall employ a Field Service representative approved by the Autoscope supplier. The cameras shall
be aimed so that the field of view provides for a fully operational signal and is to the satisfaction of the City of Duluth.

All Autoscope equipment and cameras shall be installed by personnel with proper training and certified for Autoscope installation by the equipment manufacturer.

The Video Detection System shall be complete and in operation and shall be incidental to Traffic Signal Systems “A” and “B”. The contractor is responsible for all the cost including services of field service representative of the Autoscope supplier.

B. Handholes

2565.2C is hereby deleted and the following is substituted therefore.

C Handholes

Only use handholes for non-deliberate heavy vehicular traffic unless otherwise indicated in the Plans.

C1 Handholes Non-Deliberate Heavy Vehicular Traffic

Only use MnDOT-approved handholes listed on the Approved/Qualified Products List under “Signals.”

Emboss “ELECTRIC” on the cover for traffic signal control handholes.

C2 Handholes Deliberate Heavy Vehicular Traffic

Only use handholes in accordance with Standard Plate 8117 which are in full compliance with Article 314.30 of the NEC. Handholes shall meet the requirements of “AASHTO H-20 Deliberate Vehicular Traffic Applications”.

Emboss “ELECTRIC” on the cover for traffic signal control handholes.

The frame and casting cover for all handholes and pull vaults shall be modified according to the following detail and drawings (also shown in the plans).
Arrowhead/Kenwood Signal and Roadway Improvements Project
S.A.P. 118-151-012, S.A.P. 118-160-023
St. Louis County Project No. 0034-278317
City of Duluth Project No. 1468
June 9, 2016

NOTE:
1. ALL CASTINGS SHALL BE GREY IRON AS PER SPEC. 3321, CLASS 350.
2. SPECIFICATION REFERENCES 2545 & 2565.
3. REFERENCE STANDARD PLATE NO. MBL144A FOR DETAILS ON P.V.C. HANDHOLE/PULLBOX AND EXTENSION RING.

MODIFIED FRAME AND COVER CASTING DETAIL.

10-SS
C. Accessible Pedestrian Signals (APS) – (Audible Pedestrian Push Button Units and Associated Traffic Control Signal Cabinet Equipment)

Provide Accessible Pedestrian Signals in accordance with MnDOT 3833 and as follows:

The APS manufacturer must provide the required voice messages in each button as defined below. Additionally the APS manufacturer must supply backup copies of the voice messages to the City of Duluth on one of the following media types:

- Compact Disk
- USB flash drive.

Present the order form below to the Accessible Pedestrian Signal (APS) manufacturer so the appropriate Braille message is added to the pedestrian information sign and the correct voice messages are programmed in the pedestrian push buttons.

Although the APS pushbutton units shall be capable of sounding percussive tones and the voice messages noted below, they shall be configured to operate in the field similar to standard pushbuttons; the voice messages and audible tone shall be disabled.
### Accessible Pedestrian Signal (APS)

**ORDER FORM**

**Intersection:** Kenwood Avenue at Arrowhead Road (SYSTEM “A”)

**Total Qty of Pedestrian Push Buttons**

- **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 when available
  - **Qty:** 1

**Push Button and Sign Braille Information**

<table>
<thead>
<tr>
<th>Button</th>
<th>Arrow Direction R/L</th>
<th>Street Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB2-1</td>
<td>L</td>
<td>PB2-1 Kenwood Avenue</td>
</tr>
<tr>
<td>PB2-2</td>
<td>R</td>
<td>PB2-2 Kenwood Avenue</td>
</tr>
<tr>
<td>PB4-1</td>
<td>L</td>
<td>PB4-1 Arrowhead Road</td>
</tr>
<tr>
<td>PB4-2</td>
<td>R</td>
<td>PB4-2 Arrowhead Road</td>
</tr>
<tr>
<td>PB6-1</td>
<td>L</td>
<td>PB6-1 Kenwood Avenue</td>
</tr>
<tr>
<td>PB6-2</td>
<td>R</td>
<td>PB6-2 Kenwood Avenue</td>
</tr>
<tr>
<td>PB8-1</td>
<td>L</td>
<td>PB8-1 Arrowhead Road</td>
</tr>
<tr>
<td>PB8-2</td>
<td>R</td>
<td>PB8-2 Arrowhead Road</td>
</tr>
</tbody>
</table>

**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**

<table>
<thead>
<tr>
<th>Kenwood</th>
<th>at</th>
<th>Arrowhead</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Street Being Crossed)</td>
<td></td>
<td>(Intersecting Street)</td>
</tr>
</tbody>
</table>

**Walk Message:**

<table>
<thead>
<tr>
<th>Kenwood</th>
<th>Walk sign is on to cross</th>
<th>Kenwood</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Street Being Crossed)</td>
<td></td>
<td>(Street Being Crossed)</td>
</tr>
</tbody>
</table>

### PB2-2

**Wait Message:**

**Wait to Cross**

<table>
<thead>
<tr>
<th>Kenwood</th>
<th>at</th>
<th>Arrowhead</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Street Being Crossed)</td>
<td></td>
<td>(Intersecting Street)</td>
</tr>
</tbody>
</table>

**Walk Message:**

<table>
<thead>
<tr>
<th>Kenwood</th>
<th>Walk sign is on to cross</th>
<th>Kenwood</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Street Being Crossed)</td>
<td></td>
<td>(Street Being Crossed)</td>
</tr>
</tbody>
</table>

### PB4-1

**Wait Message:**

**Wait to Cross**

<table>
<thead>
<tr>
<th>Arrowhead</th>
<th>at</th>
<th>Kenwood</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Street Being Crossed)</td>
<td></td>
<td>(Intersecting Street)</td>
</tr>
</tbody>
</table>

**Walk Message:**

<table>
<thead>
<tr>
<th>Arrowhead</th>
<th>Walk sign is on to cross</th>
<th>Arrowhead</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Street Being Crossed)</td>
<td></td>
<td>(Street Being Crossed)</td>
</tr>
</tbody>
</table>

### PB4-2

**Wait Message:**

**Wait to Cross**

<table>
<thead>
<tr>
<th>Arrowhead</th>
<th>at</th>
<th>Kenwood</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Street Being Crossed)</td>
<td></td>
<td>(Intersecting Street)</td>
</tr>
</tbody>
</table>

**Walk Message:**

<table>
<thead>
<tr>
<th>Arrowhead</th>
<th>Walk sign is on to cross</th>
<th>Arrowhead</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Street Being Crossed)</td>
<td></td>
<td>(Street Being Crossed)</td>
</tr>
</tbody>
</table>
Wait Message:

Wait to Cross

Kenwood at Arrowhead
(Street Being Crossed) (Intersecting Street)

Walk Message:

Kenwood Walk sign is on to cross Kenwood
(Street Being Crossed) (Street Being Crossed)

Wait Message:

Wait to Cross

Kenwood at Arrowhead
(Street Being Crossed) (Intersecting Street)

Walk Message:

Kenwood Walk sign is on to cross Kenwood
(Street Being Crossed) (Street Being Crossed)

Wait Message:

Wait to Cross

Arrowhead at Kenwood
(Street Being Crossed) (Intersecting Street)

Walk Message:

Arrowhead Walk sign is on to cross Arrowhead
(Street Being Crossed) (Street Being Crossed)

Wait Message:

Wait to Cross

Arrowhead at Kenwood
(Street Being Crossed) (Intersecting Street)

Walk Message:

Arrowhead Walk sign is on to cross Arrowhead
(Street Being Crossed) (Street Being Crossed)

16-SS
Accessible Pedestrian Signal (APS)

ORDER FORM

Intersection: Kenwood Avenue at Cleveland Street (SYSTEM “B”)

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 when available Qty 1

Push Button and Sign Braille Information

<table>
<thead>
<tr>
<th>Button</th>
<th>Arrow Direction R/L</th>
<th>Street Name (Street Being Crossed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB2-1</td>
<td>L</td>
<td>PB2-1 Cleveland Street</td>
</tr>
<tr>
<td>PB2-2</td>
<td>R</td>
<td>PB2-2 Cleveland Street</td>
</tr>
<tr>
<td>PB4-1</td>
<td>L</td>
<td>PB4-1 Kenwood Avenue</td>
</tr>
<tr>
<td>PB4-2</td>
<td>R</td>
<td>PB4-2 Kenwood Avenue</td>
</tr>
<tr>
<td>PB6-1</td>
<td>L</td>
<td>PB6-1 Cleveland Street</td>
</tr>
<tr>
<td>PB6-2</td>
<td>R</td>
<td>PB6-2 Cleveland Street</td>
</tr>
<tr>
<td>PB8-1</td>
<td>L</td>
<td>PB8-1 Kenwood Avenue</td>
</tr>
<tr>
<td>PB8-2</td>
<td>R</td>
<td>PB8-2 Kenwood Avenue</td>
</tr>
</tbody>
</table>

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** | Cleveland | at | Kenwood | (Street Being Crossed) | (Intersecting Street)

**Walk Message:**

| Cleveland | Walk sign is on to cross | Cleveland | (Street Being Crossed) |

### PB2-2

**Wait Message:**

**Wait to Cross** | Cleveland | at | Kenwood | (Street Being Crossed) | (Intersecting Street)

**Walk Message:**

| Cleveland | Walk sign is on to cross | Cleveland | (Street Being Crossed) |

### PB4-1

**Wait Message:**

**Wait to Cross** | Kenwood | at | Cleveland | (Street Being Crossed) | (Intersecting Street)

**Walk Message:**

| Kenwood | Walk sign is on to cross | Kenwood | (Street Being Crossed) |

### PB4-2

**Wait Message:**

**Wait to Cross** | Kenwood | at | Cleveland | (Street Being Crossed) | (Intersecting Street)

**Walk Message:**

| Kenwood | Walk sign is on to cross | Kenwood | (Street Being Crossed) |
### PB6-1

**Wait Message:**

**Wait to Cross**  
Cleveland  
(Street Being Crossed)  
at  
Kenwood  
(Intersecting Street)

**Walk Message:**

Cleveland  
Walk sign is on to cross  
Cleveland  
(Street Being Crossed)

### PB6-2

**Wait Message:**

**Wait to Cross**  
Cleveland  
(Street Being Crossed)  
at  
Kenwood  
(Intersecting Street)

**Walk Message:**

Cleveland  
Walk sign is on to cross  
Cleveland  
(Street Being Crossed)

### PB8-1

**Wait Message:**

**Wait to Cross**  
Kenwood  
(Street Being Crossed)  
at  
Cleveland  
(Intersecting Street)

**Walk Message:**

Kenwood  
Walk sign is on to cross  
Kenwood  
(Street Being Crossed)

### PB8-2

**Wait Message:**

**Wait to Cross**  
Kenwood  
(Street Being Crossed)  
at  
Cleveland  
(Intersecting Street)

**Walk Message:**

Kenwood  
Walk sign is on to cross  
Kenwood  
(Street Being Crossed)
D. Equipment Pad

For SYSTEM “A”, provide an equipment pad as detailed in the Plans and specified in these Special Provisions.

The equipment pad contains the following:

1. Traffic control signal cabinet and control equipment.

   Traffic control signal cabinet, anchor rods, nuts and washers and associated internal control equipment to be provided and installed by the Contractor.

2. Signal Service Cabinet.

   Signal service cabinet Type SSB to be provided and installed by the Contractor. SSB cabinets will be supplied from the manufacturer with anchor rods, nuts and washers used for attaching the service cabinet to the equipment pad.

For SYSTEM “B”, provide an equipment pad as detailed in the Plans and specified in these Special Provisions.

The equipment pad contains the following:

1. Traffic control signal cabinet and control equipment.

   Traffic control signal cabinet, anchor rods, nuts and washers and associated internal control equipment to be provided and installed by the Contractor.

E. Signal Service Cabinet, Type SSB (with Battery Back-up Equipment)

Provide a signal service cabinet in accordance with MnDOT 3837.2A.7 and as follows:

Type SSB with battery back-up equipment that includes an inverter, batteries, bypass switch, and external strobe.

The SSB cabinet shall have the following circuit breakers:

One, 2 pole 100 AMP (Labeled Main)

The main circuit breaker shall be rated for 100 Amps of continuous current at 40 degrees C. The main circuit breaker shall carry a minimum 18,000 AIR (Ampere Interrupting Rating)

One, 2 pole 20 AMP (Labeled TVSS)
One, 1 pole 30 AMP (Labeled Signal Service System “A”)

One, 1 pole 30 AMP (Labeled Signal Service System “B”)

One, 1 pole 15 AMP (Labeled Photocell Control)

One, 1 pole 10 AMP (Labeled Fan)

Four, 1 pole 15 AMP (Labeled Luminaire 1 thru 4 for System “A”)

Four, 1 pole 15 AMP (Labeled Luminaire 1 thru 4 for System “B”)

The eight circuit breakers for lighting luminaires shall have the means to change the cabinet configuration so that the lighting power can metered or unmetered.

F. Terminal Blocks

Provide terminal blocks in accordance with the provisions of MnDOT 2565.GG.

G. City of Duluth 2015 Cabinet Specification with TSP Data Key

The Contractor shall furnish and install new traffic signal cabinet(s) complete with control equipment in accordance with the following:

The Contractor shall furnish and install new traffic signal cabinets complete with control equipment in accordance with City of Duluth Standards and specifications for SYSTEM “A” and SYSTEM “B”.

The information in Appendix A, City of Duluth Specifications for TS2 Type 1 Traffic Signal Controller Cabinet & Controller (Duluth Specification No. 550-80A3), dated April 21, 2015, shall be adhered to by the Contractor for providing a new controller and cabinet at SYSTEM “A” and SYSTEM “B”.

H. Red Light Enforcement Lights

This work shall consist of installing “Blue Light” materials and electrical equipment; furnishing and installing materials and electrical equipment as specified herein; all to provide four (4) enforcement lights on SYSTEM “A” in accordance with plans; and follows.

New conductors from the pole base to the pole mounted enforcement light (2/c#14) shall be furnished and installed by the contractor in accordance with the applicable provisions of Mn/DOT 2565.3J and Mn/DOT 3815.
Labels to identify these cables and conductors, shall be labeled in the “Direction” ENFORCEMENT LIGHT” and in the traffic signal controller cabinet.

Red light enforcement lights shall be attached to the signal pole hub using bracketing and elbows that are in general conformance with the signal head bracketing detailed in MnDOT Standard Plate 8110. Bracketing shall be aluminum and shall have an anodic coating as per MIL-A-8625C for Type II, Class I coating. This installation may require threaded elbows with different angles from those included in the standard plate or 180 degree couplings that are threaded inside both ends to complete the installation. The length of the brackets shall be sufficient to allow for aiming of the enforcement light as required. The Contractor shall provide all appropriate lock nuts, nipples, gaskets, etc. necessary to securely fasten the red light running enforcement light. There should not be any unused openings. Brush-on anti-seize compound must be used on each threaded fitting during assembly. The Contractor shall provide a drawing showing the mounting method and fittings for review and approval to the Engineer.

The Contractor shall furnish and install a signal pole hub mounted red light enforcement light assembly and light on the signal poles. The red light enforcement light shall be a blue LED light that has a diameter between 1.5 and 3.0 inches. The red light enforcement light shall not be a screw in bulb or any assembly that can be easily tampered with by the public.

The contractor shall wire each enforcement light directly in parallel to the red indication or to the red output of the signal cabinet, so that voltages are not diminished such that a circuit is created that does not have the voltage output to power the red light or the Enforcement light. Both enforcement lights shall be wired to the red outputs of the appropriate approach phase such that the enforcement light shall turn on even if the corresponding red light has failed and does not turn on.

Each enforcement light shall be aimed in the field by the Contractor in the presence of the Engineer and Police personnel.

SS-3.3 CONSTRUCTION REQUIREMENTS

A. Pick Up City Provided Materials

Pick up materials described in SS-3.2.1 at the City of Duluth. Follow these requirements:

1. Request from the City of Duluth the materials listed SS-3.2.1.
2. Request City provided materials at least thirty (30) normal working days in advance of the time material is needed on the project.
3. Notify Mr. Earl Stewart of the City of Duluth (Telephone 218-730-4421) at least three (3) normal working days in advance of intention to pick up materials and electrical equipment.
4. Pick up the City provided materials.
B. Existing Electrical Systems

2565.3B is hereby deleted and the following is substituted therefore.

B - Existing Electrical Systems
Maintain and keep in operation the new and existing electrical systems within the limits of the project in accordance with MnDOT 1514, “Maintenance During Construction,” but not including MnDOT 1404.7, “Winter Suspension”, until the Engineer accepts the project in writing as specified in MnDOT 1716, “Contractor’s Responsibility for Work.” Maintain and keep in operation new and existing electrical systems during periods of suspension at no additional cost to the City of Duluth.

Maintenance of the existing traffic control signal is considered incidental during the progress of new work, except if the Engineer directs, or the contract requires turn-offs. Notify the Engineer at least 48 hours before scheduled turn-offs and before performing work on existing electrical systems. Do not turn off existing traffic control signal systems without the Engineer’s approval and the Engineer’s presence.

If the existing electrical system components are damaged due to Contractor operations, within 24 hours repair or replace the damaged components at no additional cost to the City of Duluth, in accordance with MnDOT 1716 and relevant to specifications for new construction. Failure to repair or replace damaged components within 24 hours will result in the City of Duluth repairing or replacing and deducting costs from project money entitled to the Contractor.

The City of Duluth will maintain the existing traffic control signal cabinet and control equipment within the cabinet unless otherwise required by the contract.

C. Maintenance of Existing Electrical Systems

Maintain and keep in operation existing electrical systems in accordance with MnDOT 2565.3B and as follows:

Except during any periods of authorized work suspension, the Contractor is responsible for locating all underground facilities of existing traffic signal systems and newly constructed signal systems within the limits of the construction project, for the duration of the construction project in accordance with the applicable provisions of MnDOT 1514 and in accordance with Minnesota State Statute 216D.

The responsibility for locating underground traffic signal system facilities shall be transferred to the Contractor on the project start date as shown on the proposal.
The Contractor responsible for locating all underground traffic signal system facilities will repair any damage as the result of improperly located or unmarked underground traffic signal system facilities within the project limits.

The repair of the damaged underground traffic signal system facilities must be in accordance with MnDOT 2545.3A, MnDOT 2565.3B, all to the satisfaction of the City of Duluth. This work is considered incidental.

During any periods of authorized work suspension, the City of Duluth will provide and maintain all items of the existing and newly constructed traffic signal systems.

In the event of an authorized work suspension the Contractor must supply 3 copies of an up to date accurate record drawing of the existing, temporary and newly constructed traffic signal systems to the City of Duluth prior to the work suspension.

**PROVIDE TO THE CITY OF DULUTH CONTACT INFORMATION WITH NAMES AND TELEPHONE NUMBERS FOR 24 HOURS A DAY, 7 DAYS A WEEK MAINTENANCE AS DEFINED ABOVE.**

**D. PA 85, 90 and 100 Pole Foundations (Standard Plates 8120 and 8126)**

Construct PA pole foundations in accordance with 2411, “Minor Concrete Structures” and as specified in the Contract, and in accordance with the following:

Construct foundations in drilled shafts. Excavate for concrete foundations by drilling a hole with an auger of sufficient size to the dimensions indicated in the contract documents. Minimize over excavation. Protect the sides of the drilled shaft from collapsing.

Pour concrete as soon as possible after the excavation to prevent loose or soft materials from accumulating at the bottom of the shaft that would affect the performance of the foundation. Remove loose materials at the bottom of the shaft and groundwater before placement of concrete.

Use a continuous fiber forming tube for the upper portion of the foundation above grade and maximum 4 ft below grade. Pour concrete directly against the soil of the drilled shaft if the sidewalls remain firm and stable.

A continuous full length fiber forming tube may be used to prevent the sidewalls of the shaft from collapsing with the approval of the Engineer at no additional cost to the City of Duluth. “Full length” means more than half the depth of the drilled shaft.

When a full length fiber forming tube is necessary to prevent the drilled shaft from collapsing, refer to the Frost Depth Zone Table and cut four 3 in x 12 in rectangular holes
into the fiber forming tube before installing into the drilled shaft. Cut two rectangular holes approximately 180 degrees apart, 6 ft to 7 ft below grade if the project site is located in Zone 1, and 4 ft to 5 ft below grade if the project site is located in Zone 2. Cut two more rectangular holes approximately 1 ft lower from the first two holes, with the pattern rotated at 90 degrees. See Detail A.

<table>
<thead>
<tr>
<th>Zone</th>
<th>Depth of Rectangular Holes Below Grade</th>
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<tbody>
<tr>
<td>1</td>
<td>6 ft- 7 ft</td>
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<tr>
<td>2</td>
<td>4 ft- 5 ft</td>
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</tbody>
</table>

Refer to The Office of The Revisor of Statutes website for frost depth zone requirements, Minnesota Administrative Rules 1303.1600 Footing Depth for Frost Protection, https://www.revisor.mn.gov/rules/?id=1303.1600 to determine appropriate frost depth zone.
Foundation design is based on installing in a drilled shaft. Any variation to the drilled shaft requires an approval by the Engineer.

Before placement of the concrete;

(1) Brace entering conduits, anchor rods, ground rod electrodes, and other equipment in position,
(2) Ensure elements of the foundation are positioned at the required projection heights and aligned with the transformer base plate opening and bolt holes by using a rigid metal template, and
(3) Tape the threaded portion of the anchor rods projecting above the concrete surface with PVC electrical tape.

Ensure concrete fills the shaft area and any void area outside the fiber forming tube that is below grade.

After the concrete has been placed;
(1) Determine the length of time required for the safe temporary removal of the concrete foundation template to complete an ordinary surface finish on the top of the foundation,

(2) Remove template in a manner to avoid damage to, or spalling of the concrete,

(3) Ensure removal of the template does not allow the anchor rods and conduits to move,

(4) Float foundation with a smooth top and beveled or chamfered edges,

(5) Finish the foundation in accordance with 2401.3.F, “Finish of Concrete”, and

(6) Place back the rigid metal template on the foundation after the concrete finishing work has been completed.

After the concrete has cured the template can be permanently removed.

The Engineer will reject foundations if anchor rods, conduits, and ground rod electrodes are improperly aligned after the concrete cures. Do not enlarge bolt holes in transformer base plates to allow for shifted anchorages or alter the transformer base plate openings to accommodate misaligned conduits and ground rod electrodes. Do not cut or alter conduits, anchorages, or ground rod electrodes.

After the concrete foundation has cured remove the top portion of the fiber forming tube at finished grade level or sidewalk.

Backfill and compact the conduit trench and around the foundation.

E. Equipment Pad Concrete Foundation

For SYSTEM “A”, provide the equipment pad concrete foundation at the location staked by the Engineer as detailed in the Plans to the satisfaction of the City of Duluth.

The anchor rods must project above the concrete foundation to accommodate the 13 mm (1/2 inch) thick gasket.

Install rubber gasket sections between the bottom of each cabinet base and the concrete foundation. Leave one ½ inch (13 mm) gap in the gasket to ensure proper water drainage.

Install the cabinet concrete foundation for the Signal Service Cabinet Type SSB as part of the equipment pad concrete foundation using anchor rods, nuts, and washers supplied by the SSB cabinet manufacturer. The anchor rods must project above the concrete foundation to accommodate 1/2 inch (13 mm) thick gasket.

Install the cabinet manufacturer specified rubber gasket sections between the bottom of each cabinet base and the concrete foundation. The Contractor must leave one 1/2 inch (13 mm) gap in the gasket to ensure proper water drainage.
For SYSTEM “B”, provide the equipment pad concrete foundation at the location staked by the Engineer as detailed in the Plans to the satisfaction of the City of Duluth.

The anchor rods must project above the concrete foundation to accommodate the 13 mm (1/2 inch) thick gasket.

Install rubber gasket sections between the bottom of each cabinet base and the concrete foundation. Leave one ½ inch (13 mm) gap in the gasket to ensure proper water drainage.

**F. Compliance with NEC Article 110.24**

Provide fault current calculations in accordance with 2565.3 CC and as follows:

1. Electric Service Information Form

   Fill out the following electric service information form shown below for traffic signal systems.

   Provide to the City of Duluth, prior to final acceptance of the project, a copy of the Electric Service Information Form for Traffic Signal Systems.

   The Contractor provided "Electrical Service Information Form for Traffic Signal Systems" and available fault current calculations and labeling are considered incidental work.
## Electric Service Information Form For Traffic Signal Systems

<table>
<thead>
<tr>
<th>MN/DOT Signal System ID</th>
<th>Intersection</th>
<th>Meter Address</th>
<th>Electric Utility Transformer Size In KVA</th>
<th>Transformer Primary Fuse Size and Type</th>
<th>Calculated Available Fault Current at the line side of the Meter Socket</th>
<th>Length of conductors in feet from transformer connection to meter socket connection.</th>
</tr>
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<tbody>
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<td>L1 = L2 = Neutral</td>
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<td>L1 = L2 = Neutral</td>
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</tbody>
</table>

NEC Article 110.24
G. **Sign Panel Warning Stickers**

Install City furnished warning stickers on new sign panels in accordance with MnDOT 2564.3H.

Give 30 days advance notice to the City of Duluth prior to picking up the City furnished warning stickers.

H. **Handholes**

MnDOT 2565.3E is hereby deleted and the following is substituted therefore:

**E Handholes**

Install handholes as required by the contract and as approved by the City of Duluth. The Contractor may install additional handholes at no additional cost to the City of Duluth. All handholes shall be PVC with modified metal frames and covers. All handholes shall be centered into concrete slab with control joints no closer than 18 inches from any edge. Replace existing sidewalk/pavement in kind.

Set the tops of handholes so the cover is 1 in [25 mm] below grade, except in sidewalk areas, set the cover flush, or as directed by the Engineer.

To facilitate drainage, set handholes on a compacted aggregate drain bed, 4 ft [1.22 m] in diameter or square, and 12 in [300 mm] deep, using coarse filter aggregate in accordance with MnDOT 3149.2H, “Coarse Filter Aggregate.”

Backfill handholes after installing the cover.

Drill conduit holes into the side walls of handholes no more than 1 inch larger than the size conduit being installed.

Conduits entering handholes must enter thru the barrel or side wall of the handhole.

Remove excess material inside of existing handholes that are to be used in the new system.

After handhole and conduit installation at each handhole location, make the sidewalls inside handholes watertight by patching with concrete for pre-cast concrete handholes, or material-compatible caulking compound, or other sealing material, compatible handhole material, to the Engineer’s satisfaction.

For placing pre-cast concrete handholes with Type HD or other metal frame and cover, in areas not surfaced with concrete, support handholes with concrete to the City of Duluth’s satisfaction. If Connect at the overlap with either a small stainless steel or brass bolt and nut assembly.
I. Blank

J. Terminal Blocks

Install terminal blocks in accordance with manufacturer’s installation instructions and MnDOT 2565.3J.8.

K. Source of Power

The Contractor shall coordinate the connection of the power to the signal service cabinet with Minnesota Power. The Contractor is responsible for any hookup charges, which shall be included as part of the Traffic Control Signal System “A” pay item; no separate compensation will be made for the hookup charges. Minnesota Power will furnish and install and own the conductors required to provide power to the signal service cabinet. The Contractor shall furnish and install conduit and a pull line only from the source of power to the signal service cabinet.

SS-3.4 MEASUREMENTS AND PAYMENTS

A. As-Built Drawings

As Built drawings and GPS coordinates in accordance with Division S Special Provisions “AS-Builts” including Pay Item No. 2011.601 (AS BUILT).

B. Traffic Control Signal System

Providing and installing materials and electrical equipment; and installing City provided materials as specified herein, all to provide two (2) complete operating new interconnected full-traffic-actuated traffic control signal systems as follows ---

1. SYSTEM "A" - at the intersection of KENWOOD AVENUE and ARROWHEAD ROAD in DULUTH, ST LOUIS COUNTY, and

2. SYSTEM "B" - at the intersection of KENWOOD AVENUE and CLEVELAND STREET in DULUTH, ST LOUIS 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 2564.4 and MnDOT 2565.5 respectively for Item No. 2565.511 (TRAFFIC CONTROL SIGNAL SYSTEM).
Contractor Certification of Disposal

Project No.:___________  Location: __________________________________________

We, _________________________, hereby certify that the pole standards
( Name of Contractor)
were rendered unusable, and the mast arm pole standards, and if applicable, pedestal shafts and bases
were removed, transported, and disposed of in accordance with all requirements of the Minnesota
Pollution Control Agency (MPCA) and the Occupational Safety & Health Administration (OSHA) for the
removal, transporting, and disposal of hazardous waste.

____________________________  ___________
SIGNATURE                       DATE

After signed and dated, the Contractor must submit this form to the MnDOT project Engineer.
The Contractor must also submit to the Engineer a copy of the “Tipping Receipt” that the Contractor
receives from the scrap yard or recycler.
SUPPLIED HARDWARE

SHM SPACER CASTING

(1) 1/4" X 3" BOLT
(2) 1/4" FLAT WASHER
(1) 1/4" LOCK NUT

NOTE:
1. RECOMMENDED FOR 4 AND 5 SECTION PLASTIC SIGNAL ARRANGEMENTS.
2. TWO (2) SPACERS ARE REQUIRED PER Mn/DOT SPECIFICATIONS FOR 4 AND 5 SECTION PLASTIC SIGNAL ARRANGEMENTS.
3. SOME SPECIFICATIONS REQUIRE THEM ON ALL PLASTIC SIGNAL VEHICLE ARRANGEMENTS.

SIGNAL HEAD MOUNTING SPACER

SHM Spacer Installed

SPACERS ALLOW THREE POINT STRESS RELIEF FOR MOUNTING SIGNALS HORIZONTALLY, OR FOR PLASTIC VEHICLE SIGNALS.

SIGNAL HEAD MOUNTING SPACER

12-22-08

NOT TO SCALE
SS-4 (2565) EMERGENCY VEHICLE PREEMPTION SYSTEM

This work consists of providing and installing materials and electrical equipment for two (2) complete operating new emergency vehicle preemption (EVP) systems as follows ---

1. SYSTEM "A" - at the intersection of KENWOOD AVENUE and ARROWHEAD ROAD in DULUTH, ST LOUIS COUNTY, and

2. SYSTEM "B" - at the intersection of KENWOOD AVENUE and CLEVELAND STREET in DULUTH, ST LOUIS COUNTY,

--- in accordance with the applicable provisions of MnDOT 2565; with the Plans; and as follows:

SS-4.1 GENERAL

(None)

SS-4.2 MATERIALS

Provide Emergency Vehicle Preemption (EVP) equipment in accordance with MnDOT 2565 and 3814. Phase selectors shall be installed in the Contractor furnished cabinet by the Contractor.

SS-4.3 CONSTRUCTION REQUIREMENTS

Place in accordance with 2565.3.

SS-4.4 MEASUREMENT AND PAYMENT

Providing and installing two (2) emergency vehicle preemption (EVP) systems as follows ---

1. SYSTEM "A" - at the intersection of KENWOOD AVENUE and ARROWHEAD ROAD in DULUTH, ST LOUIS COUNTY, and

2. SYSTEM "B" - at the intersection of KENWOOD AVENUE and CLEVELAND STREET in DULUTH, ST LOUIS COUNTY,

--- as specified herein is measured as an integral unit complete in place and operating and is paid for under Item No. 2565.513 [EMERGENCY VEHICLE PREEMPTION (EVP) SYSTEM] at the Contract price per LUMP SUM, which price is compensation in full for all costs incidental thereto.
Appendix A

CITY OF DULUTH
MINIMUM SPECIFICATIONS FOR TS2 TYPE 1
SIGNAL CONTROLLER CABINET & CONTROLLER

(DULUTH SPECIFICATION NO. 550-80A3, DATED APRIL 21, 2015)

A. General:

It is the intent of these specifications to describe a signal controller cabinet in sufficient detail to secure bids on comparable equipment. All parts not specifically mentioned, which are necessary in order to provide a complete unit at each intersection shall be included in the bid and shall conform in strength, quality of material and workmanship to what is usually provided the trade in general.

Any units not conforming sufficiently to these specifications as outlined below may be rejected and it will be the responsibility of the Contractor to conform to the requirements unless deviations have been cited in the bid and acceptance made on that basis.

Any additions, deletions or variations from the following specifications must be stated. Reason for variations and deviations must also be stated. These specifications shall be construed as minimum. Should the manufacturer's current published data or specifications exceed these, they shall furnish evidence upon request that the model to be furnished has been commercially available to the trade for a period of not less than one year. Specifications also require that the Contractor furnish descriptive literature, if available, complete specifications, and all other necessary data on the equipment Contractor proposes to furnish. The Contractor shall also furnish a copy of the conditions of vendor’s warranty.

Controllers and cabinets are to be the manufacturer's latest model and design.

Location of parts outlet may be used in the evaluation of bid proposals.

B. TS2 Type 1 Cabinet Assembly Specification:

1. Introduction: This specification sets forth the minimum requirements for a TS2 Type 1 traffic control modular cabinet assembly. The cabinet assembly shall meet, as a minimum, all applicable sections of the NEMA Standard Publication No. TS2-2003. Where differences occur, this specification shall govern.

2. Cabinet Design and Construction:
a. Each cabinet shall be constructed from type 5052-H32 aluminum with a minimum thickness of 0.125 inches.

b. Design and manufacture with materials that will allow rigid mounting, whether intended for pole, base or pedestal mounting. The cabinet must not flex on its mount.

c. Incorporate a rain channel into the design of the main door opening to prevent liquids from entering the enclosure. The cabinet door opening must be a minimum of 80 percent of the front surface of the cabinet. A stiffener plate shall be welded across the inside of the main door to prevent flexing.

d. Incorporate on the top of the cabinet a 1-inch slope toward the rear to prevent rain accumulation.

e. All surfaces shall be free from weld flash. Welds shall be smooth, neatly formed, free from cracks, blow holes and other irregularities. Grind smooth all sharp edges.

f. Supply each cabinet with natural aluminum finish, and take sufficient care shall be taken in handling to insure that scratches are minimized.

g. Seal all seams with RTV sealant or equivalent material on the interior of the cabinet.

h. Supply each cabinet with a minimum of three removable shelves, manufactured from 5052-H32 aluminum. Shelves shall be a minimum of 10 inches deep.

i. Shelves shall have horizontal slots at the rear and vertical slots at the front of the turned down side flange. Shelves shall be installed by first inserting the rear edge of the shelf on the cabinet rear sidewall mounting studs, then lowering the shelves on the front sidewall mounting studs. Shelves shall be held in place by a nylon tie-wrap inserted through holes on the front edge of the shelf and around the front sidewall mounting studs.

j. The front edge of the shelf shall have holes punched every 6 inches to accommodate tie-wrapping of cables/harnesses.

k. A minimum of one set of vertical "C" channels shall be mounted on each interior wall of the cabinet for the purpose of mounting the cabinet components. The channels shall accommodate spring mounted nuts or studs. All mounting rails shall extend to within 7 inches of the top and bottom of the cabinet. Sidewall rail spacing shall be 7.88 inches center-to-center. Rear wall rail spacing shall be 18.50 inches center-to-center.
I. A 1 inch diameter electrical trade size conduit hole with removable and reusable snap plug on each side of the cabinet to facilitate lifting during installation. Place the holes so as to allow placing a piece of conduit through the cabinet to extend out both sides of cabinet.

m. The main door and police door-in-door shall close against a weatherproof and dust-proof, closed-cell neoprene gasket seal. The gasket material for the main door shall be a minimum of 0.250 inches thick by 1.00 inch wide. The gasket material for the police door shall be a minimum of 0.250 inches thick by 0.500 inches wide. The gaskets shall be permanently bonded to the cabinet.

n. Equip the lower section of the cabinet with a louvered air entrance. The air inlet shall be large enough to allow sufficient air flow per the rated fan capacity. Louvers must satisfy the NEMA rod entry test for 3R ventilated enclosures. A non-corrosive, vermin- and insect-proof, removable air filter shall be secured to the air entrance. The filter shall fit snugly against the cabinet door wall.

o. The roof of the cabinet shall incorporate an exhaust plenum with a vent screen. Perforations in the vent screen shall not exceed 0.125 inches in diameter.

p. Equip the main door on the cabinet with a three-point latching mechanism.

q. The handle on the main door to the cabinet shall utilize a shank of 5/8 inches minimum diameter. The handle shall include a hasp for the attachment of an optional padlock. The cabinet door handle shall rotate counter-clockwise to open. The handle shall not extend beyond the perimeter of the main door at any time. The lock assembly shall be positioned so that the handle shall not cause any interference with the key when opening the cabinet door.

r. The main door hinges shall be three hinge design. The hinges shall be attached in such a manner that no rivets or bolts are exposed.

s. The main door shall include a mechanism capable of holding the door open at approximately 90, 125, and 150 degrees under windy conditions. Manual placement of the mechanism shall not be required by field personnel.

t. Equip the main door with a Corbin tumbler lock number 1548-1 or exact equivalent. Minimum of two keys shall be supplied.

u. The police door-in-door shall be provided with a treasury type lock Corbin No. R357SGS or exact equivalent and a minimum of one key.
v. All base mounted cabinets require anchor bolts to properly secure the cabinet to its base. The cabinet flange for securing the anchor bolts shall not protrude outward from the bottom of the cabinet. Four (4) ¾ inch galvanized anchor bolts shall be supplied to provide proper installation. A set of ½ inch thick rubber mounting gaskets shall be supplied to provide proper seal between the cabinet flange and the concrete foundation.

w. Each cabinet shall be of sufficient size to accommodate all equipment. Minimum cabinet sizes shall be as follows:

1) 65" H x 44" W x 24" D (for all local controller cabinets).
2) 77"H x 44" W x 24" D (for controller cabinet with master controller unit).

X. Provide one computer/utility drawer 1.75"X24"X10" with each cabinet.

3. **Terminals and Facilities/Main Panel Design and Construction:**

a. Construct the main panel from 5052-H32 brushed aluminum of 0.125 inches minimum thickness and installed so as to minimize flexing when plug-in components are installed.

b. Provide all 16-position main panels with a mounting mechanism that allows easy access to all wiring on the rear of the panel without the removal of any cabinet shelves. Lowering or complete removal of the main panel can be accomplished without the use of hand tools.

c. The terminals and facilities shall be available as a minimum in the following configuration:

Configuration #4 - Sixteen load switch sockets, six flash transfer relay sockets, one flasher socket, two main panel BIU racks with two BIUs, one 16 channel detector rack with one BIU, and one Type-16 MMU.

d. Silk-screen label all load switch and flash transfer relay socket reference designators on the front and rear of the main panel to match drawing designations. Mark socket pins for reference on the rear of the panel.

e. A maximum of eight load switch sockets may be positioned horizontally or stacked in two rows on the main panel. Mount main panels requiring more than eight load switch sockets in two horizontal rows.

f. Support all load switches by a bracket, extending at least half the length of the load switch.
g. Provide rack style mounting to accommodate the required BIUs per the configuration listed above. Provide a dual-row, 64-pin female DIN 41612 Type B connector for each BIU rack position. Provide card guides for both edges of the BIU. Terminal and facilities BIU mounting shall be an integral part of the main panel. Detector rack BIU mounting shall be an integral part of the detector rack.

h. All BIU rack connectors shall have pre-wired address pins corresponding to the requirements of the TS2 specification. The address pins shall control the BIU mode of operation. BIUs shall be capable of being interchanged with no additional programming.

i. The 16-load switch position main panel shall have all field wires contained on two rows of horizontally mounted terminal blocks. The upper row shall be wired for the pedestrian and overlap field terminations. The lower row shall be reserved for phase one through phase eight vehicle field terminations.

j. Terminate all field output circuits on a non-fused barrier type terminal block with a minimum rating of 10 amps. Each terminal block position shall have two No. 10/32 screw connectors and a removable shorting bar. Each field side terminal shall be equipped with a Burndy screwlug No. KPA4C. No substitutes.

k. Identify all field input/output (I/O) terminals by permanent alphanumerical labels. All labels shall use standard nomenclature per the NEMA TS2 specification.

l. It shall be possible to flash either the yellow or red indication on any vehicle movement and to change from one color indication to the other by use of a screwdriver.

m. Wire field terminal blocks to use four positions per vehicle or overlap phase (green, yellow, red, flash). It shall not be necessary to de-buss field terminal blocks for flash programming.

Provide field terminal blocks and the screwlugs used to connect the field wiring a clear plastic protective cover mounted on plastic standoffs to allow quick removal and access while providing electrical shock protection while working in the cabinet.

n. The main panel shall contain at least one flasher socket (silk screen labeled) capable of operating a 15-amp, 2-pole, NEMA solid-state flasher. The flasher shall be supported by a bracket, extending at least half its length.

o. One RC network shall be wired in parallel with each group of three flash-transfer relays and any other relay coils.
p. Permanently label all logic-level, NEMA-controller and Malfunction Management Unit input and output terminations on the main panel. Cabinet prints shall identify the function of each terminal position.

q. At a minimum, provide three 20-position terminal blocks at the top of the main panel to provide access to the controller unit's programmable and non-programmable I/O. Terminal blocks for DC signal interfacing shall have a number 6-32 x 7/32 inch screw as minimum.

r. All main panel wiring shall conform to the following wire size and color:

1) Green/Walk load switch output - Brown wire
   - 14 gauge

2) Yellow load switch output - Yellow wire
   - 14 gauge

3) Red/Don’t Walk load switch output - Red wire
   - 14 gauge

4) MMU (other than AC power) - Violet wire
   - 22 gauge

5) Controller I/O - Blue wire
   - 22 gauge

6) AC Line (power panel to main panel) - Black wire
   - 8/10 gauge

7) AC Line (main panel) - Black wire
   - 10 gauge

8) AC Neutral (power panel to main panel) - White wire
   - 8/10 gauge

9) AC Neutral (main panel) - White wire
   - 10 gauge

10) Earth Ground (power panel) - Green wire

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** Arrowhead/Kenwood Signal and Roadway Improvements Project  
S.A.P. 118-151-012, S.A.P. 118-160-023  
St. Louis County Project No. 0034-278317  
City of Duluth Project No. 1468  
June 9, 2016

<table>
<thead>
<tr>
<th>Number</th>
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<tr>
<td>11)</td>
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<td>12)</td>
<td>Flash Programming Flasher Terminal</td>
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<td>- Orange wire</td>
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<tr>
<td></td>
<td>Or yellow field</td>
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<tr>
<td></td>
<td>Terminal</td>
<td></td>
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<tr>
<td></td>
<td>- 14 gauge</td>
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</table>

- **s.** All wiring, 14 AWG and smaller, shall conform to MIL-W-16878/1, type B/N, 600V, 19-strand tinned copper. The wire shall have a minimum of 0.010 inches thick PVC insulation with clear nylon jacket and rated to 105 degrees Celsius. All 12 AWG and larger wire shall have UL listed THHN/THWN 90 degrees Celsius, 600V, 0.020 inches thick PVC insulation and clear nylon jacketed.

- **t.** Sleeve connecting cables in a braided nylon mesh or poly-jacketed. The use of exposed tie-wraps or interwoven cables are unacceptable.

- **u.** Provide all terminals and facilities configurations with sufficient RS-485 Port 1 communication cables to allow for the intended operation of that cabinet. Each communication cable connector shall be a 15-pin metal shell D subminiature type. The cable shall be a shielded cable suitable for RS-485 communications.

- **v.** Pre-wire all main panels for a Type-16 Malfunction Management Unit.

- **w.** All wiring shall be neat in appearance. All cabinet wiring shall be continuous from its point of origin to its termination point. Butt type connections/splices are not acceptable.

- **x.** Secure all connecting cables and wire runs shall by mechanical clamps. Stick-on type clamps are not acceptable.

- **y.** The grounding system in the cabinet shall be divided into three separate circuits (AC Neutral, Earth Ground, and Logic Ground). These ground circuits shall be separated, earth ground from the other two.

- **z.** The main panel shall incorporate a relay to remove +24 VDC from the common side of the load switches when the intersection is placed into mechanical flash. The relay shall have a

*41-SS*
momentary pushbutton to apply power to the load switch inputs for ease of troubleshooting.

aa. All pedestrian push button inputs from the field to the controller shall be opto-isolated through the BIU and operate at 12 VAC.

bb. All wire (size 16 AWG or smaller) at solder joints shall be hooked or looped around the eyelet or terminal block post prior to soldering to ensure circuit integrity. Lap joint soldering is not acceptable.

4. **Power Panel Design and Construction:**

a. The power panel shall consist of a separate module, securely fastened to the right side wall of the cabinet. The power panel shall be wired to provide the necessary filtered power to the load switches, flasher(s), and power bus assembly. It shall be manufactured from 0.090-inch, 5052-H32 aluminum with a removable plastic front cover. The panel shall be of such design so as to allow a technician to access the main and auxiliary breakers without removing the front cover.

For the System “B” controller cabinet, the Contractor shall not bond the ground lug to the neutral lug.

b. The power panel shall house the following components:

1) A minimum of a 40-amp main breaker for the 16-position cabinet. This breaker shall supply power to the controller, MMU, signals, cabinet power supply and auxiliary panels, and a 40-amp breaker to supply the flasher power. Breakers shall be at minimum, a thermal magnetic type, U.L. listed for HACR service, with a minimum of 10,000 amp interrupting capacity.

2) A minimum of a 15-amp auxiliary breaker. This breaker shall supply power to the fan, light and GFI utility outlet.

3) An EDCO model SHP-1250 or exact approved equivalent surge arrester.

4) A 50 amp, 125 VAC radio interference line filter.

5) A SPST-NO Crydom A4890 solid state relay.

6) A minimum of 2-30 position neutral bus bars capable of connecting three #12 wires per position. One on the left side and one on the right side of the cabinet.
7) A minimum of 2-12 position ground bus bars capable of connecting three #12 wires per position. One on the left side and one on the right side of the cabinet.

8) A NEMA type 5-15R GFI utility outlet.

9) A 4 position plug-in connector for wiring to the power bus assembly.

5. Power Bus Assembly:
   a. Manufacture the power bus assembly from 0.090 inch, 5052-H32 aluminum. It shall provide filtered power for the controller, malfunction management unit, cabinet power supply, and all auxiliary equipment. It shall include the SDLC Bus connecting cables wired into a surface mounted compression terminal block.

   b. The Power Bus Assembly shall house the following components:
      1) Six (6) power connectors.
      2) Two terminal strips to hardwire the power connections.
      3) SDLC terminal block with pre-wired cables.

   c. Cabinet equipment requiring filtered power to operate, shall be connected to the power bus assembly by a Burndy connector # SMS12PDH1 or exact equivalent, or hardwired directly to the supplied terminal blocks.

6. Auxiliary Cabinet Equipment:
   a. Provide each cabinet with a thermostatically controlled (adjustable between 80-150 degrees Fahrenheit) ventilation fan in the top of the cabinet plenum. The fanplate shall be removable with the use of simple hand tools for serviceability. A minimum of one exhaust fan shall be provided. The fan shall be a ball bearing type fan and shall be capable of drawing a minimum of 100 cubic feet of air per minute. The Fan/Thermostat assembly shall be connected to the Power panel by means of a 4 position plug-in cable.

   b. At minimum, two LED 7100 K LUM-GEWHSSPS3 shall be mounted in the cabinet to sufficiently illuminate the field terminals and appropriate power supply to support up to four panels LUM-GEPS12-20. The power supply shall be wired to a 15-amp ON/OFF toggle switch mounted on the power panel.

   c. A resalable print pouch shall be mounted to the door of the cabinet. The pouch shall be of sufficient size to accommodate one complete set of cabinet prints.
d. Supply a minimum of two sets of complete and accurate cabinet drawings with each cabinet.

e. Supply a minimum of one set of manuals for the controller, Malfunction Management Unit and Vehicle Detection cabinet equipment with each cabinet.

f. Set up each cabinet for video detection with quad outlets.

g. Install master modem outlets.

7. **Vehicle Detection:**

a. A minimum of one vehicle detector amplifier rack shall be provided in each cabinet.

b. Each detector rack shall support up to 16 channels of loop detection (either eight 2 channel detectors or four 4 channel detectors), two 2-channel preemption devices and one BIU.

c. Each cabinet shall contain detector interface panels for the purpose of connecting field loops and vehicle detector amplifiers. The panels shall be manufactured from FR4 G10 fiberglass, 0.062 inches thick, with a minimum of 2 oz. of copper for all traces.

d. A 16-position interface panel shall be provided for a 16-channel rack cabinet. The interface panel shall be secured to a mounting plate and attached to the left side of the cabinet.

e. Each interface panel shall allow for the connection of sixteen independent field loops. A ground bus terminal shall be provided between each loop pair terminal to provide a termination for the loop lead-in cable ground wire.

f. Each interface panel shall provide a 10-position terminal block to terminate the field wires for up to two 2-channel preemption devices.

g. Lightning protection device mounting holes shall be provided to accommodate an Edco SRA-16C, or Edco SRA-6, or Edco LCA-6, or a varistor lightning protection device. Lightning protection devices shall be provided for each field loop.

h. A cable consisting of 20 AWG twisted pair wires shall be provided to enable connection to and from the panel to a detector rack. The twisted pair wires shall be color coded red and white wire.

i. All termination points shall be identified by a unique number and silk screened on the panel.
j. Each detector rack shall accommodate rack mountable Opticom preemption devices.

k. Power each detector rack by the cabinet power supply and connect to the power bus assembly by means of Burndy connector # SMS12PDH1.

l. If loop detection is utilized at an intersection, each detector card rack shall be supplied with the required number of 2 channel detector cards, Reno Vehicle Detector Model C-1200-SS or approved equal, to accommodate the loop detectors of the intersection plus two (2) spare 2 channel detector cards.

m. The card rack shall have provisions to attach a marking strip or other identification labels to identify detector modules and/or specific intersection loops.

n. If video detection is used, the appropriate Engineer approved “Autoscope Encore” electrical equipment and hardware shall be furnished and installed in each controller cabinet so that each Autoscope camera can be made operational to the satisfaction of the Engineer.

8. **Cabinet Test Switches and Police Panel:**

a. Mount a test switch panel on the inside of the main door. The test switch panel shall provide as a minimum the following:

1) **AUTO/FLASH SWITCH.** When in the flash position, power shall be maintained to the controller and the intersection shall be placed in flash. The controller shall not be stop timed when in flash. If required by the plans and specifications, an optional RC network shall be provided to give the controller an external start pulse when switch is returned to the auto position. This will force the controller to initiate the start-up sequence when exiting flash.

2) **STOP TIME SWITCH.** When applied, the controller shall be stop timed in the current interval.

3) **CONTROL EQUIPMENT POWER ON/OFF.** This switch shall control the controller, MMU, and cabinet power supply AC power.

4) **COORD/FREE SWITCH.** When applied, the controller shall operate in the free mode.

b. Momentary test push buttons for all vehicle and pedestrian inputs to the controller are not required. The NEMA controllers to be provided with the cabinet assemblies.
shall provide vehicular and pedestrian call inputs from its keyboard while in the standard status display.

c. The police door switch panel shall contain the following:

1) SIGNALS ON/OFF SWITCH. In the OFF position, power shall be removed from signal heads in the intersection. The controller shall continue to operate. When in the OFF position, the MMU shall not conflict or require reset.

2) AUTO/FLASH SWITCH. In the flash position, power shall not be removed from the controller and stop time shall be applied. If required by the plans and specifications, an optional RC network shall be provided to give the controller an external start pulse when switch is returned to the auto position. This will force the controller to initiate the start-up sequence when exiting flash.

3) INTENTIONALLY LEFT BLANK

d. All toggle type switches shall be heavy duty and rated 15 amps minimum. Single- or double- pole switches may be provided, as required.

e. Any exposed terminals or switch solder points shall be covered with a non-flexible shield to prevent accidental contact.

f. All switch functions must be permanently and clearly labeled.

g. All wire routed to the police door-in-door and test switch push button panel shall be adequately protected against damage from repetitive opening and closing of the main door.

h. All test switch panel wiring shall be connected to the main panel via a 36-pin Burndy connector #SMS36R1, or exact equivalent.

i. All wiring from the main panel to the test switch panel shall be connected to the switch panel via a 24-pin Burndy connector #SMS24R1 or exact equivalent.

9. Controller Telemetry Interface Panel for Hardwire interconnect if specified in plans:

a. A telemetry interface harness and interface panel shall be supplied with each cabinet assembly.

b. The harnesses shall be a minimum of 6 feet long and shall consist of two twisted shielded pairs, 22 AWG wire with drain wire in an overall jacket, terminated to a 9-pin "D" type connector at one end. The pin out of the 9-pin connector shall be in exact accordance
with the NEMA TS2 Standard. The opposite end of the harness shall be terminated on a 10-position EDCO PCB-1B or exact equal lightning protection socket base.

c. All terminal block designations and peripheral board-mounted components shall be labeled as to their number and function and shall correspond to the cabinet wiring diagrams.

d. The following signals shall be accessible from the telemetry interface panel:

1) Local controller command lines 1 & 2.
2) Local controller read back lines 1 & 2.
3) Master controller command lines 1 & 2.
4) Master controller read back lines 1 & 2.
5) Earth grounds.

e. A socket mounted communication line transient protection device shall be supplied with the telemetry interface panel. The device shall be an EDCO model PC642C-008D or exact approved equivalent. The transient protection device shall be wired in series with the telemetry communication circuit.

f. Communication line impedance shall be matched to the transmitter output impedance to minimize noise on the communication lines. The panel shall allow connection of a 620 ohm resistor across the command and read back lines, where necessary.

10. **Auxiliary Devices:**

a. **Load Switches:**

1) Load switches shall be solid state and shall conform to the requirements of Section 6.2 of the NEMA TS2 Standard.
2) Signal load switches shall have a minimum rating of 10 amperes at 120 VAC for an incandescent lamp load.
3) The front of the load switch shall be provided with at least three indicators to show, at minimum, the input signal from the controller to the load switch.
4) Load switches shall be dedicated per phase. The use of load switches for other partial phases is not acceptable.
5) The full complement of load switches shall be supplied with each cabinet to allow for maximum phase utilization for which the cabinet is designed.

b. Flashers:

1) The flasher shall be solid state and shall conform to the requirements of section 6.3 of the NEMA TS2 Standard.

2) Flashing of field circuits for the purpose of intersection flash shall be accomplished by a separate flasher.

3) The flasher shall be rated at 15 amperes, double pole with a nominal flash rate of 60 FPM.

c. Flash Transfer Relays:

1) All flash transfer relays shall meet the requirements of Section 6.4 of the NEMA TS2 Standard.

2) The coil of the flash transfer relay must be de-energized for flash operation.

3) The full complement of relays shall be supplied with each cabinet to allow for maximum phase utilization for which the cabinet is designed.

d. Malfunction Management Units:

1) Each cabinet assembly shall be supplied with one Malfunction Management Unit (MMU) as defined by the requirements of Section 4 of the NEMA TS2 Standard.

2) Units shall be an EDI Model MMU-16LEip or Reno MMU-1600GE

e. Bus Interface Units:

1) All Bus Interface Units (BIUs) shall meet the requirements of Section 8 of the NEMA TS2 Standard.

2) The full complement of Econolite Control Products Inc. Model 160-1003-502 or Eberle Design Inc. Model BIU-700 Bus Interface Units shall be supplied with each cabinet to allow for maximum phase and function utilization for which the cabinet is designed.

3) Each Bus Interface Unit shall include power on, transmit and valid data indicators. All indicators shall be LEDs.
f. **Cabinet Power Supply:**
   1) Each cabinet power supply shall meet the requirements of Section 5.3.5 of the NEMA TS2 Standard.
   2) The cabinet power supply shall provide LED indicators for the line frequency, 12 VDC, 12 VAC, and 24 VDC outputs.
   3) The cabinet power supply shall provide (on the front panel) jack plugs for access to the +24 VDC for test purposes.
   4) One Econolite Control Products Inc. Model 1084-003, Eberle Design Inc. Model PS-200 or equivalent cabinet power supply shall be supplied with each cabinet assembly, and shall be wired directly to the Power Bus Assembly via a Burndy 12-pos #SMS12PDH1 connector or exact equivalent.

g. **Controller Unit:**
   1) Each controller unit shall be a NEW Econolite ASC/3-2100 controller with data key and Ethernet connection (and FSK module for hardwire interconnection if specific in plans)

h. **Ethernet Switch**
   1) For hardwire interconnect specified in plans provide each cabinet assembly with one 6-Port Managed Ethernet Switch with Dual Port Ethernet over VDSL Uplinks, 128-bit Encryption. Units shall be a Ruggedcom model RS930L or Engineer approved equal.
   2) For Fiber Optic interconnect specified in plans provide a Ruggedcom Ethernet Switch model RS900G-HI-P-2SFP.

11. **Testing and Warranty:**
   a. **Testing:**
      1) Test each controller and cabinet assembly as a complete entity under signal load for a minimum of 48 hours.
      2) Deliver each assembly with a signed document detailing the cabinet final tests performed.
3) Assemble and test each cabinet shall by the controller manufacturer or authorized local distributor to ensure proper component integration and operation.

b. Warranty:

1) Warrant each controller and Malfunction Management Unit by the manufacturer against mechanical and electrical defects for a period of not less than 2 years from date of shipment. The manufacturer's warranty shall be supplied in writing with each cabinet and controller. Second party extended warranties are not acceptable.

2) Warrant each cabinet assembly and all other component for a period of not less than one year from date of shipment.

3) Any defects shall be corrected by the manufacturer or supplier at no cost to the owner.

12. Anchor Rods and Gasketing: Provide and install for each signal system: four (4) sets of anchor rods, nuts, and washers to mount the traffic signal cabinet (one set = 1 anchor rod, nut, and washer); and one (1) 4-section rubber gasket (for installation by the Contractor between the bottom of the traffic signal cabinet and the concrete foundation).

13. Miscellaneous: The Contractor shall install and make operational (installing all pluggables, verifying that all signal equipment is wired and operational to the satisfaction of the Engineer, etc.) each traffic signal cabinet, complete with actuated controller unit and all required signal control equipment described above; shall furnish and install all additional materials required to provide a complete operating traffic signal cabinet installation (which includes, but are not limited to: cabinet concrete foundation as part of the equipment pad foundation, using the Contractor provided anchor rods, nuts, and washers; ground rod; bonding and grounding materials; etc.) at each intersection; and make all field lead connections in the traffic signal cabinet as directed by the Engineer to make each new traffic control signal system operational to the satisfaction of the Engineer.
**Division ST**

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<thead>
<tr>
<th>Section No.</th>
<th>Item No.</th>
<th>Description</th>
<th>Page No.</th>
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<td>ST-1</td>
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<td>Removing Miscellaneous Structures</td>
<td>1-ST</td>
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<tr>
<td>ST-2</td>
<td>(2564)</td>
<td>Traffic Signs and Devices</td>
<td>2-ST</td>
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<tr>
<td>ST-3</td>
<td>(3352)</td>
<td>Signs, Delineators and Markers</td>
<td>3-ST</td>
</tr>
</tbody>
</table>

I hereby certify that the Special Provisions for traffic sign construction (Division ST) contained in this proposal were prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

Scott C. Poska

Lic. No. 47068  
Date 06/09/2016
DIVISION ST

ST-1 *(2104)* REMOVING MISCELLANEOUS STRUCTURES

ST-1.1 DESCRIPTION
The Contractor shall remove and salvage miscellaneous structures according to MnDOT 2104, “Removing Pavement and Miscellaneous Structures” and these Special Provisions.

ST-1.2 MATERIALS
The Contractor shall use materials according to MnDOT 2104, “Removing Miscellaneous Structures” and the MnDOT 2104, “Removing Miscellaneous Structures: Construction Requirements” section of these Special Provisions.

ST-1.3 CONSTRUCTION REQUIREMENTS
A Salvage Sign Type C
Inform the Engineer of any damaged in-place Type C sign panels prior to salvaging.

Remove and dispose of the sign structure, nuts, bolts and washers.

If the Contractor damages a sign panel,

Dispose of the damaged sign panel.

Fabricate a new sign panel according to MnDOT 2564.2F, “Traffic Signs and Devices: Signs and Markers,” and these Special Provisions, at no cost to the City of Duluth or St. Louis County.

Prevent damage to the aluminum sign panels and the sign sheeting materials at all times, including during storage.

Methods to prevent damage during storage include but are not limited to:

Store sign panels so that they are NOT lying on the ground.

Store sign panels so that reflective surfaces do NOT come in contact with dirt, water, or grass.

Store sign panels so that they are NOT covered with plastic or a tarp.

Salvaged Type C sign panels will be reinstalled under Item No. 2564.537 - Install Sign Type C.

ST-1.4 METHOD OF MEASUREMENT & BASIS OF PAYMENT
The Engineer will measure each item according to the Contract and the MnDOT 2104, “Removing Miscellaneous Structures: Construction Requirements” section of these Special Provisions.

The City of Duluth will include all work described in the Contract and the MnDOT 2104, “Removing Miscellaneous Structures: Construction Requirements” section of these Special Provisions as part of the contract unit price per unit of measure.

The City of Duluth will pay for traffic signs and devices on the basis of the following schedule:

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Item:</th>
<th>Unit:</th>
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<tbody>
<tr>
<td>2104.509</td>
<td>Remove Sign Type C</td>
<td>Each</td>
</tr>
<tr>
<td>2104.523</td>
<td>Salvage Sign Type C</td>
<td>Each</td>
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</tbody>
</table>
The City of Duluth’s payment for each item shall be compensation in full for all work, material, and costs involved in performing the work specified on the Plans and these Special Provisions.

**ST-2**  **(2564) TRAFFIC SIGNS AND DEVICES**

**ST-2.1 DESCRIPTION**
The Contractor shall furnish and install traffic signs in accordance with MnDOT 2564, “Traffic Signs and Devices,” except as modified in these Special Provisions.

**ST-2.2 MATERIALS (BLANK)**

Fabricate all signs, markers, and delineators with material in accordance with MnDOT 3352, “Signs, Delineators, and Markers” except as modified in these Special Provisions.

Fabricate all rigid permanent signs, markers, and delineators with materials from the MnDOT Approved/Qualified Products List.

Provide sign face material meeting the performance requirements of MnDOT 3352.2.A.2.b, “Sign Sheeting Type IV” for rigid permanent signs, markers, and delineators described in Table 1 and on the Plans:

<table>
<thead>
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<th>Table 1: Sign Sheeting Type IV Requirements</th>
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<tr>
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</table>
ST-2.3 CONSTRUCTION REQUIREMENTS
The provisions of MnDOT 2564.3, “Construction Requirements, General” are modified and supplemented as follows:

The following replaces the fourth paragraph of MnDOT 2564.3A:
Sign locations and sign structure posts lengths indicated on the Plans are approximate. Locate and stake final sign and delineator locations and obtain approval of locations by the Engineer. Determine the final post lengths for Type C signs and delineators in accordance with offsets, mounting heights and clearances detailed on the Plans and field verification of the proposed or inplace slopes.

A Fabrication & Warning Stickers
Install City of Duluth or St. Louis County-provided warning stickers on new Type C sign panels according to MnDOT 2564.3H.2, “Traffic Signs and Devices: Construction Requirements: Sign Panels: Fabrication and Warning Stickers.” Give 30 days advance notice to the City of Duluth and St. Louis County prior to picking up the warning stickers:

B Install Sign Type C
Install signs with 3/8” stainless steel bolts and zinc-plated nylon insert lock nuts on the L-Bracket assembly when a knee brace is used.

ST-2.4 METHOD OF MEASUREMENT AND BASIS OF PAYMENT
The Engineer will measure each item according to the Contract and the MnDOT 2564, “Traffic Signs and Devices: Construction Requirements” section of these Special Provisions.

The City of Duluth will include all work described in the Contract and the 2564, “Traffic Signs and Devices: Construction Requirements” section of these Special Provisions as part of the contract unit price per unit of measure.

The City of Duluth will pay for traffic signs and devices on the basis of the following schedule:

<table>
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<tr>
<th>Item No.</th>
<th>Item:</th>
<th>Unit:</th>
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<tr>
<td>2564.531</td>
<td>Sign Panels Type C</td>
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<td>2564.537</td>
<td>Install Sign Type C</td>
<td>Each</td>
</tr>
<tr>
<td>2564.552</td>
<td>Object Marker Type X4-2</td>
<td>Each</td>
</tr>
<tr>
<td>2564.552</td>
<td>Object Marker Type X4-4</td>
<td>Each</td>
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</tbody>
</table>

The City of Duluth’s payment for each item shall be compensation in full for all work, material, and costs involved in performing the work specified on the Plans and these Special Provisions.

ST-3 (3352) SIGNS, DELINEATORS AND MARKERS

ST-3.1 SCOPE
The Contractor shall fabricate traffic signs, delineators, and markers consisting of sign panels in accordance with MnDOT 3352, “Signs, Delineators and Markers” and these Special Provisions.

ST-3.2 REQUIREMENTS
The Contractor shall use materials according to MnDOT 3352, “Signs, Delineators and Markers” and these Special Provisions.

ST-3.3 SAMPLING AND TESTING — (BLANK)
I hereby certify that the Special Provisions for the Fiber Optic Interconnect (Division SZ) were prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

________________________________________
Jacob H. W. Folkeringa

License No. 50911 Date: 06/08/2016
**DIVISION SZ**

**SZ-1**

**(1102) ABBREVIATIONS AND MEASUREMENT UNITS**

The provisions of MnDOT 1102 are hereby supplemented with the following:

**SZ-1.1** The following is added to MnDOT 1102.1:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>APL</td>
<td>Approved Product List</td>
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<tr>
<td>FO</td>
<td>Fiber Optic</td>
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<tr>
<td>FOTP</td>
<td>Fiber Optic Test Procedure</td>
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<td>LTU</td>
<td>Line Termination Unit</td>
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<td>MM</td>
<td>Multimode</td>
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<tr>
<td>OTDR</td>
<td>Optical Time Domain Reflectometer</td>
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<tr>
<td>OFSTP</td>
<td>Optical Fiber System Test Procedure</td>
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<td>Polyethylene</td>
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<td>SGU</td>
<td>Sheath Grounding Unit</td>
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<td>SM</td>
<td>Single Mode</td>
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<td>TIA</td>
<td>Telecommunications Industries Association</td>
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**SZ-1.2** **SYMBOLS**

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<th>Symbol</th>
<th>Description</th>
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<td>π</td>
<td>pi (3.1416)</td>
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<td>&gt;</td>
<td>greater than</td>
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**SZ-1.3** **CONVERSIONS**

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<tr>
<td>1 inch</td>
<td>25.4 millimeters (mm)</td>
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<tr>
<td>1 inch²</td>
<td>645 mm²</td>
</tr>
<tr>
<td>1 inch³</td>
<td>16,400 mm³</td>
</tr>
<tr>
<td>1 yd³</td>
<td>0.76 m³</td>
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<td>61 in³</td>
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<tr>
<td>1 gallon</td>
<td>3.785 liters</td>
</tr>
<tr>
<td>1 pound mass</td>
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**SZ-2**

**(1103) DEFINITIONS**

The provisions of MnDOT 1103 are hereby supplemented with the following:

**AS BUILT PLANS**

Copies of the original Plan and Plan Detail sheets with changes and additions to the Contract marked in the color red.

**SPECIFICATIONS**

Detailed descriptions of a device or devices including physical and operating characteristics.

**SUBMITTAL**

Documentation of proposed, materials, products, equipment or processes. Additionally, it shall include shop drawings, wiring diagrams, and test reports.
SCHEMATICS
Diagrams using standard symbols to show the function.

HAS MET
A manufacturer’s product that is in conformance with the specifications required in these Special Provisions. The Contractor may submit any other manufacturer’s product of equal quality for approval.

APL
Approved Product List which contains Manufacturer’s products that are in conformance with the specifications. The Contractor shall only use products contained within the Traffic Management Systems/ITS section of the APL unless otherwise directed within these Special Provisions. The Contractor may submit any other Manufacturer’s product of equal quality for approval. See the following website for the APL:

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

SZ-3  (2550) MATERIALS
The following provisions shall supplement MnDOT 2550.2A:

SZ-3.1 All materials, work methods, and equipment shall comply with the standards of the National Electrical Manufacturers Association, Electronic Industries Association, Underwriters Laboratory, Inc., National Electrical Code; Telecommunications Industries Association, local codes and ordinances, the requirements of the Contract, these Special Provisions, and the Plan.

SZ-3.2 The Contractor warranties all furnished and installed materials and workmanship as well as workmanship on materials that were paid for as an install item for a minimum of one year after completion and acceptance of the work. Specific items within these Special Provisions may require longer warranty periods. The warranty period begins when the Contractor completes all construction obligations, documented as the Final Completion Date on the Change in Construction Status report.

SZ-3.3 Use stainless steel hardware (e.g. mounting bolts, nuts, washers, and external hinges, etc.) on all outdoor components.

SZ-3.4 The Contractor is responsible for rounding and smoothing sharp corners and edges of all furnished and installed components.

SZ-4  CITY FURNISHED MATERIALS
The following provisions shall apply to City Furnished Materials:

SZ-4.1 City provided materials are procured and stored by the City of Duluth, unless otherwise stated, and are provided to the Contractor with proper notice. The Contractor is responsible for any damage to the equipment once the City has provided the materials to the Contractor.

SZ-4.2 LOCATOR BALLS
The City provides the 3M 1401 four-inch Locator Balls. The Contractor shall be responsible for the following:
(A) Contacting the Integrator and arrange to have the Locator Balls delivered. Seven working days notice is necessary prior to ball marker delivery.

(B) Providing the Integrator with an exact count of Locator Balls needed for the Project.

(C) Mounting the hardware.

SZ-5 INTEGRATION
The Engineer will assign an Integrator to the project. The Integrator shall serve as a technical resource to the Engineer. Contact information will be provided at the pre-construction meeting. If the Integrator is not reachable, contact the City at (218) 730-4420.

SZ-5.1 INTEGRATOR RESPONSIBILITIES
The Integrator will be responsible for performing the following tasks:

(A) Recommend approval/disapproval of components and/or construction methods to the Engineer.

(B) Help to resolve Plan and Special Provision discrepancies.

(C) Provide technical guidance to Contractors as directed by the Engineer.

(D) Stake the locations of pull vaults

(E) Respond to requests for City Furnished Materials.

(F) Assist with construction inspection.

SZ-5.2 PROJECT SUBMITTALS AND FO TEST DOCUMENTATION
Project Submittals and FO Test Documentation shall be reviewed by the Integrator. The Integrator will evaluate and make recommendations to the Engineer regarding acceptance of the required documentation.

SZ-6 GROUNDING
The following provisions shall apply to Grounding:

SZ-6.1 SINGLE POINT GROUNDING
All grounded devices shall connect to one single piece ground rod, via the shortest and straightest route. Connect the devices’ chassis and electrical grounds at a ground buss before connecting them to the earth ground rod.

SZ-6.2 GROUND RODS AND GROUND ROD CONNECTIONS
The following provisions shall apply to ground rods and ground rod connections:

(A) The ground rod shall be 4.6 m (15 feet) long, one piece, and comply with MnDOT 2545.3R.

(B) The ground rod shall be in the center of cabinet foundations unless otherwise specified in the Plan details.
(C) An oxide inhibitor shall be applied over bonded connections to ground rods. The oxide inhibitor must be U.L. listed and applied to the bonded area between the temperatures of -22 C (-30 °F) and 149 C (300 °F).

(D) The Contractor shall clean each grounding component with 300-grit emery cloth before bonding and apply a mineral oil based oxide inhibitor to the bond area.

(E) Bonding the ground conductor to the ground rod shall be accomplished by one of the following bonding methods:

a. Mechanical. The Mechanical Grounding connector shall have the following characteristics:
   i. Shall be sized 0.625 inch diameter for ground rods.
   ii. Shall include two stainless steel cap screws to secure the cable to the ground electrode for a positive electrical connection.

b. Exothermic Welding.

(F) APL Approved mechanical grounding connectors for ground rods are listed on the following website:

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

SZ-6.3 OUTDOOR FIBER SPLICE ENCLOSURE
The following provisions shall apply to the grounding of Outdoor Fiber Splice Enclosure:

(A) All FO cable shields shall be bonded to the internal ground lug within the Outdoor Fiber Splice Enclosure. Bond one SGU conductor to the ground lug of the splice enclosure and the other conductor to the outside ground rod.

(B) A ground strap shall connect the two grounding post to electrically tie them together.

SZ-6.4 FO CABLE
The following provisions shall apply to the grounding of Fiber Optic Cable:

(A) The Contractor furnishes and installs the appropriate SGU for all fiber optic cable ground locations including but not limited to signal cabinets, lighting cabinets, and vaults.

(B) A SGU shall be required in the following locations:
   a. Cabinets require a LTU to ground the outer shield and armor of the fiber optic cables to the equipment ground buss.
   b. Vaults require one SGU between the splice enclosure and the ground rod.

(C) An oxide inhibitor shall be applied over bonded connections. The oxide inhibitor must be U.L. listed and applied to the bonded area between the temperatures of -22 C (-30 °F) and 149 C (300 °F).

(D) The Contractor shall clean each grounding component with 300-grit emery cloth before bonding and apply a mineral oil based oxide inhibitor to the bond area.
(E) In vaults mount the SGU to the inner wall of the vault along the upper half. The SGU shall have the following features:

a. Low impedance ground path for high voltage transients while allowing location and monitoring signals to pass.
b. Automatic reset.
c. Failsafe circuitry design.
d. Hybrid surge suppression circuitry designed for below grade use.
e. No. 6 AWG solid copper lead wires.

(F) Grounding of fiber optic cables must be within the first five feet after the conduit entrance.

(G) **APL**

Approved Sheath Grounding Units are listed on the following website:

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

a. Line Termination Unit (LTU) shall be used in the following locations:
   i. Armored FO Pigtail Cable ends contained within a Control Cabinet.
   ii. Trunk FO Cable ends when the Trunk FO cable end is located in a vault and is the end of the Trunk FO cable run:

b. Sheath Grounding Unit (SGU) shall be used in the following locations:
   i. Armored FO Pigtail Cable ends contained within a vault
   ii. Trunk FO Cable ends except when the Trunk FO cable end is located in a vault and is the end of the Trunk FO cable run:

**SZ-6.5 MEASUREMENT AND PAYMENT**

GROUNDING includes but shall not be limited to Single Point Grounding, Ground Rods and Ground Rod Connections, Outdoor Fiber Splice Enclosure, FO Cable, and all materials and labor necessary to complete Grounding. GROUNDING shall be considered incidental for which no direct compensation will be made.

**SZ-7 LABELING**

The following provisions shall apply to Labeling:

**SZ-7.1** Secure identifying labels to each fiber, cable, component, cabinet in the manner described in the Plan and these Special Provisions.

**SZ-7.2** Contractor shall not use wire ties for labeling cables.

**SZ-7.3 FIBER OPTIC CABLES**

The following provisions shall apply to labeling Fiber Optic Cables:

(A) See “Fiber Optic Cable Labeling” in the Plans for additional information.

(B) Colored electrical tape shall be applied to both ends of trunk FO and pigtail cables to indicate either a pigtail or the direction the majority of the FO Cable travels from a structure. The direction of the cable will not always coincide with the initial direction the cable leaves a structure. The color of the tape shall represent the following:
a. Northbound-NB (blue)
b. Southbound-SB (green)
c. Eastbound-EB (yellow)
d. Westbound-WB (orange)
e. Pigtails (white)

(C) Descriptive identifiers shall be written on the colored tape with a laundry marking pen. Descriptive identifiers shall include a combination of the following:

a. Identify the nearest meter mark.
b. Identify the FO Cable number.
c. Identify the item that the fiber is traveling to by name.
d. Identify the fiber count and mode.
e. Identify the direction the majority of the FO Cable travels from a structure. The direction of the cable will not always coincide with the initial direction the cable leaves a structure.

(D) Labeling shall include the following identifiers and be applied to the outer jacket of the FO Cable at the following structures and locations:

a. Cabinets
   i. The pre-terminated/armored FO pigtail, within 18 inches from the connection to the patch block (white tape) with the following identifiers: name, fiber count and mode, and nearest meter mark.

b. Vaults
   i. The trunk FO Cable, within 18 inches from the end of the conduits with the following identifiers: FO Cable number, direction, fiber count and mode, and nearest meter mark.
   ii. The pre-terminated/armored FO pigtail, within 18 inches from the end of the conduit (white tape) with the following identifiers: name, fiber count and mode, and nearest meter mark.

c. Outdoor FO Splice Enclosure
   i. The trunk FO Cable, within 18 inches from the end with the following identifiers: FO Cable number, direction, fiber count and mode, and nearest meter mark.
   ii. The pre-terminated/armored FO pigtail, within 18 inches from the end (white tape) with the following identifiers: name, fiber count and mode, and nearest meter mark.
   iii. Splice trays with the FO Cable ID number and each fiber number on the Manufacturer provided cover label.

SZ-7.4 MEASUREMENT AND PAYMENT
LABELING includes but shall not be limited to FO Cables and all materials and labor necessary to complete Labeling. LABELING shall be considered incidental for which no direct compensation will be made.
**JOB SPECIFIC SPECIFICATION CONSIDERATIONS**

**SZ-8.1** Empty conduit for future fiber optic cable shall include a tracer wire. Furnishing and installing the tracer wire shall be considered incidental for which no direct compensation will be made.

**SZ-8.2** The City will furnish and install the fiber optic patch panels, Ethernet switches, Ethernet cables, and cellular modem upon the acceptance of the fiber optic interconnect.

**PROJECT TESTING AND DOCUMENTATION SUBMITTALS**

This work shall consist of Project Documentation Submittals for Components, FO Cable Testing, and As-builds which shall be in accordance with the MnDOT Standard Specifications, MnDOT Standard Plans/Plates, the Plans, and the following:

**SZ-9.1** Project Testing and Documentation Submittals shall be presented directly to the Engineer. Project Testing and Documentation Submittals shall be presented as three complete packages unless prior authorization is made with the Engineer. The complete packages shall be defined as one submittal for Components, one submittal for FO Cable Testing, and one submittal for As-builds. Each submittal shall include all required documentation. No payment shall be made until a submittal package is received and approved by the Engineer.

**SZ-9.2** Project Testing and Documentation Submittals are required for the following items:

- **(A)** Components
- **(B)** FO Cable Testing.
- **(C)** As-builds

**SZ-9.3** **COMPONENTS**

The following provisions shall apply to project component testing and documentation submittals for Components:

- **(A)** Component Documentation Submittals shall be submitted to the Engineer within two weeks subsequent to contract approval. The Contractor shall be subject to a daily charge assessed at a rate of $200.00 per day for each day or portion thereof with which the Engineer determines that the Contractor has not complied. The Engineer reserves the right to allow the Contractor greater than two weeks after contract approval to make submittals.

- **(B)** The Contractor shall submit two sets of component specifications and/or shop drawings for each project component, assembled or whole, to the Engineer. The Contractor shall forward any recommended revisions to the Manufacturer.

- **(C)** Two separate copies of project Component documentation shall be submitted as a complete and organized package unless otherwise directed by the Engineer.

- **(D)** The Engineer will approve or reject submittals within two weeks of receipt. The Component Documentation Submittal package shall be approved by the Engineer prior to installation or payment for the component.
Component Documentation Submittals shall include the manufacturer’s name, manufacturer’s specification, and/or detailed drawings for all items listed on the COMPONENT CHECK-OFF LIST on page 10-SZ.

It is not necessary to submit manufacturer’s information for components already identified as meeting the specification as a “Has Met” or is listed on the Traffic Management System/ITS APL. This includes components listed on the TMS/ITS APL when the Contract is advertised and at the time the Component Documentation Submittal is submitted.

The Contractor shall complete the check-off list for “Has Met” items and include this list as part of the Documentation Component Submittal package. See COMPONENT CHECK-OFF LIST on page 10-SZ.

SZ-9.4 FO CABLE TESTING

The following provisions shall apply to project component testing and documentation submittals for FO Cable Testing:

(A) FO Cable Testing Documentation Submittals shall be submitted to the Engineer within 30 working days subsequent to the last test. The Contractor shall be subject to a daily charge assessed at a rate of $200.00 per day for each day or portion thereof with which the Engineer determines that the Contractor has not complied. The Engineer reserves the right to allow the Contractor greater than 30 working days after contract approval to make submittals.

(B) Documentation of test equipment calibration and certification (See (2550) FIBER OPTIC CABLE TESTING on page 16-SZ) shall be submitted as part of the FO Cable Testing Documentation Submittals along with the test results. The calibration certificate shall be dated no more than one year prior to the last date of FO Cable Testing. FO Cable Testing shall be rejected if calibration certificates are out of date.

(C) The Contractor shall use the “Fiber Optic Schematics” sheets in the Plan as a template for recording power meter and OTDR test data as well as the physical characteristics of the FO cable and FO cable run.

(D) FO Cable test parameters are identified in a later section of this document. See (2550) FIBER OPTIC CABLE TESTING on page 16-SZ.

(E) The Contractor shall utilize a manufacturer-recommended “OTDR Trace Analysis” and a “Power Meter Report” software program or a single software program that is a combination of “OTDR Trace Analysis” and “Power Meter Report”. The software shall conform to SZ-16.8 (A) (see page 17-SZ). The Contractor shall identify the software to the Engineer as part of the FO Cable Testing Project Documentation Submittal. If the Engineer does not already own a copy of the software, the Contractor shall provide the Engineer with an “OTDR Trace Analysis” and a “Power Meter Report” viewer application.

(F) The Contractor shall notify the Engineer prior to beginning the FO system testing. The Contractor shall provide all test documentation electronically on a CD. The Contractor shall use the MnDOT file naming convention for OTDR electronic test files (see page 18-SZ). The Engineer may observe each test.
OTDR electronic files shall be stored under a directory folder named by the launch point cable identification (ID) description found on the test schematics. These files must include the following items:

a. Date of each test completed.
b. The “index of refraction” for the FO Cable as recorded on the cable spool by the manufacturer or for existing FO Cable, the index of refraction that was utilized.
c. File names and notes as described by the MnDOT file naming convention. See FO CABLE TEST DOCUMENTATION on page 18-SZ for file naming convention example.

The Contractor shall provide a test summary describing the following items:

a. Final measurements that are out of range.
b. Engineer and Integrator approved changes in specified methods.
c. OTDR manufacturer, equipment model number, and last date calibrated.
d. Dates of tests performed by both power meter and OTDR.
e. The method used to set a launch power reference regarding the additional launching cables used for power meter testing.
f. Special circumstances.

The Contractor shall provide the Engineer with the manufacturer’s reel (spool) test documentation. This is required for all Contractor furnished FO Cable.

As-Builts

The Contractor shall submit As-built drawings with deviations from the Plan shown in red on the Plan. These sheets do not satisfy the Contractor’s responsibilities with regard to Gopher State One Call.

As-Built Documentation Submittals shall be submitted to the Engineer subsequent to construction completion. As-Built Documentation Submittals shall reflect the final location of all items constructed for the project, not just the FO Cable. It shall also include any roadway or other construction modifications included in the project.

MEASUREMENT AND PAYMENT

PROJECT TESTING AND DOCUMENTATION SUBMITTALS includes but shall not be limited to Project Testing and Documentation Submittals, Components, FO Cable Testing, As-Builts, and all materials and labor necessary to prepare and submit the Project Testing and Documentation Submittals. PROJECT TESTING AND DOCUMENTATION SUBMITTALS shall be considered incidental for which no direct compensation will be made.
SZ-9.7 COMPONENT CHECK-OFF LIST
The Contractor shall complete the following Component check-off list for “Has Met” and “APL” items and include this list as part of the submittal package. For “Has Met” components the Contractor may choose to submit components of equal quality to the Engineer for Integrator approval. For “APL” components the Contractor may choose to submit components through the process for listing products on the APL. The Contractor shall provide submittals for items that do not have a Has Met or are not on the APL.

<table>
<thead>
<tr>
<th>Product Manufacturer</th>
<th>Material Description</th>
<th>Special Provisions Section</th>
<th>“Has Met” or “APL” Part Number (no Submittal required if “Has Met” or “APL” listed here)</th>
<th>Submittal Provided (✓)</th>
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SZ-10 INDUSTRY ACCEPTED LUBRICANTS FOR ALL CABLES
The following provisions shall apply to Industry Accepted Lubricants for all Cables:

- INDUSTRY ACCEPTED LUBRICANTS FOR ALL CABLES

The following provisions shall apply to Industry Accepted Lubricants for all Cables:
The “Industry Accepted Lubricants” referenced in 2550.3, used during cable pulling operations shall be UL Listed and be compatible with cable insulation materials. They shall not deteriorate the cable insulation or performance.

Lubricants shall not contain wax or grease.

The appropriate lubricant shall be applied as specified by the manufacturer for its intended use.

MEASUREMENT AND PAYMENT

Industry Accepted Lubricants for All Cables includes but shall not be limited to lubricating, and all materials, equipment, and labor necessary to Inspect and Clean Existing Conduit Systems. INDUSTRY ACCEPTED LUBRICANTS FOR ALL CABLES shall be considered incidental for which no direct compensation will be made.

INSPECTION AND CLEANING EXISTING CONDUIT SYSTEMS

The following provisions shall apply to Existing Conduit Systems:

Existing conduit systems may consist of stick PVC, stick PE, continuous PE, IMC or RSC.

When installing copper cable or FO cable in existing conduits through existing handholes, the Contractor shall visually check the cable route to ensure that there is a smooth transition between exit and entrance elevations and that the horizontal and vertical angle is not so sharp as to cause damage to the cable as it is being pulled through the existing conduit. Should the Contractor encounter sharp bends in existing conduit, the Contractor shall bring the situation to the Engineer’s attention. Reinstalling existing conduit through a handhole to provide smooth transitions is a potential solution.

Clean the existing conduit of any debris that could impede pulling FO or copper cable through it or that could damage the cable if the debris remained, as directed by the Engineer.

MEASUREMENT AND PAYMENT

Inspection And Cleaning Existing Conduit Systems includes but shall not be limited to inspecting the cable route, notifying the Engineer of sharp bends, cleaning, and all materials, equipment, and labor necessary to Inspect and Clean Existing Conduit Systems. INSPECTION AND CLEANING EXISTING CONDUIT SYSTEMS shall be considered incidental for which no direct compensation will be made.

FO CABLE REPAIR OR REPLACEMENT

FO Cable Repair or Replacement shall be in accordance with the MnDOT Standard Specifications, MnDOT Standard Plans/Plates, the Plans, and the following:

DAMAGED FO CABLE

The following provisions shall apply to Damaged FO Cable:

Active FO Cable that is severed or otherwise rendered not usable by Contract activities shall be repaired. The cost of the Contract shall reduce at the rate of $1,000 per hour until the repair is complete. The penalty shall begin when the Contractor severs the cable or otherwise renders the FO Cable unusable. The penalty shall continue until the permanent repair is complete or until an approved temporary splice is installed. A part of an hour shall count as a full hour. Notify the integrator as soon as the cable damage is discovered.
(B) The Contractor shall stock approved splice kits to repair any cable damaged by construction activities.

(C) Spliced repairs to Damaged FO Cable shall comply with the following:
   a. Initial emergency repairs to FO Cable shall utilize mechanical splices unless all fibers (severed and not severed) are fusion spliced within 24 hours.
   b. Splices shall be located within existing splice vaults.
   c. Splices shall comply with the requirements for FO Cable Splicing. See the Engineer for FO Cable splicing requirements.
   d. The engineer shall withhold payment until approved FO Cables with fusion splices have been installed.

(D) New cable shall be furnished and installed for cable that has suffered damage caused by contract activities if the damage affects performance or longevity.

(E) Nicks or abrasions caused by exposing any cable by hand digging or vacuum excavation shall be sealed with rubber splicing tape. Seal nicks that penetrate through the cable jacket to the armor with a cast epoxy kit.

SZ-12.2 HAS MET
   The following items have met the above specifications:
   (A) Sealing nicks and abrasions: 3M Scotchcast kits and 3M Scotch #23 rubberized splicing tape.

SZ-12.3 MEASUREMENT AND PAYMENT
   FO CABLE REPAIR OR REPLACEMENT includes but shall not be limited to devices, enclosures, and all materials and labor necessary to construct the FO Cable Repair or Replacement. FO CABLE REPAIR OR REPLACEMENT shall be considered incidental for which no direct compensation will be made.

SZ-13 ELECTRIC AND ELECTRONIC CABLE REPAIR OR REPLACEMENT
   Electric and Electronic Cable Repair or Replacement shall be in accordance with the MnDOT Standard Specifications, MnDOT Standard Plans/Plates, the Plans, and the following:
   SZ-13.1 The Contractor shall stock approved splice kits to repair any cable damaged by construction activities.
   SZ-13.2 Notify the Engineer and Integrator of any damaged cable or damaged conduit that contains cables before starting repair.
   SZ-13.3 Electric, electronic, video and telephone cables are found within the project limits and may be impacted or are replaced by construction activities. The Contractor shall exercise caution when working near existing cables. Exercise caution and dig by hand or use vacuum excavator when within two feet of exposing the existing cables.
   SZ-13.4 Nicks or abrasions caused by exposing any cable by hand digging or vacuum excavation shall be sealed with rubber splicing tape. Seal nicks that penetrate through the cable jacket to the armor with a cast epoxy kit.
Above ground, temporary, twisted pair, control cable splices shall be repaired with button style, gel filled, crimp-on butt splices enclosed in zippered poly bags. Splices shall be protected in a manner approved by the Engineer and Integrator until the permanent splices are installed.

Permanent repairs to twisted pair cables shall utilize button style crimp-on butt splices within an enclosure that is rigid-body, non-re-enterable, made of translucent polypropylene, and packed with a urethane compound. Rubber tape shall be used to seal the ends of the enclosure. The enclosure is available in 4-pr, 18-pr, and 50 pr sizes.

Cables severely damaged and not replaced in a timely manner shall be repaired and maintained until cable replacement is made.

New cable shall be furnished and installed for cable that has suffered damage caused by contract activities if the damage affects performance or longevity.

Engineer and Integrator approved materials shall be used to replace cable.

HAS MET
The following items have met the above specifications:

(A) Butt Connector: 3M UY2 or UR2 as appropriate

(B) Enclosure for permanent repairs to twisted pair cables: 3M Better Buried Closure with 3M Scotchlok Shield Connector and 3M High Gel Encapsulating Compound.

(C) Sealing nicks and abrasions: 3M Scotchcast kits and 3M Scotch #23 rubberized splicing tape.

MEASUREMENT AND PAYMENT
ELECTRIC AND ELECTRONIC CABLE REPAIR OR REPLACEMENT includes but shall not be limited to devices, enclosures, and all materials and labor necessary to construct the Electric and Electronic Cable Repair or Replacement. ELECTRIC AND ELECTRONIC CABLE REPAIR OR REPLACEMENT shall be considered incidental for which no direct compensation will be made.

OUTDOOR FIBER SPLICE ENCLOSURE
This work shall consist of furnishing and installing an Outdoor Fiber Splice Enclosure, which shall be in accordance with the MnDOT Standard Specifications, MnDOT Standard Plans/Plates, the Plans, and the following:

ENCLOSURE
The following provisions shall apply to the Enclosure part of the Outdoor Fiber Optic Splice Enclosure:

(A) The enclosure shall have the following characteristics:

a. A temperature rating of -30 to +60 C (-22 °F to 140 °F).
b. Sufficient desiccant (packaged silica) inside to reduce possible damage from moisture.
c. FO Cables enter and exit from the same end of the Outdoor Fiber Splice Enclosure.
d. Expands to allow for up to 8 FO cables and/or FO pigtails to enter through one end.
e. Pressurized to 20 kPa (3 psi).
f. Permits selective fiber splicing (FO cable can loop in and out with only the selected fibers cut).
g. Is compatible with the splice trays and FO cables.
h. Protects splices from damage.
i. Composed of salt corrosion resistant, compatible materials not supporting galvanic cell action.
j. Splicing can be completed without circuit disruption.
k. Provides for FO cable (trunk and pigtails) strain relief.
l. FO cables may be inserted without exceeding the minimum bending radius.
m. Includes a grounding lug.
n. Includes two grounding posts.
o. Provides for termination of up to two trunk FO cables and armored FO pigtails.
p. Includes a cable clamp for bonding to the armor of the FO cable.
q. Provides for re-entry of future FO cable.
r. Able to accommodate the following combinations of FO cables, FO cable addition kits, and bolt adapter kits:
   i. Two FO cables without a FO cable addition kit.
   ii. Four FO cables with one FO cable addition kit and butt adapter bolt kit.
   iii. Six FO cables with two FO cable addition kits and double butt adapter bolt kit.
   iv. Eight FO cables with three FO cable addition kits and triple butt adapter bolt kit.

(B) Non-oxidizing coating shall be applied to all connections.

SZ-14.2 Tape the FO cables together as necessary near the Outdoor FO Splice Enclosure and throughout the slack length.

SZ-14.3 See GROUNDING on page 3-SZ for grounding specifications.

SZ-14.4 **SPlice Tray**
The following provisions shall apply to the Splice Tray part of the Outdoor Fiber Optic Splice Enclosure:

(A) The splice tray shall have the following characteristics:

   a. Provides for entry of individual fibers.
   b. Is stackable.
   c. Capable of holding 24 splices and 48 fibers.
   d. FO cables may be inserted without exceeding the minimum bending radius.
   e. Accommodates splice identification on the cover.
   f. Includes polyethylene tubes to protect the fibers and ethylene vinyl acetate sleeves with stainless steel rods to protect the splices.
   g. Has a manufacturer provided label on the cover for fiber identification.

(B) Splices shall be mounted on the splice chip.

(C) See LABELING on page 5-SZ for more details.

SZ-14.5 **MOUNTing**
The following provisions shall apply to Mounting of the Outdoor Fiber Optic Splice Enclosure:

(A) Mounting the Outdoor Fiber Splice Enclosure in the pull vault requires a bracket to be constructed to fit the opening to the pull vault per Plan detail. The objective of this bracket is to keep the splice enclosure off the floor of the vault. The bracket is constructed as follows:
a. The main support member is 3/4-inch by 1.5-inch variable “C” channel and may be perforated with web-centered holes. The length dimension varies with the diameter of the access cover.
b. The ends of the main support member have “Z” brackets constructed of 0.1875-inch stainless steel 1.5 inches wide. The “Z” brackets rest on the vault lip for the round access cover.
c. The outdoor fiber splice enclosure is hung from the bracket assembly with 0.125 inch stainless steel cable.

SZ-14.6 **HAS MET**
The following items have met the above specifications:

(A) Splice Case Enclosure: 3M 2178-LS.
(B) Cable Addition Kit: 3M 2181-LS.
(C) Double Butt Adapter Bolt Kit: 3M 2181-B.
(D) Triple Butt Adapter Bolt Kit: 3M 2181-C.
(E) Splice Tray: 3M 2524-FT.

**MEASUREMENT AND PAYMENT**
Measurement will be made by the each constructed as specified. Payment will be made under Item 2550.515 (OUTDOOR FIBER SPLICE ENCLOSURE) at the Contract bid price per each, which shall be compensation in full for all costs incidental thereto, including but not limited to, the enclosure, grounding, FO cable addition kits, butt adapter bolt kits, hanger hardware, splice tray, mounting, pressure testing, and all materials and labor necessary to construct the Outdoor Fiber Splice Enclosure.

**SZ-15 (2550) NON-METALLIC CONDUIT**
This work shall consist of furnishing and installing Non-Metallic Conduit, which shall be UL listed and in accordance with the MnDOT Standard Specifications, MnDOT Standard Plans/Plates, the Plans, and the following:

SZ-15.1 The requirement for red-colored conduit in MnDOT 3803 does not apply.
SZ-15.2 Industry standard couplings shall be used.
SZ-15.3 If adhesives and solvents are used they shall be compatible with the materials to be adhered.
SZ-15.4 The Contractor shall connect to existing conduit utilizing standard couplings. Prepare existing conduit for coupling as indicated in the Plans.
SZ-15.5 All NMC designated to contain FO cable shall be continuous. Stick conduit shall not be allowed.
SZ-15.6 All conduit under roads shall be placed a minimum of 60 inches below finished grade and shall be continuous without joints.
SZ-15.7 All conduit used for FO cable shall be placed a minimum of 0.9 m (36 inches) below the finished grade.
Non-metallic conduit shall be PVC or HDPE and shall be Schedule 40, with the exception of conduit above ground or under roadway surfaces. Conduit above ground or under roadway surfaces shall be heavy-wall rigid PVC or HDPE and shall be Schedule 80.

Standard bell ends shall be installed on all NMC ends to prevent damage to cables during installation.

3.15 inches wide, stretchable, orange warning tape shall be installed between 18 inches and 12 inches below the surface over all NMC bearing communication cable (including FO cable). The tape shall bare the following permanent legend: **CAUTION: CITY OF DULUTH CABLE BELOW.**

The following provisions shall apply to Non-Metallic conduit for Blown FO Cable:

(A) The NMC shall have the following material characteristics:

a. The NMC shall be 1.5 inches diameter or as called out in Plan.

b. The minimum pressure rating for the 1.5 inches NMC and couplings shall be 130-psi.

(B) The conduit shall be continuous flexible duct and direct buried. Plowed duct is preferred over trenched duct.

(C) Open trench installations of NMC for Blown FO Cable shall be backfilled with granular material to six inches over the top of conduit elevation.

MEASUREMENT AND PAYMENT
Measurement will be made by the length of NMC furnished and installed as specified. Payment for NON-METALLIC CONDUIT will be made in accordance with the schedule set forth below at the appropriate Contract unit bid price for each separate item of work, which shall, in each instance, be compensation in full for the costs of all materials, equipment, and labor required to complete the work as specified, to the satisfaction of the Engineer.

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<th>Item No.</th>
<th>Description</th>
<th>Unit</th>
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<tr>
<td>2550.523</td>
<td>___” Non-Metallic Conduit</td>
<td>linear foot</td>
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**FIBER OPTIC CABLE TESTING**
This work shall consist of Fiber Optic Cable Testing, which shall be in accordance with the MnDOT Standard Specifications, MnDOT Standard Plans/Plates, the Plans, and the following:

A FO link shall be defined as “any fiber with a connector at one end originating in a cabinet, and the other end with a connector in another location within a cabinet”. A FO link shall include each fiber.

The Contractor shall arrange a meeting with the Engineer and the Integrator to discuss the plan for proposed FO Cable splicing, testing, and documentation. This meeting shall occur prior to any splicing. All splicing, testing, and documentation personnel shall be required to attend the meeting. The meeting will be waived if approved by the Engineer. The meeting may be waived if...
the splicing, testing, and documentation personnel have historically demonstrated their ability to conform to MnDOT FO cable splicing, testing and documentation requirements.

SZ-16.3 The Contractor shall notify the Engineer and Integrator prior to FO system splicing and testing. The Engineer, or a representative, may observe splicing or testing. All test documentation shall be provided electronically.

SZ-16.4 The Contractor shall use an OTDR and power meter with current calibration certificates to perform the FO cable testing required. Test equipment calibration information and certification documentation shall be submitted as part of the FO Cable Testing Documentation (with test results).

SZ-16.5 The calibration certificate shall be dated no more than one year prior to the last dates of FO Cable testing.

SZ-16.6 Problems encountered with existing cable plant or hardware shall be brought to the attention of the Integrator before testing is completed. The Contractor shall notify the Integrator by email within two working days of noticing the problem.

SZ-16.7 FO Cable Testing shall be rejected if calibration certificates are out of date.

SZ-16.8 **OPTICAL TIME DOMAIN REFLECTOMETER “OTDR” TESTING**

The following provisions shall apply to OTDR Testing:

(A) The OTDR shall comply with the latest issue of Telcordia Document GR-196. In addition, the OTDR performance shall comply with the following minimum requirements:

   a. The event dead zone shall be less than or equal to three meters.
   b. The attenuation dead zone is less than or equal to five meters.
   c. Has a dynamic range of 25 dB or greater.
   d. Test pulse width shall be set to the shortest value allowed by the OTDR.
   e. OTDR testing of rerouted or relocated FO cables to a cabinet shall require the following modifications:

          i. OTDR shall be set to manual mode.
          ii. Average OTDR test time for each fiber shall be one minute.
          iii. OTDR testing shall be launched from the proposed cabinet. The Contractor shall disconnect the other end of the fiber to be tested prior to launching the OTDR test.

(B) **OTDR Test files**

   a. The Contractor uses MnDOT’s file naming convention for test files. See **FO CABLE TEST DOCUMENTATION** on page 18-SZ for file naming convention and example.
   b. The test files must include the actual date of testing and the "index of refraction" for the FO Cable as recorded on the cable spool by the manufacturer or for existing FO Cable, the index of refraction that was utilized.

(C) Test FO links bi-directionally per EIA/TIA 455-59, FOTP-59, except as otherwise noted. Use a 500 m (1,650 foot) patch cord as a launch cable when testing.

(D) Measure and record each FO signature for the completed SM FO link at 1550 nm or 1300 nm for MM. (See Fiber Optic Schematics).

17-SZ
Test each FO link and salvaged or installed FO Cable. Each fusion splice shall be tested in the forward and backward directions, recorded, and denoted by FO vault location. All events which indicate a loss greater than or equal to 0.01 dB, within the FO signature shall be recorded as “Event Notes” describing the corresponding vault location. Event notes are not required for splices indicating loss less than 0.01 dB. The Contractor shall provide an explanation for all events that do not align with a vault.

The average loss through a fusion splice, when measured at wavelengths of 1550 nm for SM and 1300 nm for MM, is no more than 0.15 dB. The average shall be calculated by adding the bi-directional testing values and dividing by 2.

Each FO link shall be tested after splices are sealed within their enclosure or panel. Should any FO link fail, re-splice that FO link and retest all FO links within the enclosure or panel. The Contractor will be allowed a maximum of three splice attempts to achieve passing results.

**POWER METER TESTING**

The following provisions shall apply to Power Meter Testing of FO links:

(A) The Contractor shall use a light source and power meter conforming to EIA/TIA 455-171, FOTP-171, and OFSTP-14, except as otherwise noted, to bi-directionally test the cable plant.

(B) Measure and record each directional value for the completed SM optical link at 1550 nm or 1300 nm for MM. (See Fiber Optic Schematics).

(C) Power meter measurements shall be in dB.

   a. Measurements for SM links shall not exceed the result of the following formula:

   \[ 0.4 \times \text{[link length of FO Cable in kilometers]} + 1 \]

   b. Measurements for MM links shall not exceed the result of the following formula:

   \[ \text{[link length of FO Cable in kilometers]} + 1 \]

(D) The Contractor shall correct out of range measurements on the constructed FO links. If after performing corrective action an acceptable measurement has not been achieved, the Contractor shall notify the Integrator.

**FO CABLE TEST DOCUMENTATION**

The objective of FO Cable Test Documentation is to document OTDR and power meter test results to verify that these results meet specifications, as well as to document the FO link loss, FO cable distance between splices and terminations, and the fusion splice losses. The Integrator will review this documentation for approval and the following provisions shall apply to FO Cable Test Documentation:

(A) The Contractor shall provide post installation documentation on a CD.

   a. The Contractor shall use the “Fiber Optic Schematic” Plan sheets as a template for recording power meter and OTDR test data, fiber count, and fiber routing of the cable and cable run.
b. Measurements recorded on copies of FO schematics shall be stored as PDF formatted files. The Engineer will supply the Contractor with a PDF if the Contractor requests one. The text font shall be typed and legible as determined by the Integrator. If measurements are not determined legible then the measurements shall be repeated and recorded again.

c. If re-splicing is required to achieve passing test results, those OTDR files shall be stored in a separate folder on the CD.

(B) Measure and record the following values for all FO Cables:

a. FO Cable length markings at all splice and termination locations on the FO schematics.

b. Fiber distances derived from OTDR testing and the FO index of refraction (usually included on FO cable spool documentation) shall be shown on the FIBER OPTIC SCHEMATICS in the Plan. For existing FO Cable, provide the Index of Refraction utilized.

c. Attenuation of each FO link in each direction measured.

d. Event notes for each splice indicating loss greater than or equal to 0.01 dB. These notes shall identify each splice location and shall be consistent with each FO schematic vault location. The Contractor shall provide an explanation for all events that do not align with a vault.

e. Signatures of the FO cable span and events using MnDOT’s file naming convention. See below in this section for file naming convention example.

f. Attenuation of each FO link, in both directions, as measured with a light source and power meter at 1550 nm wavelength for SM and 1300 nm wavelength for MM.

g. The Contractor shall provide fiber optic schematics indicating power meter and splice loss results, power meter test reports, and OTDR trace files on the Contractor provided CD.

(C) Naming OTDR files is done as follows:

a. The FO trunk cable ID and FO pigtail cable ID numbers are derived from the fiber optic schematic plan sheets.

b. The OTDR file name is developed from left to right in the following order:

   i. FO Cable launch point (trunk or pigtail FO Cables).
   ii. North, South, East, or West (N, S, E, or W) designation shall be added after the FO trunk ID or FO pigtail ID; this is the direction of the optical test pulse traveling from the OTDR launch point along the majority of cable under test. This will not always be the direction the cable leaves the OTDR launch point.
   iii. FO Cable type (S=Single Mode, M=Multimode) and strand count.
   iv. Filename extension (data format) proceeded by a period.

   **Fiber Optic OTDR File Naming Convention**

   ┌─      LAUNCH DIRECTION      ─┐
   │       CABLE I.D            │       FIBER     │       EXT   │
   └─┴─ C A B 6 9 4 – 50 . 47 ─┘       W       S 0 4     .       XXX

   CABLE I.D. = Trunk or pigtail FO cable ID as shown on the plan schematics. Number of characters may vary.

   LAUNCH DIRECTION = Direction in which the OTDR is launching (N, S, E or W). This is the direction of the optical test pulse traveling from the OTDR launch point along the majority of cable under test. This will not always be the direction the cable leaves the OTDR launch point.

   FIBER = Fiber Type, (S= Single mode), (M= Multimode) and Fiber Number
The OTDR file “Fiber Notes” field includes the State Project Number and the origin of the test launch (i.e. the complete name of the cabinet).

**SZ-16.11 MEASUREMENT AND PAYMENT**

No measurement will be made of the various Items that constitute Fiber Optic Cable Testing but all such work will be construed to be included in the single Lump Sum payment under Item 2550.601 (FIBER OPTIC CABLE TESTING).

**SZ-17 (2550) FIBER OPTIC CABLE SPLICING**

This work shall consist of Fiber Optic Cable Splicing, which shall be in accordance with the MnDOT Standard Specifications, MnDOT Standard Plans/Plates, the Plans, and the following:

**SZ-17.1 PRESSURE TEST**

To ensure that the outdoor fiber splice enclosure is properly sealed, the Contractor shall utilize the following test procedure:

(A) Testing shall be performed in the presence of the Integrator when the Outdoor Fiber Splice Enclosure is in its final hanging position.

(B) Pressurize the enclosure to between 8 to 10 psi and wait 45 seconds. During the 45-second wait, spray soapy water around the seal to check for leaks.

(C) Recheck the pressure. The enclosure should not have lost more than 2.5 psi.

(D) If the pressure loss is not greater than 2.5 psi and no leaks were detected when soapy water was sprayed around the seal, the enclosure requires no further testing.

(E) If the pressure loss is greater than 2.5 psi or leaks were detected when soapy water was sprayed around the seal, the Contractor shall repair any leaks and retest the enclosure.

**SZ-17.2 HAS MET**

The following items have met the above specifications:

(A) Cable Addition Kit: 3M 2181-LS.

(B) Double Butt Adapter Bolt Kit: 3M 2181-B.

(C) Triple Butt Adapter Bolt Kit: 3M 2181-C.

(D) Splice Tray: 3M 2524-FT.

**SZ-17.3 MEASUREMENT AND PAYMENT**

Measurement will be made by the each constructed as specified per location. Payment will be made under Item 2550.602 (FIBER OPTIC CABLE SPLICING) at the Contract bid price per each, which shall be compensation in full for all costs incidental thereto, including but not limited to FO Splice Enclosure, Pressure Test, and all materials and labor necessary to construct the Fiber Optic Cable Splicing.
SZ-18  **(2550) PULL VAULT**
This work shall consist of furnishing and installing a Pull Vault, which shall be in accordance with the MnDOT Standard Specifications, MnDOT Standard Plans/Plates, the Plans, and the following:

SZ-18.1 **SPlicing REQUIREMENTS**
The following provisions shall apply when FO Cable splicing is required within the Pull Vault:

(A) See GROUNDING on page 3-SZ for grounding specifications.

(B) Provide a drainage system for the Pull Vault (see plan details). The Engineer must approve deviation from the drainage system shown on the Pull Vault details in the Plans.

(C) Clean Pull Vaults after installation and splicing of cable. All areas shall be cleaned including the flange that the Cover rests on and the bolt holes for the Cover.

(D) FO Cables shall be coiled onto the FO coiling brackets within vaults.

SZ-18.2 Shall be placed on a 12-inch thick layer of coarse filter aggregate per MnDOT 3149.2H.

SZ-18.3 **COVER**
The following provisions shall apply to the Cover part of the Pull Vault:

(A) Provide one ferrous device to lift the cover from the body of the Pull Vault for every three Pull Vaults. The ferrous device must be at least 28 inches in length.

SZ-18.4 **SIDEWALK INSTALLATION**
The following provisions shall apply to Pull Vaults installed in sidewalks (see Plan details):

(A) Install the standard Pull Vault approximately 12 inches beneath the sidewalk surface.

(B) Furnish and install a Pull Vault extension and lid one size larger over the standard Pull Vault. The larger Pull Vault and extension should be installed flush with sidewalk surface.

(C) Furnish and install additional concrete and reinforcement bars per the Plan details.

(D) Do not place any concrete joints within 15 inches of the Pull Vault.

SZ-18.5 The Pull Vault contains a City furnished locator ball installed by the Contractor. See **LOCATOR BALLS** on page 2-SZ.

SZ-18.6 Near the Pull Vault, the FO Cables sweep up to meet the conduit entrance to the Pull Vault. Take care not to exceed minimum bend radius.

SZ-18.7 Clean Pull Vaults after installation. All areas shall be cleaned including the flange that the cover rests on and the bolt holes for the cover.

HZ-18.8 **HAS MET**
The following items have met the above specifications:
(A) Quazite PG2436Z714MN (42-inch depth)

**SZ-18.9 MEASUREMENT AND PAYMENT**
Measurement will be made by the each constructed as specified. Payment will be made under Item 2550.602 (PULL VAULT) at the Contract bid price per each, which shall be compensation in full for all costs incidental thereto, including Splicing Requirements, Cover, Sidewalk Installation, and all materials and labor necessary to construct the Pull Vault.

**SZ-19 (2550) BORED CONDUIT**
This work shall consist of furnishing and installing Bored Conduit, which shall be in accordance with the MnDOT Standard Specifications, MnDOT Standard Plans/Plates, the Plans, and the following:

**SZ-19.1** Bored Conduit shall conform to but not be limited to the following MnDOT Specifications except as modified by these provisions:

(A) Installation: MnDOT 2565.3.
(B) NMC: MnDOT 3803.
(C) RSC: MnDOT 3801.
(D) Expansion Fittings: MnDOT 3839.

**SZ-19.2** For installation under an existing roadway or paved surface, Bored Conduit shall be heavy-wall rigid PVC or HDPE and shall be Schedule 80.

**SZ-19.3** All conduit under roadways shall be continuous without joints.

**SZ-19.4** Bored Conduit installed under slope paving shall be accomplished without damage to the slope paving.

**SZ-19.5** Bored Conduit shall be installed 1.5 m (60 inches) below the bottom of the finished driving surface. Bored Conduit under roadway surfaces shall extend 10 feet beyond the pavement edge or curb line. The transition from the routine 0.9 m (36 inches) depth of direct-buried cable to the 1.5 m (60 inches) depth under a roadway or paved shoulder shall not exceed one foot vertical per five feet horizontal.

**SZ-19.6** Bored conduit shall be installed at depths according to the Plan if the Plan calls out for deviations from these specifications.

**SZ-19.7** Standard bell ends shall be installed on all conduit ends to prevent damage to cables during installation.

**SZ-19.8 MEASUREMENT AND PAYMENT**
Measurement will be made by the length of Bored Conduit furnished and installed as specified. Payment for BORED CONDUIT of each size will be made in accordance with the schedule set forth below at the appropriate Contract unit bid price for each separate item of work, which shall, in each instance, be compensation in full for the costs of all materials, equipment, and labor required to complete the work as specified, to the satisfaction of the Engineer.
**SZ-20**

**FIBER OPTIC CABLE**

This work shall consist of furnishing and installing Fiber Optic Cable, which shall be in accordance with the MnDOT Standard Specifications, MnDOT Standard Plans/Plates, the Plans, and the following:

**SZ-20.1**

**PRE-TERMINATED ARMORED FO PIGTAIL CABLE**

The following provisions shall apply Pre-terminated Armored FO Pigtail Cable:

**(A)**

The Pre-terminated Armored FO Pigtail Cable shall be constructed with the following requirements:

a. The manufacturer’s operational temperature rating range shall include -40 to +70 C (-40 °F to 158 degrees °F). The range may be larger but shall include the previously mentioned range.

b. Connector assemblies shall be ultra-polished FC/PC design with zirconia ceramic ferrules and sleeves. These must meet or exceed the requirements of the Telcordia GR-326 CORE Issue 3 document.

c. Rated for outdoor use.

d. Includes a factory terminated patch panel,

e. Typical dimensions shall be as follows:

   i. 6 fibers: 9 inches long by 1.75 inches wide by 1.75 inches deep
   ii. 12 fibers: 13 inches long by 1.75 inches wide by 1.75 inches deep

**(B)**

The patch enclosure of the Pre-terminated Armored FO Pigtail Cable shall not contain any potting material. The Contractor shall notify the Manufacturer of this requirement when ordering the parts.

**SZ-20.2**

**INSTALLATION REQUIREMENTS**

The Installation Requirements for FO Cable shall comply with MnDOT 2550.3 and the following provisions:

**(A)**

Additional lengths of FO Cable shall be stored in end-equipment cabinets.

**(B)**

The following lengths of outer jacket and armor shall be removed from field terminated FO Cable for fiber management:

   a. Remove 8 to 15 feet of the outer jacket of cable terminating an Outdoor FO Splice Enclosure.
   b. Remove 33 feet of the outer jacket of cable terminating in a ground-mounted cabinet.

**(C)**

FO Cable shall be placed a minimum of 36 inches below finished grade.

**(D)**

FO cable shall be placed a minimum of 60 inches below finished grade when it is placed under a road.

**(E)**

For lengths of FO Cable over 600 feet the Contractor shall employ the air-assisted method for installation.

**(F)**

See GROUNDING on page 3-SZ for grounding requirements.
(G) Expected tension on the FO Cable and pulling tape shall be calculated prior to installing the FO Cable in conduit runs. The pulling force shall be distributed between the inner strength member and the aramid fibers by securing both to the main pulling device.

(H) A “break-away” type pulling attachment shall be utilized to protect against over stressing the FO Cable. A cable grip that pulls only on the outer jacket to pull FO Cable shall not be allowed.

(I) Damage to the FO Cable from any source or exceeding the manufacturer’s recommended tensile strength limits or cable-bending radius is cause for the cables to be rejected. The Contractor shall ensure a minimum bend radius of ten inches during installation (loaded cable) and minimum bend radius of eight inches after installation (static cable).

(J) Often, FO Cable is pulled through conduit/handhole networks. Using the 24-inch diameter handholes as a fiber pull box is likely to exceed the minimum loaded bend radius and cause damage to the cable fibers. The Contractor shall not use the handhole as a fiber pull box.

(K) Slack FO cable shall be provided for FO cables spliced within vaults. Provide 70 feet of slack FO Cable coiled in these vaults per each vault entrance/exit. Provide other lengths of slack FO Cable if called for in the Plan.

(L) Backfill open trench installations with granular material six inches over the FO Cable conduit elevation.

(M) **Air Assisted FO Cable**

a. Long radius bends shall be utilized in equipment foundations and other situations requiring the negotiation of sharp angles.

b. The duct system shall be properly installed utilizing pressure tight splices.

   i. Seal one end of the duct and pressurize the duct utilizing a sealed blowing machine.

   ii. The duct shall maintain 130 psi without realizing significant pressure loss

   iii. Use care near pressurized ducts.

c. High air speed blowing shall require the front end of the FO Cable to be end-capped to prevent the cable from getting hung up in the duct.

d. Utilize proper air seals to fit the OD of the FO Cable.

(e) Provide proof that the duct is properly spliced and not crushed by blowing a hard mandrel through the duct.

f. Clean and dry the duct utilizing the following procedures

   i. Blow a tight fitting foam carrier through the duct at high pressure. The foam shall travel at approximately 100 fps.

   ii. If excess water and/or dirt is expelled from the duct, repeat the process until minimal water and/or dirt is observed.

   iii. Dry the duct with airflow.

g. For high speed air machines (no missile), inject the recommended amount of approved lubricant and spread it with a foam carrier. For piston type machines, inject the majority of the lubricant in front of the missile with some placed behind the missile.

h. For push/pull machines, attach the piston to the FO Cable and insert the piston into the duct.
For high air speed machines, hand push approximately 100 feet of FO Cable into the duct prior to activating the machine.

Use caution in bringing up the air and hydraulic pressure.

SZ-20.3 **HAS MET**
The following items have met the above specifications:

(A) Pre-terminated Armored FO Pigtail Cable:

   a. Fiber Connections, FCP61(2 Digit Fiber Count) specify length

SZ-20.4 **APL**
Approved FO Cable is listed on the following website:

   [http://www.dot.state.mn.us/products/trafficmgtsystems/index.html](http://www.dot.state.mn.us/products/trafficmgtsystems/index.html)

**MEASUREMENT AND PAYMENT**
Measurement will be made by the length of Fiber Optic Cable furnished and installed as specified. Payment for FIBER OPTIC CABLE of each size and type will be made in accordance with the schedule set forth below at the appropriate Contract unit bid price for each separate item of work, which shall, in each instance, be compensation in full for all costs incidental thereto, including but not limited to FO Cables, Pre-terminated Armored FO Pigtail Cable, Installation Requirements, and all materials, equipment, and labor required to complete the work as specified, to the satisfaction of the Engineer.

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<tr>
<td>2550.603</td>
<td>Pre-terminated/Armored Fiber Optic Pigtail</td>
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APPENDIX A

MN/DOT State Aid Tech Memo No.16-SA-01
Specification 2360-Plant Mixed
Asphalt Pavement- Design
Guidelines
MINNESOTA DEPARTMENT OF TRANSPORTATION
State Aid Division
Technical Memorandum No. 16-SA-01
January 8, 2016

To: Country Engineers (Distribution 618)
    City Engineers (Distribution 650)
    MnDOT District State Aid Engineers
    MnDOT District Materials Engineers
    SALT Consultant list

From: Mitch Rasmussen, P.E.
       Assistant Commissioner, State Aid

Subject: Specification 2360 - Plant Mixed Asphalt Pavement - Design Guidelines

Expiration
This Technical Memorandum supersedes Technical Memorandum No. 10-SA-02 and will expire on July 1, 2025 unless superseded prior to this date.

Implementation
The guidelines contained in this Technical Memorandum are effective immediately for all Federal Aid and State Aid projects that contain specification 2360 - Plant Mixed Asphalt Pavement.

Modification(s) to specification 2360 - Plant Mixed Asphalt Pavement shall be requested by the local agency in a letter to the District State Aid Engineer. The request for modification letter shall include justification for the specification deviation(s). The request for modification to the specification shall include at a minimum an explanation of the situation, why the modification is necessary and how this modification will provide a better product. A copy of the request for modification letter shall be retained in the respective local agency project file.

Introduction
Over the past decade, MnDOT and local agencies have been specifying gyratory mix design for their asphalt pavements. Technical Memorandum No. 04-SA-01 "Bituminous Specification Implementation" was a beginning directive toward moving Federal Aid and State Aid projects to gyratory mix design and Technical Memorandum 10-SA-02 "Specification 2360 - Plant Mixed Asphalt Pavement - Design Guidelines" provided guidance and information to designers to follow established best design practices, for selection of appropriate bituminous mixture and asphalt binder grade(s), and reduce bituminous specification ambiguities for contractors bidding State Aid and Federal Aid projects.

Plan reviews for construction projects show that gyratory designed mixes are being specified. However, there has been a recent change in the PG Binder specification with the switch to AASHTO M 332 – Standard Specification for Performance-Graded Asphalt Binder Using MSCR (Multiple Stress Creep Recovery). Therefore, additional guidance is warranted to ensure that the correct PG (performance graded) binder(s) are specified.

Purpose
The main two purposes of this Technical Memorandum are to: First, provide guidance in following established best design practices to ensure that public funds are spent as efficiently as possible. Second, to provide designers with the most current information regarding the appropriate choice of bituminous mixture(s) and asphalt binder grade(s) when specify them on projects.

Page 1 of 3
Guidelines
To further standardize bituminous pavement specifications, all State Aid (including Federal Aid) projects should follow the most current criteria for asphalt pavement mix design and PG binder selection. At the present time, the most current documents are: "Design Criteria 2360" dated April 4, 2014 and "MnDOT PG Binder Guidelines" dated November 12, 2015. Both of these publications can be found at the MnDOT Bituminous Engineering webpage under Design and on the State Aid Pavement webpage under Pavement Design.

Typically each year in January, the MnDOT Bituminous Unit prepares a memo which contains recent specification changes and reminders. Please see the current bituminous specification updates on the State Aid Construction webpage for this information and for the most current 2360 - Plant Mixed Asphalt Pavement specification before starting your bituminous pavement design.

Following is a list of items that designers should watch closely to ensure these items are correct in the plan.

1. Superpave (gyratory design) considers the top four inches (top three inches for local agencies with traffic levels <3 million ESAL's) to be wear. Bituminous mixture placed below the top 4 inches or (top 3 inches for local agencies with traffic levels <3 million ESAL's) is considered nonwear.

2. A PG 58(H, V, E) -34°C should be specified in the top four inches (top three inches for local agencies with traffic levels <3 million ESAL's) for new construction, reclaiming and cold in-place recycling projects. Pavement management data shows thermal cracking may be reduced up to 90% when a PG 58(H, V, E) -34°C is used in the top four inches of the pavement structure. Reduced thermal cracking should lead to longer pavement life.

3. A PG 58S -28°C should be specified in bituminous mix placed as an overlay on existing asphalt pavements. The typical moderate to high degree of thermal cracking associated with older pavements makes the use of more expensive 58x -34°C binders less beneficial.

4. Do not specify a PG 58(H, V, E) -34°C below four inches (top three for local agencies with <3 million ESAL's) in the pavement structure unless, because of small quantities, it makes economic sense to specify the same binder grade for the entire pavement structure. Typically, specify a PG 58S -28°C below four inches (top three inches for local agencies with traffic levels <3 million ESAL's) in the pavement structure. Research at MnROAD has shown that the pavement typically does not reach temperatures below -28°C Celsius at these depths. The use of a more expensive asphalt binder below these depths is usually not warranted.

5. Be careful when specifying the aggregate size (A, B, C, D). Aggregate sizes A and B are specified most often. Aggregate size A is ½ inch minus and aggregate size B is ¾ inch minus. There has been a shift recently to aggregate size A as the aggregate specified most often in the wearing course mixtures. Although aggregate size B will accommodate RAP more readily than aggregate size A, splitting of RAP into two sizes appears to diminish this. See specification 2360.1 A3 Mixture Designations for further clarification.

6. Be careful when specifying air voids in the mixture. A nonwear mixture will always have 3.0 percent air voids. Mainline wear mixtures have 4.0 percent air voids and shoulder wear mixes will have 3.0 percent air voids. The Engineer should consider modifying mainline wear traffic level 2 mixtures to 3.0 percent air voids for low-volume local agency pavements having <0.3 million ESAL’s. Use 4.0 percent air voids on higher volume facilities.

7. Use the maximum density specification for bituminous compaction on the mainline of County State Aid Highways. Achieving the required density is essential to constructing longer lasting...
pavements. It is highly recommended to not write out the ride specification as ride should not be sacrificed for density. Well compacted roads with good ride quality are desirable. Ordinary compaction should be limited to layers identified in the typical sections with a minimum planned thickness of less than 1½ inches, thin lift leveling, wedging layers, patching layers, driveways and areas that cannot be compacted with standard highway construction equipment. See specification 2360.6C Ordinary Compaction Method for further information.

8. Bikeway trail mixture designation should be SPWEB230B. See the Bicycle Path Design State Aid web page for additional guidance.

   http://www.dot.state.mn.us/stateaid/bicycle.html

9. Recycled asphalt pavement (RAP) has been successfully used for many years in MnDOT and local agency bituminous mixtures. The use of RAP is encouraged in both non-wear and wear courses.

10. Warm mix asphalt use is permissible on State Aid projects (including Federal Aid) provided that the requirements of the 2360 specification are met. There may be economical and environmental incentives to use this type of bituminous mix.

Rules of Thumb
- Minimize the number of mixtures and PG grades on any one project. Typically, it is not economical to specify another bituminous mixture for quantities less than 2000 tons.

- The top four inches (three inches for local agencies with traffic levels <3 million ESAL's) of bituminous mixture should have the same PG grade. Typically, in the top four inches, (three inches for local agencies with traffic levels <3 million ESAL's) specify PG 58(H, V, E) -34°C for new construction, reclaiming, and cold in-place recycling. In the case where small quantities are involved, it may make economic sense to specify the same binder grade for the entire pavement structure.

- Bituminous mixture placed as an overlay or below four inches from the surface (three inches for local agencies with traffic levels <3 million ESAL's) should be the same PG grade. Typically, specify PG 58S -28°C. This is because the common high crack frequency associated with older pavements does not make the more expensive binders economical.

Questions
For special or unique design considerations, please contact your District State Aid Engineer for guidance.

For information on the technical contents of this memorandum, please contact John Garrity, MnDOT Bituminous Engineer at (651)366-5577 or Joel Ulring, State Aid Pavement Engineer at (651)366-3831.

Links
A link to all active and historical State Aid for Local Transportation Technical Memoranda can be found at:

   State Aid Tech Memos: http://www.dot.state.mn.us/stateaid/tech-memos.html

A link to the current bituminous design publications can be found at:

   MnDOT: http://www.dot.state.mn.us/materials/bituminousdesignpage.html

   State Aid: http://www.dot.state.mn.us/stateaid/pavement.html

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The new PG designations are different from the previous asphalt binder specification. Following AASHTO M332 (MSCR) the New PG grading designations for Minnesota will all be PG58, followed by traffic loading designation and minimum pavement design temperature. For example: PG58S-XX, PG58H-XX, PG58V-XX, and PG58E-XX.

S, H, V or E grade designations must be specified for standard, high, very high or extremely high traffic loading, respectively.

<table>
<thead>
<tr>
<th>Type of Construction</th>
<th>Recommended Asphalt Binder for &lt; 3 Million ESALs (20 yr)</th>
<th>Recommended Asphalt Binder for 3 - 10 Million ESALs (20 yr)</th>
<th>Recommended Asphalt Binder for &gt; 10 Million ESALs (20 yr)</th>
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<tbody>
<tr>
<td>Overlay Wearing Mixture (Top 4&quot;)³</td>
<td>PG 58S-28</td>
<td>PG 58S-28¹</td>
<td>PG 58H-28¹</td>
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<tr>
<td>New Construction² Wearing Mixture (Top 4&quot;)³</td>
<td>PG 58H-34</td>
<td>PG 58H-34¹</td>
<td>PG 58V-34¹</td>
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<tr>
<td>All Non-Wear Mixture (Below 4&quot; from Surface)</td>
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<td></td>
<td>PG 58S-28</td>
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</table>

**Recommended Binder Grade for Shoulders:**

<table>
<thead>
<tr>
<th>With Traffic</th>
<th>With No Traffic</th>
<th>Next to Concrete Mainline and Concrete Curb and Gutter</th>
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</thead>
<tbody>
<tr>
<td>Generally, use the same binder grade as the mainline, but, not to exceed PG 58H-xx.</td>
<td>PG 58S-28 or PG 52S-34 (match the mainline low PG number)</td>
<td>PG 58S-28 or PG 58H-28</td>
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</tbody>
</table>

**NOTES:** When varying from these guidelines or for further clarification, consult the MnDOT Bituminous Office.

1. Selecting a higher PG grade and/or mixture type (traffic level), for higher ESALs within the category, will provide better resistance to rutting. Contact the Bituminous Engineer for guidance.
2. New construction includes: reconstruction, rubblization, CIR, reclaiming (FDR)
3. For Non-Trunk Highway with traffic levels <3 million ESAL, consider modifying the “top 4" criteria to top 3”.
4. With concurrence of the Bituminous Office the designer may allow, by Special Provision, the Contractor’s option to use PG 64S-22 on overlay construction when both of the following conditions are met:
   a. Overlay thickness 3” or less and,
   b. Average inplace crack/joint spacing 30ft. or less
The Special Provision shall limit the allowable RAP usage to 15% for mixtures specifying PG 64S-22.
Rules of Thumb
- Minimize the number of PG grades on any one project.
- The top 4” should be the same PG grade. Typically, specify PG xxx-34 for new construction. Typically, specify PG xxx-28 for overlay construction.
- Below 4” from the surface should be the same PG grade, typically, specify PG 58S-28.

Considerations
- For non-trunk highway with traffic levels < 3 million ESAL, consider modifying the top 4” criteria described under “Rules of Thumb” to top 3” criteria.
- For temporary construction (2 years or less) consider using PG 64S-22 when PG 58H-28 or PG 58V-34 is otherwise recommended.
- For special or unique design considerations contact the Bituminous Office.

Asphalt Binder Grade Designation

The PG Binder Grade letters should be used in all bituminous mixture designations, regardless of the specification number. These letters and PG Grade are listed below:

Binder Grades and Allowable Substitutions

A = PG 52S-34
B = PG 58S-28 allowed as substitute for PG 58-28
C = PG 58H-34 allowed as substitute for PG 58-34 & PG 58-34(PMB)
E = PG 58H-28 allowed as substitute for PG 64-28 & PG 64-28(PMB)
F = PG 58V-34 allowed as substitute for PG 64-34 & PG 64-34(PMB)
H = PG 58V-28 allowed as substitute for PG 70-28 & PG 70-28(PMB)
I = PG 58E-34 allowed as substitute for PG 70-34
L = PG 64S-22
M = PG 49S-34
ATTACHMENT B

PERMITS
# Erosion and Sediment Control Application and Permit

(Required For Land Disturbance of 3,000 sq ft or greater**)

(See City of Duluth UDC Article 2, Section 50-18.1.E) Revised March 2015

## SITE LOCATION

<table>
<thead>
<tr>
<th>Site Address:</th>
<th>Date:</th>
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<tr>
<td>Lot:</td>
<td>Plat &amp; Parcel:</td>
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<tr>
<td>Nature of Project:</td>
<td></td>
</tr>
<tr>
<td>Est. Start Date:</td>
<td>Est. Completion Date:</td>
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## OWNER / CONTRACTOR

<table>
<thead>
<tr>
<th>Property Owners Name</th>
<th>Email:</th>
<th>Telephone No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>City</td>
<td>State</td>
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<table>
<thead>
<tr>
<th>Contractors Name</th>
<th>Email:</th>
<th>Telephone No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>City</td>
<td>State</td>
</tr>
</tbody>
</table>

## CITY USE ONLY

<table>
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<th>City Engineer Approval:</th>
<th>Date:</th>
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<table>
<thead>
<tr>
<th>Permit Number:</th>
<th>Permit Fee:</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>$150 $300</td>
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</tbody>
</table>

**SEE REVERSE SIDE FOR FEE SCHEDULE AND ADDITIONAL REQUIREMENTS**

(Attach the Erosion and Sediment Control Plan (ESCP) to this application page)

**MS-4 Statement of Compliance** (not for permanent stormwater management)

The property owner and the contractor conducting work on the site are responsible for all the construction activities that occur on the site. By signing this permit both parties are required to install and maintain all erosion and sediment control BMPs to ensure that sediment, soil and debris does not leave the construction site. This includes but is not limited to tracking of soil/mud onto public streets and roadways from vehicles leaving the site, soil eroding from the site onto roadways or drainage ditches or onto neighboring property. If sediment, soil/mud and/or debris leaves the site, both parties are responsible for the immediate clean up and all costs and fines associated with it. Both parties are also responsible for the total restoration of vegetation on the site (seed/mulch, sod, gardens…) after construction disturbance is substantially complete, and only after vegetation has been established with vigorous growth can BMPs be cleaned and removed.

/ / 
Property Owner Telephone # Date
/ / 
Contractor Telephone # Date
### EROSION CONTROL PERMIT FEES

<table>
<thead>
<tr>
<th>Size of Project* (***** )</th>
<th>Erosion and Sediment Control Plan / SWPPP ***</th>
<th>Erosion and Sediment Control Permit</th>
<th>FEE</th>
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</thead>
<tbody>
<tr>
<td>Land Disturbance Area less than 3,000 s.f.**</td>
<td>Specific plan not required, but must follow BMPs</td>
<td>No</td>
<td>No Fee</td>
</tr>
<tr>
<td>Land Disturbance Area greater than 3,000 s.f. and less than 10,000 s.f.</td>
<td>Yes</td>
<td>Yes</td>
<td>$150</td>
</tr>
<tr>
<td>Land Disturbance Area greater than 10,000 s.f. and less than 1 acre.</td>
<td>Yes</td>
<td>Yes</td>
<td>$300</td>
</tr>
<tr>
<td>Land Disturbance Area equal to or greater than 1 acre.</td>
<td>Yes</td>
<td>Yes ****</td>
<td>N/A</td>
</tr>
</tbody>
</table>

* All projects regardless of area disturbed, will be inspected for compliance with Erosion and Sediment Control Best Management Practices (BMPs), see attached.

** If city engineer determines that the proposed development is in a vulnerable area (steep slopes, erodible soils, adjacent to sensitive areas, etc.) and may cause degradation of the waters connected to the City’s storm water system, then the provisions applicable to land disturbance areas between 3,000 and 10,000 sq. ft. shall apply.

*** A site specific Storm Water Pollution Prevention Plan (SWPPP) meeting MPCA NPDES Permit requirements for Construction Activity is required and shall be submitted to the City for review. An individual one-family or two-family residence (that is not part of a common plan of development) with less than 10,000 sq. ft. of disturbance and less than 7,500 sq. ft. of new impervious area does not have to prepare a SWPPP, but shall submit an erosion control plan meeting the requirements of this document and attachments.

**** The MPCA Permit No. MN R 100001 is required (General Permit Authorization to Discharge Stormwater Associated with Construction Activity under the National Pollutant Discharge Elimination), and a copy of permit to be submitted to City. See this page for internet link.

***** Please see the City of Duluth UDC Article Two, Section 50-18.1.E to determine if the proposed project is required to meet permanent stormwater quality and rate control requirements and applicable fees.

**NOTE:** For projects disturbing one acre or more, the MPCA Stormwater Permit for Construction Activity must be completed--not the City of Duluth’s form.


The entire MS4 Permit may also be found at the MPCA:

[website](http://www.pca.state.mn.us/water/stormwater/stormwater-ms4.html#requirements)

**City of Duluth Erosion and Sediment Control Plan Guidelines**

**Erosion and Sediment Control Plan** *(ESCP)*

The Permit Application should be filled out and the Erosion and Sediment Control Plan should be prepared as follows:

- Complete the attached Narrative form Item No. 1, or use a separate sheet. Fill in all areas as completely as possible.
- Complete a Site Map / Plan showing the items listed below in item No. 2 and see Elements of Erosion Control Plan, Site Map Requirements for further guidance to address specific item for each plan. Additionally see example site map / plan.
- Incomplete Narratives or Site Map / Plans will be returned for additional information and will delay permit approval.

**Erosion and Sediment Control Methods**

Control of sediment is required so that it does not migrate to an adjoining property, roadway, catch basin, or a wetland/watercourse. Diagrams are attached that depict some of the control methods commonly used for erosion and sediment control. Silt fence barriers and crushed rock temporary entrances are common control methods that can be effective for small projects. Additional methods, such as sediment traps and detention structures, are required for some projects and a qualified professional may need to specify the appropriate erosion and sediment control methods. See attached sheet titled Commonly Used Erosion Controls.

**Activities Exempt from the Ordinance**

Minor land disturbing activities are exempt such as: home gardens, landscaping, repairs and maintenance work, utility work, certain septic tank work, fencing, tilling, planting, or harvesting of agricultural, horticultural, or silviculture crops, and certain emergency repairs.
City Erosion/Sediment Control Permit Narrative - rev 2011

These are the absolute minimum submittal requirements for all projects:

(1) NARRATIVE
A) Provide a description of what you are doing and type foundation/disturbance.
   (e.g., constructing a 2,000 sq ft house w/full basement; constructing an attached 24x24 garage on slab; building a 20x15 house addition on frost footings, etc.)

B) How much land are you disturbing? Total: _______________ square feet
   Main soil type? _____________ Are you importing/exporting any fill? ____ Amount _______________

C) Describe the slope of the land and the slope of the adjacent land.

D) Describe all temporary erosion control devices you intend to use and show on an attached drawing where and when you will be installing them. [At a MINIMUM, you must have perimeter control such as silt fence and washed rock construction entrance.] Also, show and protect all stockpiles.

E) Final Stabilization. Date you will sod, or seed & mulch, or otherwise establish vegetation on the disturbed area.
   Method: _____________________ Target Date: ___________________
   If site is not vegetated by October 30th, describe below your selected winter-over methods (mulch, erosion blanket, etc.).

(2) DRAWING
A) * Always clearly show the site grading/disturbance limits.
   * Also, show pre- and post-development drainage arrows.

B) Clearly show estimated land contours (hand drawn is acceptable for small projects).

C) Show any/all creeks, ditches, wetlands, or other sensitive areas within 200 feet of your site.
   * If none, so state: ______

D) Clearly show the amount and placement of silt fence, hay bales, construction entrance, etc.

E) Clearly show washed rock construction entrance. [Minimum: 12' W x 50' L x 6" deep] OR show mud mat reusable mat - 8'x 45' minimum (see Brock White handout).

F) * Show and label streets and adjacent properties.
   * Show catch basins/inlets.
   * Clearly show all protective measures for those areas where sediment could migrate. Protect your neighbor’s property from your construction activity and potential erosion and sediment.

**For Large Projects, Commercial Projects, Complex Projects – Additional information and design are required - refer to City Ordinance 9365**

Technical assistance: Engineering 730-5200; [Tom Johnson 730-5103]
GENERAL NOTES FOR EROSION CONTROL

STRAW BALES or SILT FENCE
*Put up before any other work is done
*Install on downslope side(s) of site with ends extended up sideslopes a short distance
*Place parallel to the contour of the land
to allow water to pond behind the fence
*Entrench 4 inches deep (see diagram)
*Stake (every 3 feet minimum)
*Leave no gaps/overlap if necessary
*Inspect often and maintain
*Remove sediment when deposits reach half way up fence or bale

ROCK CONSTRUCTION ENTRANCE
*Install a single construction access using large crushed rock (1 1/2 “ to 2 1/2 “) to prevent
tracking of soils off project site
*Put rock 6 inches deep, 12 feet wide, 50 feet long
* Maintain rock access through project end
* All vehicles to use rock entrance

SEDIMENT CLEANUP
* By the end of each work day, sweep/scrape up soil tracked on roads, alley, sidewalk
* After a storm clean up soil washed off site onto sidewalks, streets, alleys.

REVEGETATION
*Seed & mulch, sod or mulch disturbed area as soon as project is completed

PRESERVING EXISTING VEGETATION
*Preserve existing trees, shrubs, sod, as much as possible

WARNING! Extra measures may be needed if your site:
*Has highly erodible soils
*Is within 200 feet of a river or stream
*Is within 1,000 feet of a lake
*Is steeply sloped
*Receives runoff from adjacent land

For more information on appropriate measures for your site, please call the City of Duluth
Engineering Division at 730-5200.
ELEMENTS OF EROSION & SEDIMENT CONTROL PLAN (ESCP)

ESCP Project Narrative
(1) Project description
(2) Phasing of construction
(3) Existing site conditions
(4) Adjacent areas affected by project
(5) Critical areas identified
(6) Erosion and sediment control measures
(7) Soil descriptions
(8) Permanent stabilization methods
(9) Stormwater management considerations
(10) Maintenance schedule for erosion and sediment measures
(11) Calculations
(12) Additional information required by the city engineer

Criteria to be considered in the ESCP
(1) Stabilization of denuded areas and soil stockpiles
(2) Establishment of permanent vegetation
(3) Protection of adjacent properties
(4) Timing and stabilization of sediment trapping measures
(5) Use of sediment basins
(6) Cut and fill slopes
(7) Stormwater management criteria for controlling off-site erosion
(8) Stabilization of waterways and outlets
(9) Stormwater management criteria for controlling off-site erosion
(10) Working in or crossing water bodies
(11) Underground utility construction
(12) Construction access routes
(13) Disposition of temporary erosion and sediment control measures
(14) Maintenance of erosion and sediment control practice

Site Map Requirements
(1) Location Map
(2) North Arrow
(3) Scale (1 inch = 100 ft. or greater detail)
(4) Benchmark
(5) Existing contours at two ft. intervals, 200 ft. beyond boundary - show watercourses/wetlands
(6) Final contours
(7) Existing vegetation - trees, shrubs, grasses
(8) Soil boundaries
(9) Property boundary and lot lines
(10) Elevations and grades - street grades, pond elevations, etc.
(11) Drainage arrows
(12) Critical erosion areas
(13) Clearing and grubbing limits
(14) Utility plans
(15) Location of erosion and sedimentation control practices - basins, swales, silt fence, bales
(16) Location of other practices
(17) Plan preparer’s signature, address and phone number
(18) Responsible party name, address, and phone number
(19) Delineation of applicable zoning boundaries
APPENDIX C

MNDOT

2016 SALT SCHEDULE OF MATERIALS CONTROL-
LOCAL GOVERNMENT AGENCY
This Schedule of Materials Control (SMC) outlines the minimum testing requirements for State Aid Funded and/or federal aid Projects off the National Highway and Trunk Highway System. Optional to this SMC is the MnDOT Materials Control Schedule. Usage of either schedule must be defined in the project proposal.

1603.2 SAMPLING AND TESTING - INSERT INTO SPECIAL PROVISIONS

The first paragraph is hereby deleted and replaced with the following:

Sampling and testing of materials for this project will be in accordance with the State Aid for Local Transportation (SALT) “Schedule of Materials Control – Local Government Agency” (SMC-LGA). The SMC-LGA establishes the size of samples and the minimum rate of testing. The SMC-LGA references the 2016 MnDOT Standard Specifications for Construction and does not set contract requirements for the material.

The SMC - LGA serves as a guide for material testing with allowable acceptance "as directed by the Engineer" detailed in Specification 1501.1(1) - Authority of the Engineer. These testing rates are a minimum and additional tests may be taken at the Engineer's discretion. A minimal testing rate does not always ensure a quality product; field observations and attention to detail is crucial. Materials not listed on an approved products list may be sampled and tested as directed by the Engineer. Materials listed on a Qualified Products list may be accepted or tested at the discretion of the Engineer.

Federal Aid projects require Independent Assurance Inspection. Contact the MnDOT District IA Inspector when the job starts to provide the proper servicing of your project.

Definitions

**SALT Construction Website**

MnDOT Office of State Aid for Local Transportation. The SMC - LGA is located at the construction page under "Information & Resources - Manuals".

**MnDOT Schedule of Materials Control**

Schedule of Materials Control (SMC) are inserted into project proposals to direct how materials are to be sampled. The SMC is updated yearly. Each SMC is project specific. Therefore, one needs to refer to their specific proposal.

**Approved Products List**

Products are "approved" when they have been found to routinely meet all applicable standards and specifications. The product is placed on the list based upon established successful manufacturer's quality control and warranties, but the listing may expire or require periodic renewal to verify the product has not changed over time. The approval process for the individual product should specify any expiration requirement.

**Qualified Products List**

Products are predicted to meet all applicable standards and specifications, but random sample testing is required to verify specific product lots meet specifications prior to usage. These products are generally considered to be "qualified" but not approved until tested for compliance. Successfully tested products lots are considered to be "approved". The approval process for the individual product should specify any further testing requirements for the product.

**Certified Sources**

Certified Sources must comply with each individual product's defined "certification procedure". Acceptance of products from certified sources follows the same sampling and testing as "qualified" products.

**Quality assurance (QA)** is a process-centered approach to ensuring that the best possible products or services are provided. Related to quality control, quality assurance focuses on enhancing and improving the process that is used to create the end result, rather than focusing on the result itself. Among the parts of the process that are considered in QA are planning, design, development, production and service.

**Quality control (QC)** is a process that is used to ensure a certain level of quality in a product or service. It includes actions deemed necessary to provide for the control and verification of certain characteristics of a product or service. It involves thoroughly examining and testing the quality of products or the results of services. The basic goal of quality control is to ensure that the products or services that are provided meet specific requirements and characteristics.
<table>
<thead>
<tr>
<th>Bid Item #</th>
<th>Item Description</th>
<th>Qualified Product List</th>
<th>Approved Product List</th>
<th>Certificate of Compliance</th>
<th>Accepted by Engineer</th>
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</tr>
<tr>
<td>2575.562</td>
<td>Hydraulic Matrix Type Bonded Fiber</td>
<td></td>
<td></td>
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<tr>
<td>2575.571</td>
<td>Rapid Stabilization Method 3</td>
<td></td>
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<tr>
<td>2580.603</td>
<td>Interim Pavement Marking</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2582.502</td>
<td>Paint - Pavement Marking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Items not included on the Approved Product List or the Manufacturer's Certifications have not been received are hereby accepted by the Engineer. Materials on a Qualified Products list which have not been tested at the discretion of the Engineer are hereby accepted.

signed:

Project Engineer      Date

January 2016
<table>
<thead>
<tr>
<th>Bid Item #</th>
<th>Item Description</th>
<th>Qualified Product List</th>
<th>Approved Product List</th>
<th>Certificate of Compliance</th>
<th>Accepted by Engineer*</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

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signed: ____________________________  ____________________________

Project Engineer          Date
# BITUMINOUS QUALITY MANAGEMENT

The Contractor shall provide and maintain a quality control program as detailed in Specification 2360.2.G. The Engineer shall review the quality control program for compliance.

<table>
<thead>
<tr>
<th>Type of Test</th>
<th>Spec Section</th>
<th>Contractor - QC Testing Rates</th>
<th>Agency - Testing Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk Specific Gravity</td>
<td>2360.2.G.7.b</td>
<td>1 test per 500 tons 55 lb. sample 3 full cylinder molds</td>
<td>1 Verification Mixture Sample test per day, all Verification samples are from a split (QC/QA) sample.</td>
</tr>
<tr>
<td>Maximum Specific Gravity</td>
<td>2360.2.G.7.c</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Voids (calculated)</td>
<td>2360.2.G.7.d</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asphalt Content</td>
<td>2360.2.G.7.a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adj. Asphalt Film Thickness (AFT)</td>
<td>2360.2.E.7.e</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gradation</td>
<td>2360.2.G.7.f</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fines to Effective Asphalt Ratio calc'd</td>
<td>2360.2.G.7.a/f</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coarse Aggregate Angularity (CAA)</td>
<td>2360.2.G.7.g</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fine Aggregate Angularity (FAA)</td>
<td>2360.2.G.7.h</td>
<td></td>
<td>1 Verification Mixture Sample test per day/ mix type, submit companion to the QC - CAA &amp; FAA test results.</td>
</tr>
<tr>
<td>Added AC/Total AC Ratio (calc'd)</td>
<td>2360.2.G.7.a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulk Specific Gravity</td>
<td>2360.2.G.7.b</td>
<td>1 test per 1000 tons 55 lb. sample 3 full cylinder molds</td>
<td></td>
</tr>
<tr>
<td>Maximum Specific Gravity</td>
<td>2360.2.G.7.c</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Voids (calculated)</td>
<td>2360.2.G.7.d</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asphalt Content</td>
<td>2360.2.G.7.a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adj. Asphalt Film Thickness (AFT)</td>
<td>2360.2.E.7.e</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gradation (minimum of 1 per day)</td>
<td>2360.2.G.7.f</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Added AC/Total AC Ratio (calculated)</td>
<td>2360.2.G.7.a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coarse Aggregate Angularity (CAA)</td>
<td>2360.2.G.7.g</td>
<td>NOTE 1</td>
<td></td>
</tr>
<tr>
<td>Fine Aggregate Angularity (FAA)</td>
<td>2360.2.G.7.h</td>
<td>NOTE 2</td>
<td></td>
</tr>
<tr>
<td>TSR</td>
<td>2360.2.G.7.i</td>
<td>When directed by the Materials Engineer</td>
<td></td>
</tr>
<tr>
<td>Aggregate Specific Gravity</td>
<td>2360.2.G.7.j</td>
<td></td>
<td>As directed by the Engineer</td>
</tr>
<tr>
<td>Mixture Moisture Content</td>
<td>2360.2.G.7.k</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asphalt Binder Certified Supplier</td>
<td>2360.2.G.7.l</td>
<td>NOTE 3 (1qt. Steel container for asphalt binder. 1/2 gal. plastic container with wide screw top for emulsion)</td>
<td></td>
</tr>
<tr>
<td>Asphalt Emulsion Certified Supplier</td>
<td>2357</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compaction / Density Requirements</td>
<td>2360.3.D</td>
<td>Review special provisions</td>
<td></td>
</tr>
<tr>
<td>Small Quantity Requirements</td>
<td></td>
<td>See 2360.2.G.5 &amp; 2360.3.G</td>
<td></td>
</tr>
</tbody>
</table>

Testing rates are minimums, additional testing is encouraged to ensure a quality product.

Contact the MnDOT District IA Inspector to provide servicing of your Federal Aid Project.


** The testing rates apply only to mixtures that have not been tested on previous projects.

Mixtures from previous years should use the start-up testing rates.

**At start-up or new Mix Design**: 2 tests per day for a minimum of 2 days, then 1 per day if CAA is met. If CAA > 8% of requirement, 1 sample per day but test 1 per week. No testing required for Class A and or B Aggregates.

**NOTE 1**: Shall be a Certified Supplier - No Samples Required unless otherwise directed by the Engineer.

**NOTE 2**: Agencies using MnDOT Metro Inspection Services will be sampled at the current MnDOT Schedule of Materials Control rates and will be billed accordingly.

**NOTE 3**:
# BITUMINOUS SPECIALTY ITEMS

<table>
<thead>
<tr>
<th>Type of Test</th>
<th>Spec</th>
<th>Contractor - QC Testing Rates</th>
<th>Agency - Testing Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gradation</td>
<td>2363</td>
<td>1 per 1,000 Ton with a minimum 1 per day.</td>
<td>1 per day. 35 lbs.</td>
</tr>
<tr>
<td></td>
<td>3139.3</td>
<td>Stockpile: 1/1,500 Tons (min 1/day)</td>
<td>Stockpile &amp; Machine Hopper: 1/day 30 lbs.</td>
</tr>
<tr>
<td>Micro-Surfacing</td>
<td>2354</td>
<td>Machine Hopper: 1/500 Tons (min 1/day)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3139.5</td>
<td>Stockpile or Machine Hopper: 1/500 Tons (min 1/day)</td>
<td></td>
</tr>
<tr>
<td>Seal Coat &amp; Otto Seal</td>
<td>2356</td>
<td>Stockpile: 1/1,500 Tons (min 1/day)</td>
<td>1/day from Hopper. 30 lbs.</td>
</tr>
<tr>
<td></td>
<td>3137.2</td>
<td>Chip Spreader Hopper: 1/day</td>
<td></td>
</tr>
<tr>
<td></td>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Crushing - CAA</td>
<td>2363</td>
<td>1 per 1,000 Ton with a minimum 1 per day.</td>
<td>1 per day from gradation test. 35 lbs.</td>
</tr>
<tr>
<td></td>
<td>3139.3</td>
<td>Machine Hopper: 1/500 Tons (min 1/day)</td>
<td></td>
</tr>
<tr>
<td>Sand Equivalence</td>
<td>2354</td>
<td>Stockpile or Machine Hopper: 1/500 Tons (min 1/day)</td>
<td>1/day, test at Engineer discretion, 25 lbs.</td>
</tr>
<tr>
<td></td>
<td>3139.5</td>
<td>Sample taken from first load on first day, submit to Agency: 30 lbs.</td>
<td></td>
</tr>
<tr>
<td>Flakiness Index</td>
<td>2356</td>
<td>Agency will test at their discretion, see Lab Manual 1223</td>
<td></td>
</tr>
<tr>
<td>Bituminous Seal Coat</td>
<td>2356</td>
<td>1/300 Tons, min 1/day. %AC, Gradation, Max SpG, Adj,AFT</td>
<td>1/day, 20 lbs. 1 cylinder from truck box.</td>
</tr>
<tr>
<td>UTBWC</td>
<td>3151</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2350</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stone Matrix Asphalt - SMA</td>
<td>2365</td>
<td>Tests, %AC, gradation, Gmm, Gmb, Voids, VMA, CAA, Draindown, VCA,</td>
<td></td>
</tr>
<tr>
<td>Lab Manual 1203, 1204, 1205, 1211,</td>
<td></td>
<td>fines/effective asphalt.</td>
<td>Tests: %AC, Gradation, Gmm, Gmb, Voids, VMA, CAA,</td>
</tr>
<tr>
<td>1214, 1806, 1807, 1808, 1813, 1853,</td>
<td></td>
<td>Rate, (1/1000 tons, min 1/day) Agg SpG, mix moisture, TSR to be</td>
<td>VCA, fines/effective asphalt. Agency is not</td>
</tr>
<tr>
<td>1854, 1855, AI SP-2, AASHTO T305</td>
<td></td>
<td>tested as directed by Engineer.</td>
<td>required to do draindown. Copy MDR to Project</td>
</tr>
<tr>
<td>Asphalt Emulsion List</td>
<td></td>
<td></td>
<td>Engineer and Grading &amp; Base Engineer.</td>
</tr>
<tr>
<td>Asphalt Binder Tests</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UTBWC</td>
<td>2353</td>
<td>Shall be a Certified Supplier - No Samples Required unless</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3151</td>
<td>otherwise directed by the Engineer:</td>
<td></td>
</tr>
<tr>
<td>Micro-Surfacing</td>
<td>2354</td>
<td>Asphalt Binder: First load, then 1/250,000 gallons. Sample size</td>
<td></td>
</tr>
<tr>
<td>Seal Coat &amp; Otto Seal</td>
<td>2356</td>
<td>of 1 quart metal container.</td>
<td></td>
</tr>
<tr>
<td>Tack Coat</td>
<td>2357</td>
<td>Emulsified Asphalt: First load, then 1/50,000 gallons. Sample</td>
<td></td>
</tr>
<tr>
<td>PASSRC &amp; PASB</td>
<td>3151</td>
<td>size of 1/2 gallon wide screw top plastic container.</td>
<td></td>
</tr>
</tbody>
</table>

Contact the MnDOT District IA Inspector to provide servicing of your Federal Aid Project.
<table>
<thead>
<tr>
<th>Test Type</th>
<th>Producer Testing Rates</th>
<th>Engineer Testing Rates</th>
<th>Grading &amp; Base Manual/Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gradation SFDR (Simple) Pre-ground un-stabilized material</td>
<td>1 per mile - report sieves 2&quot; &amp; 3&quot;</td>
<td>Run gradation at the discretion of the Engineer</td>
<td>.215 / 101 report sieve 2&quot; &amp; 3&quot;</td>
</tr>
<tr>
<td>Gradation (Entire) (Material to be stabilized)</td>
<td>One per day, give split sample to the Engineer</td>
<td>Run gradation at the discretion of the Engineer</td>
<td>.215 / 101 report sieve 2&quot;, 1.5&quot;, 1&quot;, 1.25&quot;, 3/4&quot;, 3/8&quot;, #4, #10, #30.</td>
</tr>
<tr>
<td>Gradation (Simple) (Material to be stabilized)</td>
<td>1 per mile for SFDR &amp; CIR w/o top size screening. 4 / mile for CIR with top size screens.</td>
<td>Run gradation at the discretion of the Engineer</td>
<td>.215 &amp; .293 / 101 report sieve 2&quot; &amp; 1.5&quot; for SFDR, 1.5&quot; and 1.25&quot; for CIR</td>
</tr>
<tr>
<td>Depth Check - Unstabilized and Stabilized</td>
<td>1 per 1,000' /machine width for each vertical machine face for initial pulverization and stabilization.</td>
<td>1 per day</td>
<td>.284 / 401</td>
</tr>
<tr>
<td>SFDR: Moisture during compaction of unstabilized portion</td>
<td>1/6,000 sq. yd.</td>
<td>none</td>
<td>.245 Speedy tester not allowed.</td>
</tr>
<tr>
<td>Penetration Index (DCP) - SFDR only Unstabilized.</td>
<td>1 per 1/2 mile lane mile</td>
<td>1 per lane mile</td>
<td>.255 / 205</td>
</tr>
<tr>
<td>Calibrate: mineral stabilizing agent application rate</td>
<td>Once using design rate per vane feeder.</td>
<td>Observe contractor calibration</td>
<td>.286 or .287</td>
</tr>
<tr>
<td>Moisture: before injecting liquid bituminous material</td>
<td>1 per 5,000 feet of lane of daily anticipated SFDR &amp; one after the addition of water by the Contractor or mechanical drying out (disking, etc).</td>
<td>none</td>
<td>.281 / 105</td>
</tr>
<tr>
<td>Yield: Mineral Stabilizing Agent and/or Liquid Bituminous Material</td>
<td>1 per transport load each type</td>
<td>1 per day each type</td>
<td>.286 &amp; .287 / 402 &amp; 403</td>
</tr>
<tr>
<td>Compaction: Nuclear density for SFDR stabilized and CIR</td>
<td>1 per 500 feet of lane width, (see note below).</td>
<td>Observe the Contractor.</td>
<td>0.282</td>
</tr>
<tr>
<td>Control Strip: SFDR Stabilized and CIR</td>
<td>Minimum of once per project</td>
<td>Observe the Contractor.</td>
<td></td>
</tr>
<tr>
<td>Bituminous Material Samples</td>
<td>none</td>
<td>Shall be a Certified Supplier - No Samples Required unless otherwise directed by the Engineer.</td>
<td>1 quart each sample</td>
</tr>
<tr>
<td>Mineral Stabilizing Agent Samples</td>
<td>none</td>
<td>1 sample</td>
<td>none</td>
</tr>
<tr>
<td>Foaming asphalt checks expansion ratio &amp; half life</td>
<td>1 per load</td>
<td>Observe the Contractor once per day.</td>
<td>0.285</td>
</tr>
<tr>
<td>Moisture (stabilized) - before placement of next layer during curing</td>
<td>none</td>
<td>3 daily after compaction.</td>
<td>Grading &amp; Base Manual</td>
</tr>
</tbody>
</table>

Note: The Engineer may require a Contractor to perform additional nuclear density tests in areas that the Engineer believes are failing density requirements.
# Grading and Base Construction Items

**Material Type** | Spec. | Minimum Required Agency | Acceptance Testing - QA | QC Testing Rates | Lab Sample |
--- | --- | --- | --- | --- | --- |
Aggregate Surfacing | 3138<br>2211.5 | Total quantity less than 4000 tons (2200 cy-cv) = 1 gradation, 1,000 tons (550 cy-cv) or less, determine compliance to individual results (table 2211-5). Total quantity greater than 4,000 tons (2200 cy-cv), divide the total quantity by 10,000, round up to the next whole number to determine the number of lots. Each lot is divided into 4 equal sublots, randomly sample each sublot. Determine individual results and subplot averages for compliance (Table 2211-4 & 2211-5) | 1 / 1,000 tons stockpile gradation only required for materials on hand. Spec 1906.2 | 1 / source 30 lb. |
Aggregate Base | 3149 | 1/40,000 Cubic Yards - Compact Volume - CV | 1 / 10,000 Cubic Yards - only required for material on hand, Spec 1906.2 | 1 / source 30 lb. |
Aggregate Shoulders | 3136 | 1/day | 1/6,000 yd2 & depth check | None |
Drainable Aggregate Base (OGAB & DSB) | 3149 | 1 / source | 1 / source - before delivery on the project. | 1 / source 30 lb. |
Granular Borrow/Embankment | 3149 | 1 / source | 1 / source - before delivery on the project. | 1 / source 30 lb. |
Select Granular Borrow/Embankment | 3149 | 1 / source | 1 / source - before delivery on the project. | 1 / source 30 lb. |
Modified Granular Borrow/Embankment | 3149 | 1 / source | 1 / source - before delivery on the project. | 1 / source 30 lb. |
Stabilizing Aggregate | 3149 | 1 / source | 1 / source - before delivery on the project. | 1 / source 30 lb. |
Full Depth Reclamation | 3135 | 1 / source | 1 / source - before delivery on the project. | 1 / source 30 lb. |
Granular Filter | 3601 | 1 / source | 1 / source - before delivery on the project. | 1 / source 30 lb. |
Granular Backfill | 3149 | 1 / source | 1 / source - before delivery on the project. | 1 / source 30 lb. |
Aggregate Backfill | 3149 | 1 / source | 1 / source - before delivery on the project. | 1 / source 30 lb. |
Granular Bedding | 3149 | 1 / source | 1 / source - before delivery on the project. | 1 / source 30 lb. |
Aggregate Bedding | 3149 | 1 / source | 1 / source - before delivery on the project. | 1 / source 30 lb. |
Coarse Filter | 3149 | 1 / source | 1 / source - before delivery on the project. | 1 / source 30 lb. |
Fine Filter | 3149 | 1 / source | 1 / source - before delivery on the project. | 1 / source 30 lb. |
Non-Granular Material per 2105.3F | 2105<br>2106<br>3149 | 1 per major soil, subgrade preparation specified density requires 100% of proctor density. | None | 1 sample 25 lb. |
Proctor **Non-Granular Material per 2105.3F** | 2105<br>2106<br>3149 | 1 per major soil, subgrade preparation specified density requires 100% of proctor density. | None | 1 sample 25 lb. |
Sand Cone **Specified Density** | 2105<br>2106<br>3149 | 1 per major soil, subgrade preparation specified density requires 100% of proctor density. | None | 1 sample 25 lb. |
Aggregate Base | 3138 | 1 DCP tests per 500 yd² (CV) or 1 per 900 Tons. If test rolled, 1 test / 1,000 yd³ (CV) or 1,800 Tons. | None | None |
Aggregate Shoulders | 3138 | 1 DCP tests per 500 yd² (CV) or 1 per 900 Tons. If test rolled, 1 test / 1,000 yd³ (CV) or 1,800 Tons. | None | None |
Full Depth Reclamation | 3135 | 1 DCP test per 3,000 yd² | None | None |
Granular Materials Subgrade Preparation (for materials meeting 3149.2B1) | 3149.2<br>B | AGENCY TESTING: Roadway Embankment: One test per 4,000 yd³ (CV) or if test rolled, one test per 6,000 yd³ (CV). Transverse culverts & Abutments: 1 test per every 2 feet of fill per 250' of trench length. Structures Trenches: One test/500 feet of each structure length at various depths. Subgrade Preparation: One per 25 road stations. | None | None |
Penetration Index Method Index (DCP) | 3138 | AGENCY TESTING: Roadway Embankment: One test per 4,000 yd³ (CV) or if test rolled, one test per 6,000 yd³ (CV). Transverse culverts & Abutments: 1 test per every 5 feet of fill per 250' of trench length. Structures Trenches: One test/500 feet of each structure length at various depths. Subgrade Preparation: One per 25 road stations. | None | None |

The Grading and Base Manual allows the nuclear density gauge, see pages 60 and 65.

January 2016
<table>
<thead>
<tr>
<th>Material Type</th>
<th>Spec</th>
<th>Minimum Required Agency Acceptance Testing - QA</th>
<th>QC Testing Rates</th>
<th>Lab Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggregate Base, Shoulder &amp; Surfacing</td>
<td>3138</td>
<td>1 per project unless directed by the Engineer, obtain split companion sample for the Contractor. * May replace tests with time stamped photos showing water being applied.</td>
<td>1 / 1,000 yd³</td>
<td>None</td>
</tr>
<tr>
<td>*Drainable Aggregate Base (OGAB &amp; DSB)</td>
<td></td>
<td></td>
<td>1/6000 yd²</td>
<td></td>
</tr>
<tr>
<td>Full Depth Reclamation</td>
<td>3135</td>
<td>1/10,000 yd³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All Embankment Materials</td>
<td>3149</td>
<td>1 per 25 road stations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subgrade Preparation</td>
<td>2105</td>
<td>1 per day unless directed by Engineer</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Moisture Content Test During All Compaction Methods</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Particle Count (note 1)</td>
<td>3138</td>
<td>1/ source unless directed by Engineer, (required for 3138.2B &amp; C, 3149.2C &amp; G1, 3136.2B Drainable Bases).</td>
<td>1 required for mat'l on hand, Spec 1906.2</td>
<td>1/source 30lb</td>
</tr>
<tr>
<td>Aggregate Quality Tests</td>
<td>3138</td>
<td>1/ source unless directed by Engineer</td>
<td>2 required for mat'l on hand, Spec 1906.2</td>
<td>1/source 30lb</td>
</tr>
<tr>
<td>3149</td>
<td>3601</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Depth Check</strong></td>
<td></td>
<td>1/1,000 feet of machine width.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test Rolling (as directed in the special provisions)</td>
<td>2111</td>
<td>As directed by the Engineer the contractor will perform test rolling at the top of all subgrade, base layers (2211), non stabilized FDR (2215) and granular layers not meeting the requirements of 3149.2B2 (2105 &amp; 2106). Minimum 12' width and 300' length. Agency to observe test rolling. See G &amp; B Manual 5-692.270.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Laboratory Samples are companion split samples to the QA sample:**
1. Companion gradation, proctor, QA crushing, aggregate quality samples not required 1,000 tons or less.
2. Include the laboratory companion with the first field sample.
3. Include the field sample results with the laboratory sample.
4. Laboratories with AMRL Accreditation are not required to submit laboratory companion samples.
5. Carbonate aggregate materials require 50 lb. samples for the laboratory testing.

**NOTE**
Percent crushing test is not required when the material is crushed from a quarry or contains 25% or greater recycled materials.

**NOTE**
Submit a laboratory companion to the first Acceptance Gradation sample for a bituminous extraction, see 3138.2C. Full Depth Reclamation samples are not required.

**NOTE**
The Certification of Aggregates and Granular Materials procedure and documentation of testing locations is at the discretion of the Engineer.

* Review the Special Provisions. For granular materials, aggregate compaction will be by the "Penetration Index Method" unless otherwise designated in the Special Provisions. Other compaction methods include the "Specified Density Method" (sand cone), "Quality Compaction Method" or "Light Weight Deflectometer Method. See 2211.3.D.2 Compaction. The Grading and Base Manual allows the nuclear density gauge, see pages 80 and 65.

Conversions: 1 ton = 0.55 yd³ (CV), 1 ton = 0.7 yd³ (LV), 1 yd³ (CV) = 1.8 tons.

Contact the MnDOT District IA Inspector to provide servicing of your Federal Aid Project.

Samples are not required for less than 500 tons (275 yd³).

January 2016
# GRADING AND BASE CONSTRUCTION ITEMS 3 of 3

## Guidelines for Required Crushing & Aggregate Quality Tests

<table>
<thead>
<tr>
<th>3149 Granular Materials</th>
<th>3138 Aggregate for Surface and Base</th>
<th>3136 Drainable Bases</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Crushing</strong></td>
<td><strong>Yes</strong>, 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.</td>
<td><strong>Yes</strong>, for Class 5, 5Q &amp; 6. Test waived if material contains recycled at twice the minimum crushing requirement. Not required for quarried sources. Class 2 must contain 100% crushed quarry rock.</td>
</tr>
<tr>
<td><strong>Bitumen Content</strong></td>
<td><strong>Yes</strong>, if it contains Bitumen</td>
<td><strong>Yes</strong>, if it contains Bitumen</td>
</tr>
<tr>
<td><strong>LAR</strong></td>
<td>Not applicable</td>
<td><strong>Yes</strong>, if source is carbonate quarry and does not contain bitumen.</td>
</tr>
<tr>
<td><strong>Insoluble Residue</strong></td>
<td><strong>Yes</strong>, if source is carbonate quarry and does not contain bitumen.</td>
<td><strong>Yes</strong>, if source is carbonate quarry and does not contain bitumen.</td>
</tr>
<tr>
<td><strong>Litho Exam &amp; Shale Float Test</strong></td>
<td><strong>Yes</strong>, for Medium Filter Aggregate</td>
<td><strong>Yes</strong>, for Class 3, 4, 5, 5Q &amp; 6, when not from quarried rock, and does not contain bitumen.</td>
</tr>
</tbody>
</table>

[Click here for testing procedures in the Grading & Base Manual.](#)

[Forms and worksheets at the Grading & Base Website.](#)

[Gradation worksheets at the SALT Construction Website](#)
## CERTIFIED READY-MIX CONCRETE, 1 of 2

The Prime Contractor is responsible to assure that all ready-mix concrete used is produced by an annually Certified Ready-Mix plant as detailed in Specification 2461.3F.

### Material Spec.
- bridge
- 2406.2
- 2411.2
- 2461.2
- 2461.3
- general
- 2301**
- 2452.2
- 2461.2
- 2461.3
- 2506.2
- 2511.2
- 2514.2
- 2520.2
- 2521.2
- 2531.2
- 2533.2
- 2545.2
- 2564.2
- 2565.2

### Test Type (Concrete Manual)
- Gradation
  - (5-694.145)
  - (5-694.148)
- Moisture Content
  - (5-694.142)
- Aggregate Quality
  - (5-694.146)
- Coarse Aggregate (% Passing 200)
  - (5-694.146)

### Engineer Testing Rates (1)
- Coarse & Fine: When over 20 yd³ per week, 1 per week or 1 per 400 yd³, whichever is greater. Bridge Deck Concrete must have passing gradations prior to mixing.
- Coarse & Fine: 1 per week

### Concrete Plant Production Testing Rates
- 21763
  - Concrete Agg. Work sheet
- 2449
  - Weekly Concrete Agg. Report
- 24143
  - Weekly Certified R-M Plant Report

### Concrete Field Testing Rates
- 2448
  - Weekly Concrete Report

### Sampling Locations for Air, Slump, Temperature and Cylinder Testing
1. First load each day per mix - Take sample after discharging approximately 1/4 yd³, stop further discharge until both slump and air content test are completed. The first load of concrete must have passing air content and slump prior to placement. Cast strength specimens from the same load as the air content and slump test. Test whenever adjustments are made to the mix.
2. Subsequent tests - Sample from the middle portion of the load.

### Test Type
- Air Content - Type 3 Concrete
  - (5-694.541)
- Slump
  - (5-694.531)
- Air and Concrete Temperature
  - (5-694.550)

### Engineer Testing Rates (1)
- Air Content - Type 3 Concrete: 1 test per 200 yd³. For Bridge Concrete: 1 test per 100 yd³. Test first load each day per mix. Test when adjustments are made to the mix.
- Slump: 1 test per 200 yd³. For Bridge Concrete: 1 test per 100 yd³. Test first load each day per mix, or as necessary to verify passing slump. Not required for slip form placement.
- Air and Concrete Temperature: Record temperature each time air content, slump or compressive strength specimen is performed/fabricated.

(1) - Review the requirements of 2461.3F Certified Ready-Mix Concrete, 2461.3G Concrete Placement and 694.010 Inspector's Checklist in the Concrete Manual.

*Small quantity is 25 yd³ or less per week with no gradation testing or plant monitoring required but remember that Concrete Field Testing is required.

Contact the MnDOT District IA Inspector to provide servicing of your Federal Aid Project.

January 2016
CERTIFIED READY-MIX CONCRETE, 2 of 2

The Prime Contractor is responsible to assure that all ready-mix concrete used is produced by an annually Certified Ready-Mix plant as detailed in Specification 2461.3F.

**Concrete Field Testing Rates**

<table>
<thead>
<tr>
<th>Spec.</th>
<th>Test Type</th>
<th>Engineer Testing Rates (1)</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Compressive Strength</td>
<td>General Concrete Grades F, G, M, P, and R; 1 set of 3 cylinders per 300 yd3.</td>
<td>2409 Concrete Cylinder</td>
</tr>
<tr>
<td></td>
<td>(5-694.511)</td>
<td>Bridge Concrete Grades B, S, and Y; 1 set of 3 cylinders per 100 yd3, then 1 set of 3 cylinders per 300 yd3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Standard cylinder size is 4 x 8, use 6 x 12 with aggregate greater than 1 1/4&quot;.</td>
<td>Agency will break 1 set of 3 cylinders at 28 days. Agency will cast up to 3 control cylinders, any additional control cylinders are the responsibility of the Contractor.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Concrete Pavement Thickness **</td>
<td>Cellular Concrete: 1 set of 4 cylinders (28 days) per day, fill in 2 equal lifts, <strong>do not rodd</strong>, lightly tap the sides, cover and move to area with no vibration. Do not disturb for 24 hours.</td>
<td>24327</td>
</tr>
<tr>
<td></td>
<td>Flexural Strength</td>
<td>Observation of probing or coring at the Engineer’s discretion.</td>
<td>2182 Concrete Test Beam Data</td>
</tr>
<tr>
<td></td>
<td>Concrete Pavement Texture</td>
<td>Producer: 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.</td>
<td>MIT SCAN T2 Report</td>
</tr>
</tbody>
</table>

(1) - Review the requirements of 2461.3F Certified Ready-Mix Concrete, 2461.3G Concrete Placement and 5-694.010 Inspector’s Checklist in the Concrete Manual.

*Small quantity is 25 yd3 or less per week with no gradation testing or plant monitoring required but remember that Concrete Field Testing is required.

**Concrete Pavement: Use Certified Ready-Mix Concrete testing rates when: a) The entire concrete paving project is less than 3,500 cu. yd. b) When a secondary plant is used to provide minor work.

Contact the MnDOT District IA Inspector to provide servicing of your Federal Aid Project.

Agencies using MnDOT Metro Inspection Services will be sampled at the current MnDOT Schedule of Materials Control rates and will be billed accordingly.

The testing rates shown in the SMC - LGA are minimums. Take as many tests as necessary to ensure quality concrete. It is recommended that the Agency Plant Monitor be present during critical pours, such as superstructure or paving concrete. If any field test fails, reject the concrete or if the Producer makes adjustments to the load to meet requirements, record the adjustments on the Certificate of Compliance and Weekly Concrete Report. Retest the load and record the adjusted test results. Make sure the next load is tested, before it gets into the work. If batching adjustments are made at the plant, test the adjusted load, before it gets into the work. Continue to test the concrete when test results are inconsistent or marginal. Material not meeting requirements shall not knowingly be placed in the work. If failing concrete inadvertently gets placed in the work, use either the Mn/DOT Standard Specifications for Construction or the Schedule of Price Reductions for Concrete to address penalties. It is recommended that the Agency representative continually monitor the progress of all concrete pours. (It is not a recommended practice to only perform minimum testing requirements and leave the project.)

January 2016
# Concrete Plant and Field Materials

All materials must come from certified or qualified sources. All certified source must state so on the delivery invoices. The most current list of certified/approved sources can be found at MnDOT Material Website. Materials listed on the Approved Products List do not have to be sampled and need to be listed on the Material Acceptance Summary detailed in the SALT SMC. Samples can be submitted as directed by the Engineer.

<table>
<thead>
<tr>
<th>Material</th>
<th>Spec. No.</th>
<th>Minimum Required Field Sampling Rate</th>
<th>Form No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portland Cement</td>
<td>3101</td>
<td>Shall be a Certified Supplier - No Samples Required unless otherwise directed by the Engineer. For certified ready-mix and concrete paving sample rates: 1 sample when the plant is certified. Take additional samples at 6 months if producing Agency concrete, if the plant changes sources or as the contract requires. The producer obtains a 5 lb. sample and stores the sample in a sealed container provided by the Agency and includes the suppliers delivery invoice from which the sample is obtained.</td>
<td>24300 ID Card Cement Samples</td>
</tr>
<tr>
<td>Slag</td>
<td>3102</td>
<td></td>
<td>24308 Fly Ash</td>
</tr>
<tr>
<td>Blended Cement</td>
<td>3103</td>
<td></td>
<td>2410 Sample ID Card</td>
</tr>
<tr>
<td>Fly Ash</td>
<td>3115</td>
<td>For all concrete: 1 sample in a 1/2 pint plastic container provided by the Agency when the plant is certified. Take additional samples at 3 months if producing Agency concrete, if the plant changes sources or as the contract requires.</td>
<td></td>
</tr>
<tr>
<td>Admixtures (Acceleration, Retarding, Water-Reducing, Air-Entraining, etc.)</td>
<td>3113</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>3906</td>
<td>1 sample in a 1 gallon clean glass or plastic container from a questionable source.</td>
<td></td>
</tr>
<tr>
<td>Preformed Joint Filler</td>
<td>3702</td>
<td>Visual inspection, sample size 2 sq.ft.</td>
<td>2410 Sample ID Card</td>
</tr>
<tr>
<td>Preformed Elastomeric Type</td>
<td>3721</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silicone Joint Sealer</td>
<td>3722</td>
<td>1 per lot. Only materials from a qualified sources. Link to Approved Products List.</td>
<td></td>
</tr>
<tr>
<td>Hot Poured Elastomeric Type</td>
<td>3723</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burlap</td>
<td>3751</td>
<td>Visual Inspection</td>
<td></td>
</tr>
<tr>
<td>Paper</td>
<td>3752</td>
<td>Visual Inspection - Must be white opaque.</td>
<td></td>
</tr>
<tr>
<td>Membrane Curing Compound</td>
<td>3754</td>
<td>Visual Inspection - Use only pre-approved curing compounds.</td>
<td></td>
</tr>
<tr>
<td>Plastic</td>
<td>3755</td>
<td>Visual Inspection - Must be white opaque and free from holes.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3756</td>
<td>Text</td>
<td></td>
</tr>
</tbody>
</table>

Refer to the " Metals" schedule for sampling requirements for concrete reinforcement.

Agencies using MnDOT Metro Inspection Services will be sampled at the current MnDOT Schedule of Materials Control rates and will be billed accordingly.

January 2016
### 2301 CONCRETE PAVEMENT

<table>
<thead>
<tr>
<th>Test Type (concrete manual)</th>
<th>Spec.</th>
<th>Concrete Paving Batch Plant Agency Testing</th>
<th>Certified Ready-Mix Plant Agency Testing</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gradation (1) (5-694.145)</td>
<td>3126</td>
<td>Test the first 4 QA samples of production each time the Contractor mobilizes the plant in a calendar year or changes aggregate sources.</td>
<td>1 per 1000 yd³ or 1 per week whichever is higher, randomly.</td>
<td>21764 Agg Work sheet</td>
</tr>
<tr>
<td>(5-694.146)</td>
<td>3137</td>
<td>1 per day randomly thereafter.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aggregate Moisture - QC Verification (2) (5-694.142)</td>
<td>3126</td>
<td>If w/c incentives apply: 1 per 1000 yd³ or every 4 hours, whichever is greater. Take initial sample within the first 250 yd³.</td>
<td>If w/c incentives apply: 1 per 200 yd³ or every 4 hours, whichever is greater. Take initial sample within the first 100 yd³.</td>
<td>Concrete W/C Ratio Work sheet</td>
</tr>
<tr>
<td>(5-694.532)</td>
<td>3137</td>
<td>Take initial sample within the first 250 yd³. At least one additional verification test should be taken if more than 1000 yd³ is produced in a day.</td>
<td>Take initial sample within the first 100 yd³. At least one additional verification test should be taken if more than 400 yd³ is produced in a day.</td>
<td></td>
</tr>
<tr>
<td>Coarse Aggregate, -200 sieve (5-694.146)</td>
<td>3137</td>
<td>1 randomly selected sample on the first day of production and each time the Contractor mobilizes the plant, changes the aggregate sources, or the cleanliness of the coarse aggregate is in question, then 1 per week randomly thereafter. -200 test may be performed at the lab instead at the plant at the discretion of the Engineer.</td>
<td></td>
<td>21764 Agg Work sheet</td>
</tr>
<tr>
<td>Coarse and Fine Aggregate Quality (4)</td>
<td>3126</td>
<td>During concrete production: 1 randomly selected test each fraction every 20,000 yd³ of production. Split the Quality sample 4 ways: 1) Provide 2 quarters of the sample to the producer/contractor. 2) Test the -200 on the coarse aggregate at the plant the day it was sampled. 3) Submit the remaining sample to the lab for quality testing including testing the -200 sieve on the coarse aggregate.</td>
<td></td>
<td>2410 Sample ID Card</td>
</tr>
<tr>
<td>(5-694.146)</td>
<td>3137</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alkali Silica Reactivity (ASR) Testing</td>
<td>2301</td>
<td>1 per paving project per sand source. Provide one 5 lb. sample of: cement, supplementary cementitious material (fly ash or slag), and sand. Write &quot;Project Specific ASR Testing&quot; on all 3 sample cards. ASR Testing is not required if the entire project is less than 3,500 cubic yards.</td>
<td></td>
<td>2410 24300 24308</td>
</tr>
<tr>
<td>Coarse Aggregate Quality Testing of Incentive / Disincentive</td>
<td>3137</td>
<td>If coarse aggregate quality incentives apply: Test the Class B aggregates for % absorption and Class C aggregates for % carbonate including any other test necessary to make those determinations. Sample the 2 largest fractions in accordance with the following table and 2301: Coarse Aggregate Quality Incentive/Disincentive Sampling Rates</td>
<td></td>
<td>Coarse Agg Quality Incent / Disincent Work sheet</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Plan Concrete Cubic Yards</td>
<td>Samples per fraction</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3,600 - 7,500</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>7,501 - 10,000</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>10,001 - 25,000</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>25,001 - 50,000</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>50,001 +</td>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>

*Use Certified Ready-Mix Concrete testing rates when: a) The entire concrete paving project is less than 3,500 cu yd. b) When a secondary plant is used to provide minor work.

Agencies using MnDOT Metro Inspection Services will be sampled at the current MnDOT Schedule of Materials Control rates and will be billed accordingly. Contact the MnDOT District IA Inspector to provide servicing of your Federal Aid Project.

January 2016
### 2301 Concrete Pavement - Agency 2 of 2

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Spec.</th>
<th>Concrete Field Testing - Agency</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Content before consolidation for Type 3 concrete</td>
<td></td>
<td>I correlation air test per day</td>
<td></td>
</tr>
<tr>
<td>Air Content after consolidation for Type 3 concrete</td>
<td></td>
<td>1 air test per day</td>
<td>2448 Weekly Concrete Report</td>
</tr>
<tr>
<td>Slump</td>
<td></td>
<td>For fixed form placement: 1 slump test per day. For slip form placement: No slump testing required.</td>
<td></td>
</tr>
<tr>
<td>Concrete Temperature</td>
<td></td>
<td>Record temperature each time air content, slump or strength test specimen is performed/fabricated by the Agency.</td>
<td>2162 Test Beam Data</td>
</tr>
<tr>
<td>Flexural Strength</td>
<td></td>
<td>Supply beam boxes, cure, and test beams. MnDOT standard beam box size is 6&quot; x 6&quot; x 20&quot; unless other sizes or types are approved by the Concrete Engineer.</td>
<td></td>
</tr>
<tr>
<td>Concrete Pavement Texture</td>
<td></td>
<td>Determine texture testing locations using random numbers.</td>
<td>Probing, Coring, Texture and MIT-Scan T2 Report</td>
</tr>
<tr>
<td>Thickness</td>
<td></td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>Surface Smoothness</td>
<td></td>
<td>None</td>
<td>Concrete Profile Summary Work Sheet</td>
</tr>
</tbody>
</table>

Contact the MnDOT District IA Inspector to provide servicing of your Federal Aid Project.

**Note (1):** 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 gradations and quality tests require companion samples. If Coarse Aggregate Quality Incentive / Disincentives apply: The Agency may also use the QA samples for incentive / disincentive testing. Notify the producer to double the QC/QA sample size. If well-graded aggregate incentives apply: Use the Contractor's gradation results for well-graded aggregate incentive calculations as verified by Agency testing. Use the Well-graded Concrete Agg Worksheet.

**Note (2):** If w/c incentives apply: Use aggregate moisture results for determining the water content to calculate the w/c incentive / disincentive. Use the Concrete W/C Ratio Calculation Worksheet and do not leave sample unattended.

**Note (3):** If w/c incentives apply: Microwave oven verification testing to verify the w/c ration is completed in conjunction with Agency aggregate moisture testing. Do not leave samples unattended.

**Note (4):** Prior to concrete production: Obtain pre-production samples for quality testing at least 16 hours prior to concrete production. Samples may be taken from the stockpile and -200 test may be performed at the lab instead at the plant at the discretion of the Engineer. If the entire project is <3,500 yd³, pre-production sampling is not required.

<table>
<thead>
<tr>
<th>Minimum Aggregate Sample Size</th>
<th>*companion required, double sample size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggregate Size</td>
<td>Gradation*</td>
</tr>
<tr>
<td>3/4&quot; Plus, #4</td>
<td>25 lb.</td>
</tr>
<tr>
<td>3/4&quot; Minus, #67</td>
<td>25 lb.</td>
</tr>
<tr>
<td>#7, CA-70</td>
<td>6 lb.</td>
</tr>
<tr>
<td>CA-80, #89</td>
<td>1.1 lb. (500 g)</td>
</tr>
<tr>
<td>Fine Aggregate</td>
<td>1.1 lb. (500 g)</td>
</tr>
</tbody>
</table>

January 2016


**CONCRETE PAVEMENT - PRODUCER / CONTRACTOR 1 of 2**

<table>
<thead>
<tr>
<th>Test Type (concrete manual)</th>
<th>Spec.</th>
<th>Concrete Paving Batch Plant Production Testing</th>
<th>Certified Ready-Mix Plant Production Testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gradation (1)</td>
<td>3126, 3137</td>
<td>When over 250 yd³ produced per day: 1 per 1500 yd³, or completed 1 per 1/2 day, whichever is the higher sampling rate.</td>
<td>When over 20 yd³ produced per day: 1 per 400 yd³, or completed every 4 hours, whichever is the higher sampling rate.</td>
</tr>
<tr>
<td>Coarse Aggregate -200 sieve (5-694.146)</td>
<td>3137</td>
<td>Test the first sample then at least 1 of the next 3 samples on the first day of production and each time the Contractor mobilizes the plant, changes the aggregate sources, or the cleanliness of the coarse aggregate is in question, then 1 per day randomly thereafter. Test these samples at the plant.</td>
<td></td>
</tr>
<tr>
<td>Aggregate Moisture QC Verification (2) (5-694.142)</td>
<td>3126, 3137</td>
<td>If w/c incentives do not apply: 1 per 1000 yd³, or 1 completed every 4 hours, whichever is the higher sampling rate.</td>
<td>If w/c incentives do not apply: 1 completed every 4 hours.</td>
</tr>
<tr>
<td>Water Content, Microwave Oven Verification Review Concrete Manual</td>
<td></td>
<td>If w/c incentives apply: Obtain the plastic concrete sample at the plant. See Concrete Manual (5-694.532)</td>
<td></td>
</tr>
<tr>
<td>Unit Weight QC (5-694.541)</td>
<td></td>
<td>Test one load of concrete per day at the plant. See Concrete Manual (5-694.542)</td>
<td>Test the first load of concrete at the plant</td>
</tr>
<tr>
<td>Air Content QC</td>
<td></td>
<td>Prior to concrete production: Test the Agency's pre-production sample at the Contractor's discretion. During concrete production: Test the -200 on the quality companion sample the day it was sampled. All other testing is at the Contractor's discretion.</td>
<td></td>
</tr>
<tr>
<td>Coarse and Fine Aggregate Quality</td>
<td>3126, 3137</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coarse Aggregate Quality Testing for Incentive / Disincentive</td>
<td>3137</td>
<td>Test at the Contractor's discretion.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Minimum Aggregate Sample Size</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>*companion required, double sample size</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Aggregate Size</th>
<th>Gradation*</th>
<th>Quality*</th>
<th>Moisture</th>
<th>% -200 C.Agg</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4&quot; Plus, #4</td>
<td>25 lb.</td>
<td>50 lb.</td>
<td>2000 g</td>
<td>10 lb.</td>
</tr>
<tr>
<td>3/4&quot; Minus, #67</td>
<td>25 lb.</td>
<td>30 lb.</td>
<td>2000 g</td>
<td>6 lb.</td>
</tr>
<tr>
<td>#7, CA-70</td>
<td>6 lb.</td>
<td>30 lb.</td>
<td>2000 g</td>
<td>6 lb.</td>
</tr>
<tr>
<td>CA-80, #69</td>
<td>1.1 lb. (500 g)</td>
<td>30 lb.</td>
<td>500 g</td>
<td>-</td>
</tr>
<tr>
<td>Fine Aggregate</td>
<td>1.1 lb. (500 g)</td>
<td>30 lb.</td>
<td>500 g</td>
<td>-</td>
</tr>
</tbody>
</table>

* Use Certified Ready-Mix Concrete testing rates when: a) The entire concrete paving project is less than 3,500 cu.yd. b) When a secondary plant is used to provide minor work.

**NOTE (1):** 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.

**NOTE (2):** 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.

Contact the MnDOT District IA Inspector to provide servicing of your Federal Aid Project.

January 2016
<table>
<thead>
<tr>
<th>Test Type</th>
<th>Spec.</th>
<th>Concrete Field Testing - Contractor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Content before consolidation for Type 3 concrete</td>
<td>1 per 300 yd$^3$ or 1 per hour, whichever is less. Test first load each day per mix.</td>
<td></td>
</tr>
<tr>
<td>Air Content after consolidation for Type 3 concrete</td>
<td>Test 1 air content per 1/2 day of slip form paving to establish an air loss correction factor (ACF). See Special Provisions for additional information.</td>
<td></td>
</tr>
<tr>
<td>Slump</td>
<td>For fixed form placement: 1 per 300 yd$^3$ and as directed by the Engineer. Test first load each day per mix. For slip form placement: No slump testing required</td>
<td></td>
</tr>
<tr>
<td>Concrete Temperature</td>
<td>Record temperature each time air content, slump or strength test specimen is performed/fabricated by the Contractor.</td>
<td></td>
</tr>
<tr>
<td>Flexural Strength</td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>Concrete Pavement Texture</td>
<td>1 per 1000 lineal 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.</td>
<td></td>
</tr>
<tr>
<td>Thickness</td>
<td>The Contractor drills concrete cores at locations determined by the Agency. The Contractor probes the plastic concrete at locations determined by the Agency.</td>
<td></td>
</tr>
<tr>
<td>Surface Smoothness</td>
<td>Contractor provides MnDOT certified inertial profiler results for the entire project as required by the contract. Check for current certification.</td>
<td></td>
</tr>
</tbody>
</table>

Contact the MnDOT District IA Inspector to provide servicing of your Federal Aid Project.
## 2404 CONCRETE WEARING COURSE FOR BRIDGES

<table>
<thead>
<tr>
<th>Test Type (concrete manual)</th>
<th>Spec.</th>
<th>Contractor Testing</th>
<th>Agency Testing</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gradation, Quality, Coarse Agg - 200 QC/Verification (5-694.145) (5-694.146) (5-694.148)</td>
<td>3126 3137</td>
<td>Prior to production, provide the Agency with: Aggregate pit numbers, 1 passing gradation result per fraction per source. No quality test results are required. Test Agency companion samples are Contractor’s discretion.</td>
<td>1 per fraction prior to production and each time aggregate is delivered to the site.</td>
<td>2410 Sample ID Card</td>
</tr>
<tr>
<td>Air Content - Type 3 Concrete (Verification) (5-694.541)</td>
<td>None</td>
<td>1 per 15 yd³, Test at beginning of pour each day.</td>
<td>Weekly Report of Low Slump Concrete</td>
<td></td>
</tr>
<tr>
<td>Slump (Verification) (5-694.531)</td>
<td>None</td>
<td>1 per 15 yd³, Test at beginning of pour each day. Allow mix to hydrate 5 minutes before slump test to assure all cement is saturated.</td>
<td>2409 Cyl. ID Card</td>
<td></td>
</tr>
<tr>
<td>Compressive Strength (5-694.511)</td>
<td>None</td>
<td>1 cylinder (28 day) per 30 yd³</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test</th>
<th>Minimum Sample Size</th>
<th>*Companion req’d, double sample size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gradation</td>
<td>6 lb. for # 7</td>
<td>1.1 lb. Sand</td>
</tr>
<tr>
<td>Quality</td>
<td>50 lb. for Coarse Aggregate</td>
<td>30 lb. Fine Aggregate</td>
</tr>
</tbody>
</table>

Contact the MnDOT District IA Inspector to provide servicing of your Federal Aid Project.
## CONCRETE PAVEMENT REPAIR - CPR for 3U18

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Spec.</th>
<th>Contractor Testing</th>
<th>Agency Testing</th>
<th>Forms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gradation, Quality, Coarse Agg -200</td>
<td>3126</td>
<td>Prior to production, the Contractor shall provide the Agency with: Aggregate pit numbers, 1 passing gradation result per fraction per source. No quality test results are required. Test companion samples at Contractor's discretion.</td>
<td>Gradation: 1 per aggregate fraction prior to production and each time aggregate is delivered to the site. Quality Testing &amp; Coarse Agg - 200: 1 test per aggregate fraction per source. The Agency may use the gradation results for the Quality Samples as a substitute for 1 required field gradation.</td>
<td>2410 Sample ID Card</td>
</tr>
<tr>
<td></td>
<td>3137</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Content - Type 3 Concrete</td>
<td></td>
<td>None</td>
<td>1 per 15 yd³, Test at beginning of pour each day.</td>
<td>21412 Weekly Report of Low Slump Concrete</td>
</tr>
<tr>
<td>Slump</td>
<td>Review</td>
<td>None</td>
<td>1 per 15 yd³, Test at beginning of pour each day. Allow mix to hydrate 5 minutes before slump test to assure all cement is saturated.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Concrete Manual Website</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compressive Strength</td>
<td></td>
<td>None</td>
<td>1 cylinder (28 day) per 30 yd³</td>
<td>2409 Cyl ID Card</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Contact the MnDOT District IA Inspector to provide servicing of your Federal Aid Project.
## Dowel Bar Retrofit - DBR

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Spec.</th>
<th>Contractor Testing</th>
<th>Agency Testing</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gradation, Quality,</td>
<td>3126</td>
<td>Prior to production, the Contractor shall provide the Agency with: Aggregate pit</td>
<td>1 per fraction prior to production and each time aggregate is delivered to the site.</td>
<td>2410 Sample ID Card</td>
</tr>
<tr>
<td>Coarse Agg -200</td>
<td>3137</td>
<td>numbers, 1 passing gradation result per fraction per source. No quality test results are required. Test companion samples are Contractor's discretion.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Spec.</th>
<th>Agency Testing: None</th>
<th>Contractor Testing: None</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBR Material Compressive</td>
<td>Review</td>
<td><strong>Agency Testing:</strong> 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. <strong>First day of production:</strong> 1 set of 3 cylinders at a rate directed by the Concrete Engineer. <strong>After the first day of production:</strong> 1 cylinder per day during production tested at a rate determined by the Engineer to determine traffic strength.</td>
<td>Review Concrete Manual</td>
<td>2409 Cylinder ID Card</td>
</tr>
<tr>
<td>Strength</td>
<td>Manual</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Test

<table>
<thead>
<tr>
<th>Test</th>
<th>Minimum Sample Size</th>
<th>*companion req'd, double sample size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gradation</td>
<td>1.1 lb. for # 89 &amp; Sand</td>
<td></td>
</tr>
<tr>
<td>Quality</td>
<td>50 lb. Coarse Aggregate</td>
<td>30 lb. Fine Aggregate</td>
</tr>
</tbody>
</table>

Contact the MnDOT District IA Inspector to provide servicing of your Federal Aid Project.
## LANDSCAPING AND EROSION CONTROL ITEMS

<table>
<thead>
<tr>
<th>Kind of Material</th>
<th>Spec. #</th>
<th>Min. Required Acceptance Testing (Field Testing Rate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufactured Topsoil Borrow, Salvaged Topsoil (stockpiled)</td>
<td>3877.2</td>
<td>As directed by the Engineer</td>
</tr>
<tr>
<td>Plant Stock &amp; Landscape Materials</td>
<td>3861 and 2571.2A1</td>
<td>Materials must be in accordance with the Inspection and Contract Administration Guidelines for MnDOT Landscape Projects of which determines the minimum and maximum criteria thresholds. Certificate of Compliance, Nursery stock certificate registered with Mn Dept. of Agriculture. Out of state products subject to pest quarantines must accompanied by documentation certifying all products are free of regulated pests.</td>
</tr>
<tr>
<td>Erosion Control Blanket</td>
<td>3885</td>
<td>Visual Inspection and Check approved products or approved vendors list - As directed by the Engineer.</td>
</tr>
<tr>
<td>Erosion Control Netting</td>
<td>3885</td>
<td>Visual Inspection and Check approved products or approved vendors list - As directed by the Engineer.</td>
</tr>
<tr>
<td>Silt Fence</td>
<td>3886</td>
<td>Accepted, based on manufacturers certification of compliance. Check weight of fabric.</td>
</tr>
<tr>
<td>Erosion Stabilization Mat</td>
<td>3885</td>
<td>Visual Inspection</td>
</tr>
<tr>
<td>Flotation Silt Curtain</td>
<td>3887</td>
<td>Obtain copy of Certificate of Compliance and MSDS</td>
</tr>
<tr>
<td>Filter Logs</td>
<td>3897</td>
<td>Obtain copy of invoice of blended material stating analysis.</td>
</tr>
<tr>
<td>Flocculants</td>
<td>3898</td>
<td>Obtained based on manufacturers certification of compliance. Check weight of fabric.</td>
</tr>
<tr>
<td>Fertilizer</td>
<td>3881</td>
<td>Contractor must supply amount of ENP (Equivalent Neutralizing Power) for each shipment.</td>
</tr>
<tr>
<td>Agricultural Lime</td>
<td>3879</td>
<td>Certified Weed Free (Certified sources only) Check for Certified Vendor tag from Minnesota Crop Improvement Association (MCIA).</td>
</tr>
<tr>
<td>Mulch - Type 3</td>
<td>3882</td>
<td>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</td>
</tr>
<tr>
<td>Mulch - Type 6 - Woodchips</td>
<td>3882</td>
<td>(Certified Vendors Only) (Mixes 100-299) Check for Certified Vendor tag from Minnesota Crop Improvement Association (MCIA).</td>
</tr>
<tr>
<td>Seeds</td>
<td>3876</td>
<td>(Mixes 300-399) certified seed only. Check for Certified Vendor tag from Minnesota Crop Improvement Association (MCIA).</td>
</tr>
<tr>
<td>Native Seed</td>
<td>3876</td>
<td>Visual Inspection - Check approved products list - As directed by the Engineer. Check for Certified Vendor tag from Minnesota Crop Improvement Association (MCIA) for salt tolerant sod.</td>
</tr>
<tr>
<td>Sod</td>
<td>3878</td>
<td>Visual Inspection - As directed by the Engineer.</td>
</tr>
<tr>
<td>Compost (from Certified Source)</td>
<td>3890</td>
<td>Check Approved/Qualified Products List - As directed by the Engineer.</td>
</tr>
<tr>
<td>Compost (from Non-Certified Source)</td>
<td>3884</td>
<td>Contact the MnDOT District IA Inspector to provide servicing of your Federal Aid Project.</td>
</tr>
</tbody>
</table>

January 2016
## CHEMICAL ITEMS

<table>
<thead>
<tr>
<th>Kind of Material</th>
<th>Spec. No.</th>
<th>Min. Required Acceptance Testing (Field Testing Rate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt Plank</td>
<td>3204</td>
<td>Visual Inspection - As directed by the Engineer.</td>
</tr>
<tr>
<td>Calcium Chloride</td>
<td>3911</td>
<td>Review the percentage required as per specification. Check for listing on Qualified Products website.</td>
</tr>
<tr>
<td>Magnesium Chloride</td>
<td>3912</td>
<td>Retain Certification of Compliance. Check for listing on Qualified Products website.</td>
</tr>
<tr>
<td>Hot-Pour Crack Sealant (for Crack</td>
<td>3719</td>
<td>Retain Certification of Compliance.</td>
</tr>
<tr>
<td>Sealing/Filling)</td>
<td>3723</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3725</td>
<td></td>
</tr>
<tr>
<td>Pavement Joint Adhesive</td>
<td>Special</td>
<td>Retain Certification of Compliance.</td>
</tr>
<tr>
<td></td>
<td>Provisions</td>
<td></td>
</tr>
</tbody>
</table>

### Waterproofing Materials

| Membrane Waterproofing System        | 3757      | Visual Inspection - Check qualified products list.                                                                     |

### Waterproofing Materials - Three Ply System

| Asphalt Primer                       | 3165      | Verify supplied material meets ASTM D 41                                                                             |
| Waterproofing Asphalt                 | 3166      | Verify supplied material meets ASTM D 449                                                                             |
| Fabric                                | 3201      | Verify supplied material meets ASTM D 41                                                                             |

### Paints

| Epoxy Traffic Paint                   | 3590      |                                                                                                                       |
| Traffic Marking Paint                 | Special   | Retain Certification of Compliance.                                                                                   |
| Non-Traffic Striping Paints           | 3500 Series |                                                                                                                        |
| Bridge Structural Steel Paint         | 3520      | Visual Inspection - Check approved products list - retain Certificate of Compliance.                                 |
| Exterior Masonry Paint                | 3584      |                                                                                                                       |
| Noise Wall Stain                      | Special   |                                                                                                                       |
| Drop-on Glass Beads                   | 3592      | Visual Inspection - Check qualified products list. Retain Certificate of Compliance.                                 |
| Pavement Marking Tape                 | 3354      | Visual Inspection - Check qualified products list. Retain Certificate of Compliance.                                 |
|                                        | 3355      | Special Provisions                                                                                                    |
| Signs and Markers                     | 3352      | Visual Inspection - Check qualified products list.                                                                     |
# Metals 1 of 2

<table>
<thead>
<tr>
<th>Kind of Material</th>
<th>Spec. No.</th>
<th>Min. Required Acceptance Testing (Field Testing Rate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guard Rail</td>
<td></td>
<td>Visual Inspection - Materials shall be approved before use. Call MnDOT inspector at 218-846-3613 to see if material has been approved.</td>
</tr>
<tr>
<td>Fittings - Splicers, Bolts, Posts etc.</td>
<td>3381</td>
<td></td>
</tr>
<tr>
<td>Structural Plate Beam</td>
<td>3382</td>
<td></td>
</tr>
<tr>
<td>Non-High Tension Guard Rail Cable</td>
<td>3381</td>
<td></td>
</tr>
<tr>
<td>High Tension Guard Rail Cable</td>
<td>Special Provisions</td>
<td></td>
</tr>
<tr>
<td>Steel Posts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steel Sign Posts</td>
<td>3401</td>
<td>Visual Inspection - As directed by the Engineer. Retain Certificate of Compliance in Project file.</td>
</tr>
<tr>
<td>Fence Posts, Brace Bars, Rails and others</td>
<td>3403, 3406, 3379</td>
<td>Visual Inspection - As directed by the Engineer. Retain Certificate of Compliance and certified mill analysis in project file.</td>
</tr>
<tr>
<td>Fence</td>
<td></td>
<td>Visual Inspection - Retain Certification of Compliance, As directed by the Engineer.</td>
</tr>
<tr>
<td>Barbed Wire</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woven Wire</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chain Link Fabric</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Components: cup, cap, nut, bolt, end clamp, tension band, truss rod, tension wire, hog ring, tie wire, tension stretcher bar, truss rod, clamp &amp; tension wire</td>
<td>3376</td>
<td>Visual Inspection Retain Certification of Compliance, As directed by the Engineer.</td>
</tr>
<tr>
<td>Gates</td>
<td>3379</td>
<td></td>
</tr>
<tr>
<td>Pipe</td>
<td></td>
<td>Visual Inspection - As directed by the Engineer.</td>
</tr>
<tr>
<td>Water Pipe and other Piping Materials</td>
<td>3364, 3365, 3366 &amp; Special Provisions</td>
<td>Visual Inspection - As directed by the Engineer.</td>
</tr>
</tbody>
</table>

Reinforcing Steel - Inspected by MnDOT & will be charged back to the Local Agency.

| Uncoated Bars                | 3301      | Retain Certificate of Compliance & Certified Mill Analysis |
| Epoxy Coated Bars            | 3301      | For Epoxy-Coated bars, steel will be tagged "Inspected" when it has been sampled and tested by MnDOT prior to shipment, & it will be tagged "Sampled" when testing has not been completed prior to shipment. If the Epoxy-Coated bars are not tagged "Sampled" or "Inspected", submit samples (1 bar 3ft long for each size for each day’s coating production), Certificate of Compliance, & Certified Mill Analysis for testing. Maintain original Cert. of Compliance & Certified Mill Analysis in project file. |
| Spirals                      | 3305      |                                                       |
| Stainless Steel Bars         | Special Provisions | Visual Inspection Testing as directed by the Engineer (2 bars 3 ft. long per heat per bar size). Certified Mill Test Reports to be filed. |
# Metals 2 of 2

<table>
<thead>
<tr>
<th>Kind of Material</th>
<th>Spec. No.</th>
<th>Min. Required Acceptance Testing (Field Testing Rate)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing Steel - Inspected by MnDOT &amp; will be charged back to the Local Agency.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steel Fabric</td>
<td>3303</td>
<td>2 sq ft if epoxy coated.</td>
</tr>
<tr>
<td>Dowel Bars</td>
<td>3302</td>
<td>One dowel bar and basket from each shipment.</td>
</tr>
<tr>
<td>Prestress/Post Tension Strands</td>
<td>3348 Spec.Prov.</td>
<td>One sample of 2 strands by 6 ft from each heat/production lot.</td>
</tr>
</tbody>
</table>

**Castings**

| Drainage Castings                                 | 3321      | Visual Inspection - Check approved / qualified list.                   |
| Electrical                                        | 2471      |                                                                         |

**Anchorages (Drilled In)**

| Structural Steel                                  | Special Provisions | Visual Inspection - Check qualified products list.                     |
| Steel Bridge - Beams, Girders, Diaphragms, etc.   | 2471      |                                                                         |
| Concrete Girders-Diaphragms and sole plates       | 3385 3391 | Visual Inspection - Check approved / qualified list. Testing as directed by the Engineer, (see Notes below) |
| Expansion Joints                                  | 2471      |                                                                         |
| Steel Bearings                                   | 2471      |                                                                         |
| Railing-Structural tube and ornamental            | 2471      |                                                                         |
| Drainage Systems                                 | 2471      |                                                                         |
| Protection Angles                                | 2471      |                                                                         |
| Overhead Sign structures                          | 2564 2471 |                                                                         |
| High Mast Lighting Structures                     | 2545 2471 |                                                                         |
| Monotube Signal Structures                        | 2565 2471 |                                                                         |

Notes: Manufacturer must have one yearly passing test from the Department for each anchor rod or bolt type. Prior to installation, obtain copy of MnDOT passing test report from supplier. Specs 3385.2 A, B, & C require anchor rod markings per ASTM F 1554 S3. The end of each anchor bolt intended to project from the concrete must be die stamped with the grade identification as follows: Grade 36 = AB36, Grade 55 = AB55, Grade 105 = AB105.

*Check domestic steel requirement under 1601 Special Provision.
# Geosynthetics, Pipe, Tile, Precast/Prestressed Concrete

<table>
<thead>
<tr>
<th>Kind of Material</th>
<th>Spec. No.</th>
<th>Min. Required Acceptance Testing (Field Testing Rate)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Corrugated Metal Products</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Culvert Pipe Under drains Erosion control</td>
<td>3225 thru 3229,</td>
<td>Make certain pipe is Certified on Invoice, retain certificate of compliance and certified mill analysis in project file.</td>
</tr>
<tr>
<td>Structures</td>
<td>3351, 3399</td>
<td></td>
</tr>
<tr>
<td>Structural Plate</td>
<td>3231</td>
<td>Retain the Certificate of Compliance and certified mill analysis in project file.</td>
</tr>
<tr>
<td>Aluminum Structural Plate</td>
<td>3233</td>
<td></td>
</tr>
<tr>
<td><strong>Pipe</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay Pipe</td>
<td>3251</td>
<td>Visual Inspection</td>
</tr>
<tr>
<td>Reinforced Concrete Pipe and Arches,</td>
<td>3236</td>
<td>Field Inspection: Check for damage and defects. Check dimensions and class as required.</td>
</tr>
<tr>
<td>Precast Cattle Pass Units, Sectional Manhole</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Units</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Reinforced Concrete Pipe</td>
<td>3253</td>
<td></td>
</tr>
<tr>
<td>Drain Tile (Clay or Concrete)</td>
<td>3276</td>
<td>Visual Inspection - Acceptance as directed by the Engineer.</td>
</tr>
<tr>
<td>Thermoplastic (TP) Pipe ABS and PVC</td>
<td>3245</td>
<td>Obtain Certificate of compliance. Check for approved marking printed on pipe. Field inspect for damage or defects.</td>
</tr>
<tr>
<td>Corrugated Polyethylene Pipe</td>
<td>3278</td>
<td>Check for markings (AASHTO M 252) Certificate of Compliance. Field inspect for damage or defects.</td>
</tr>
<tr>
<td><strong>Corrugated Polyethylene Pipe - Dual Wall 12&quot;-48&quot;</strong></td>
<td>3247</td>
<td>Visual Inspection - Check approved products list. Obtain Certificate of Compliance.</td>
</tr>
<tr>
<td><strong>Precast/Prestressed Concrete Structures - Inspected by MnDOT &amp; will be charged back to the Local Agency.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reinforced Precast Box Culvert</td>
<td>3238</td>
<td>Field Inspection: Check for damage and defects. Check dimensions as required. Check for the &quot;MnDOT&quot; stamp and signature on the certification document.</td>
</tr>
<tr>
<td>Precast/Prestressed Concrete Structure (beams, posts, etc.)</td>
<td>2405</td>
<td></td>
</tr>
<tr>
<td>Manholes and Catch Basins (Construction)</td>
<td>2506, 3622</td>
<td></td>
</tr>
<tr>
<td>Sewer Joint Sealing Compound</td>
<td>3724</td>
<td>Visual Inspection - Acceptance as directed by the Engineer.</td>
</tr>
<tr>
<td>Preformed Plastic Sealer for Pipe</td>
<td>3726 Type b</td>
<td>Visual Inspection - Acceptance as directed by the Engineer.</td>
</tr>
<tr>
<td>Bituminous Mastic Joint Sealer for Pipe</td>
<td>3728</td>
<td></td>
</tr>
<tr>
<td>EPS Geofoam</td>
<td>Special Provisions</td>
<td>Visual Inspection - Acceptance as directed by the Engineer. Check for yellow aged material, uniformity and dimensions.</td>
</tr>
<tr>
<td>Geotextile Small Quantity Acceptance List</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silt Fence</td>
<td>3886</td>
<td>Visual Inspection - Check approved products list.</td>
</tr>
</tbody>
</table>
# ELECTRICAL AND SIGNAL EQUIPMENT ITEMS

<table>
<thead>
<tr>
<th>Kind of Material</th>
<th>Spec. No.</th>
<th>Min. Required Acceptance Testing (Field Testing Rate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lighting Standards (Aluminum or Steel)</td>
<td>3811</td>
<td>Visual Inspection - Obtain Certificate of Compliance. The Fabricator will submit &quot;Certificate of Compliance&quot;, on a per project basis, to the Project Engineer.</td>
</tr>
<tr>
<td>Hand Holes (Precast, PVC, and LLDPE)</td>
<td>2545</td>
<td>Visual Inspection - Check approved/qualified products list. Traffic signal and street lighting projects require hand holes to be listed on the Mn/DOT Signals Approved Products List (APL). For cast iron frame and cover: see Metals - Drainage and Electrical Castings</td>
</tr>
<tr>
<td></td>
<td>2550</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2565</td>
<td></td>
</tr>
<tr>
<td>Foundation</td>
<td>2545</td>
<td>Slump as needed, 1 cylinder per 25 cu.yds. Rebar is required in concrete foundations as specified in the Contract documents for all traffic control signals and roadway lighting projects.</td>
</tr>
<tr>
<td>Steel Screw In Foundations</td>
<td>2545</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2565</td>
<td>See Approved/Qualified Products List for Roadway Lighting and Signals.</td>
</tr>
<tr>
<td>Conduit and Fittings</td>
<td>3801</td>
<td>Visual Inspection - Conduit shall be labeled as being listed by a National Recognized Testing Laboratory (NRTL). For traffic signal and street lighting projects, specific requirements are contained in the Special Provisions for each project.</td>
</tr>
<tr>
<td>Metallic</td>
<td>3802</td>
<td></td>
</tr>
<tr>
<td>Non-Metallic (Rigid and HDPE)</td>
<td>3803</td>
<td>Visual Inspection - Manufacturer must have one yearly passing test from the Department for each anchor rod or bolt type. Prior to installation, obtain copy of Mn/DOT passing test report from supplier. Spec 3386 A, B, &amp; C require anchor rod markings per ASTM F 1554 S3. The end of each anchor bolt intended to project from the concrete must be die stamped with the grade identification as follows: Grade 36 = AB36, Grade 55 = AB55, Grade 105 = AB105.</td>
</tr>
<tr>
<td>Anchor Rods and Bolts (Cast in Place)</td>
<td>3385</td>
<td></td>
</tr>
<tr>
<td>Anchorages (Drilled In)</td>
<td>Special Provision</td>
<td>Visual Inspection - Check qualified products list.</td>
</tr>
<tr>
<td>Miscellaneous Hardware</td>
<td>2545</td>
<td>Visual Inspection - Check approved products list. Will carry &quot;Inspected&quot; tag if sampled and tested prior to shipment. No sample necessary if &quot;Inspected&quot;. Do not use if not tested. Field sample at sampling rate for laboratory testing. For traffic signal and street lighting projects, various miscellaneous hardware is required to be listed on the Mn/DOT Signals and Lighting Approved Products Lists (APL). The Contract documents indicate, which items must be on the Signals and/or Lighting APL.</td>
</tr>
<tr>
<td>Cable and Conductors</td>
<td>3815.2B1</td>
<td>Visual Inspection - 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.</td>
</tr>
<tr>
<td>Loop Detector Conductors (No Tubing)</td>
<td>3815.2B2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(a)</td>
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</tr>
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## ELECTRICAL AND SIGNAL EQUIPMENT ITEMS 2 of 2

<table>
<thead>
<tr>
<th>Kind of Material</th>
<th>Spec. No.</th>
<th>Min. Required Acceptance Testing (Field Testing Rate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical Cables and Single Conductors with Jacket</td>
<td>3815.2B2(b)</td>
<td>Visual Inspection - Usually inspected at the distributor. Documentation showing project number, reel number(s), &amp; Mn/DOT 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 Mn/DOT inspector for each shipment. Project inspectors should verify that the shipping documents agree with this inspection report. Call Steve Grover at 851-366-5540 or Cindy Schellick 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.</td>
</tr>
<tr>
<td></td>
<td>3815.2B3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3815.2B5</td>
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<tr>
<td></td>
<td>3815.2C1 thru .2C8</td>
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<tr>
<td></td>
<td>3815.2C14</td>
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</tr>
<tr>
<td>Special Provisions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fiber Optic Cables</td>
<td>3815.2C13</td>
<td>Visual Inspection - Check approved products list for Traffic Management Systems.</td>
</tr>
<tr>
<td>Ground Rods</td>
<td>2545</td>
<td>Visual Inspection - Check approved products list. Shall be labeled as being listed by a National Recognized Testing Laboratory (NRTL). Detail materials on Materials Acceptance Summary.</td>
</tr>
<tr>
<td></td>
<td>2565</td>
<td></td>
</tr>
<tr>
<td>Luminaires and Lamps</td>
<td>3810</td>
<td>Visual Inspection - Check approved products list. Traffic signal and street lighting projects require luminaries and lamps to be listed on the Mn/DOT Lighting Approved/Qualified Products List (APL). The conductors shall be labeled as being listed by a National Recognized Testing Laboratory (NRTL) and type, where applicable.</td>
</tr>
<tr>
<td>Electrical Systems</td>
<td>2565</td>
<td>Electrical Systems are to be reported as a &quot;System&quot; using the LIGHTING, SIGNAL AND TRAFFIC RECORDER INSPECTION REPORT. To be certified by the Project Engineer.</td>
</tr>
<tr>
<td>Traffic Signal Systems</td>
<td>2565</td>
<td>Traffic Signal Systems are to be reported as a &quot;System&quot; using the LIGHTING, SIGNAL AND TRAFFIC RECORDER INSPECTION REPORT. To be certified by the Project Engineer.</td>
</tr>
</tbody>
</table>

January 2016
## Brick, Stone and Masonry Units

<table>
<thead>
<tr>
<th>Kind of Material</th>
<th>Spec. No.</th>
<th>Min. Required Acceptance Testing (Field Testing Rate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brick</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sewer (clay) and Building</td>
<td>3612 to 3615</td>
<td>Visual Inspection - Acceptance as directed by the Engineer.</td>
</tr>
<tr>
<td>Sewer (Concrete)</td>
<td>3616</td>
<td>Visual Inspection - Acceptance as directed by the Engineer. Air entrainment required. Obtain air content statement from supplier.</td>
</tr>
</tbody>
</table>

### Concrete Masonry Units

| Sewer Construction          | 3621      | Visual Inspection - Acceptance as directed by the Engineer. Air entrainment required. Obtain air content statement from supplier. |
| Modular Block Retaining Walls | Review Current Special Provisions | Visual Inspection - Note: 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. |
| Reinforced Concrete Cribbing | 3661      | Visual Inspection - Acceptance as directed by the Engineer. Will be stamped when inspected prior to shipment.            |
| Stone for Masonry or Rip Rap | 3601 and Special Provisions | Visual Inspection - Acceptance as directed by the Engineer.                                                             |

**REMARKS:** 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.
## Miscellaneous Materials

<table>
<thead>
<tr>
<th>Kind of Material</th>
<th>Spec. No.</th>
<th>Min. Required Acceptance Testing (Field Testing Rate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timber, Lumber Piling &amp; Posts</td>
<td>3412 to 3471 &amp; 3491</td>
<td>Visual Inspection - Acceptance as directed by the Engineer. Untreated materials shall be inspected in the field. Treated materials shall be certified on the Invoice or Shipping Ticket. Material is inspected and stamped by an Independent Agency as per Specification 3491. Contact Laboratory for additional information.</td>
</tr>
<tr>
<td>Miscellaneous pieces and Hardware (Galvanized)</td>
<td>3392</td>
<td>Visual Inspection - Acceptance as directed by the Engineer.</td>
</tr>
<tr>
<td>Insulation Board</td>
<td>3394 &amp; 3760</td>
<td></td>
</tr>
<tr>
<td><strong>Elastomeric Bearing Pads - Plain or Laminated</strong></td>
<td>3741 and Special Provisions</td>
<td>Check dimensions. Check repair of tested pad. Obtain copy of Certificate of Compliance. DO NOT USE ANY PADS THAT ARE NOT CERTIFIED.</td>
</tr>
<tr>
<td>Cotton Duck Bearing Pads</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Approved/Qualified Products

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Product Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt Products</td>
<td>Roadside Safety Hardware</td>
</tr>
<tr>
<td>Bridge Products</td>
<td>Roadway Lighting Products</td>
</tr>
<tr>
<td>Concrete Products</td>
<td>Traffic Control Signals Products</td>
</tr>
<tr>
<td>Crack &amp; Joint Materials Products</td>
<td>Signing Products</td>
</tr>
<tr>
<td>Truncated Domes</td>
<td>Snow and Ice Chemical Products</td>
</tr>
<tr>
<td>Drainage</td>
<td>Temporary Traffic Control Devices</td>
</tr>
<tr>
<td>Erosion Control and Landscaping Products</td>
<td>Traffic Management Systems/ITS</td>
</tr>
<tr>
<td>Geosynthetics</td>
<td>Vehicle Safety Lighting</td>
</tr>
<tr>
<td>Maintenance Shop Supplies</td>
<td>Walls (Retaining/Noise)</td>
</tr>
<tr>
<td>Paint/Stain/Coating Systems (Non-Pavement) Products</td>
<td></td>
</tr>
</tbody>
</table>

## SALT Construction Website - Additional Resources

### Bituminous Engineering
- Asphalt Binder Certified Supplier
- Asphalt Emulsion Certified Supplier

### Concrete Engineering
- MnDOT Concrete Manual
- QC & QA RM Plant Workbooks
- MnDOT Certified Ready-Mix Program

### Grading & Base Engineering
- Testing procedures in the Grading & Base Manual
- Forms and worksheets at the Grading & Base Website
- Gradation worksheets at the SALT Construction Website
SALT SMC - LGA Contacts

Districts 1, 2, 3, 4
Ron Bumann - State Aid Construction Practices Specialist
ronald.bumann@state.mn.us
218-725-2811

Districts 6, 7, 8
Mitch Bartelt - State Aid Construction Engineer
mitch.bartelt@state.mn.us
651-366-3832

Metro
Elisa Bottos - State Aid Construction Engineer
elisa.bottos@state.mn.us
651-234-7766

Jim Deeny - State Aid Construction Liaison
james.deeny@state.mn.us
651-234-7762
# Telephone Index for MnDOT Specialty Offices

## Grading & Base

<table>
<thead>
<tr>
<th>Name</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terry Beaudry</td>
<td>(651) 366-5456</td>
</tr>
<tr>
<td>John Bormann</td>
<td>(651) 366-5496</td>
</tr>
<tr>
<td>Melissa Cole</td>
<td>(651) 366-5432</td>
</tr>
</tbody>
</table>

*Website: www.dot.state.mn.us/materials/gradingandbase.html*

## Bituminous

<table>
<thead>
<tr>
<th>Name</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Garrity</td>
<td>(651) 366-5577</td>
</tr>
<tr>
<td>Asphalt Binder</td>
<td>(651) 366-5548</td>
</tr>
<tr>
<td>Jim McGraw</td>
<td>(651) 366-5549</td>
</tr>
<tr>
<td>Jason Szondy</td>
<td>(651) 366-5549</td>
</tr>
</tbody>
</table>

## Bituminous Specialty Items

<table>
<thead>
<tr>
<th>Name</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terry Beaudry</td>
<td>(651) 366-5456</td>
</tr>
<tr>
<td>Greg Schneider</td>
<td>(651) 366-5403</td>
</tr>
<tr>
<td>Melissa Cole</td>
<td>(651) 366-5432</td>
</tr>
<tr>
<td>Tom Wood</td>
<td>(651) 366-5573</td>
</tr>
</tbody>
</table>

*Website: www.dot.state.mn.us/materials/bituminous.html*

## Concrete

<table>
<thead>
<tr>
<th>Item</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete – Aggregates and Mix Design</td>
<td></td>
</tr>
<tr>
<td>Concrete – Certified Ready Mix Concrete</td>
<td>(651) 366-5423</td>
</tr>
<tr>
<td>Wendy Garr</td>
<td></td>
</tr>
<tr>
<td>Concrete – Paving</td>
<td></td>
</tr>
<tr>
<td>Rob Golish</td>
<td>(651) 366-5576</td>
</tr>
<tr>
<td>Concrete – Bridges</td>
<td></td>
</tr>
<tr>
<td>Ron Mulvaney</td>
<td>(651) 366-5575</td>
</tr>
<tr>
<td>Concrete – Pavement Rehabilitation</td>
<td></td>
</tr>
<tr>
<td>Gordy Bruhn</td>
<td>(651) 366-5523</td>
</tr>
</tbody>
</table>

*Website: www.dot.state.mn.us/materials/concrete.html*

## Landscaping and Erosion Control Items

<table>
<thead>
<tr>
<th>Item</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erosion Control</td>
<td>(651) 366-3607</td>
</tr>
<tr>
<td>Lori Belz</td>
<td></td>
</tr>
<tr>
<td>Landscaping</td>
<td>(651) 366-4612</td>
</tr>
<tr>
<td>Scott Bradley</td>
<td></td>
</tr>
<tr>
<td>Wood Chips</td>
<td>(651) 366-3619</td>
</tr>
<tr>
<td>Tina Markeson</td>
<td></td>
</tr>
</tbody>
</table>
### Chemical Items

<table>
<thead>
<tr>
<th>Item</th>
<th>Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allen Gallistell</td>
<td>(651) 366-5545</td>
</tr>
<tr>
<td>Dave Iverson</td>
<td>(651) 366-5550</td>
</tr>
</tbody>
</table>

### Metallic Materials and Metal Products Sampling

<table>
<thead>
<tr>
<th>Item</th>
<th>Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steve Grover</td>
<td>(651) 366-5540</td>
</tr>
<tr>
<td>Laboratory - Test Results</td>
<td>(651) 366-5560</td>
</tr>
<tr>
<td>Bridge Structural Metals</td>
<td></td>
</tr>
<tr>
<td>Todd Niemann</td>
<td>(651) 366-4567</td>
</tr>
<tr>
<td>Barry Glassman</td>
<td>(651) 366-4568</td>
</tr>
</tbody>
</table>

### Miscellaneous Materials

<table>
<thead>
<tr>
<th>Item</th>
<th>Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steve Grover</td>
<td>(651) 366-5540</td>
</tr>
<tr>
<td>Bearing Pads</td>
<td></td>
</tr>
<tr>
<td>Todd Niemann</td>
<td>(651) 366-4567</td>
</tr>
<tr>
<td>Barry Glassman</td>
<td>(651) 366-4568</td>
</tr>
<tr>
<td>Laboratory - Test Results</td>
<td>(651) 366-5560</td>
</tr>
</tbody>
</table>

### Geosynthetics, Pipe, Tile, and Precast/Prestressed Concrete

<table>
<thead>
<tr>
<th>Item</th>
<th>Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steve Grover</td>
<td>(651) 366-5540</td>
</tr>
<tr>
<td>Rich Lamb</td>
<td>(651) 366-5595</td>
</tr>
<tr>
<td>Randy Tilseth</td>
<td>(651) 366-5451</td>
</tr>
<tr>
<td>Laboratory - Test Results</td>
<td>(651) 366-5560</td>
</tr>
</tbody>
</table>

### Brick, Stone and Masonry Units/Modular Retaining Wall Blocks

<table>
<thead>
<tr>
<th>Item</th>
<th>Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steve Grover</td>
<td>(651) 366-5540</td>
</tr>
<tr>
<td>Blake Nelson</td>
<td>(651) 366-5599</td>
</tr>
<tr>
<td>Laboratory - Test Results</td>
<td>(651) 366-5561</td>
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</tbody>
</table>

### Electrical & Signal

<table>
<thead>
<tr>
<th>Item</th>
<th>Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Susan Zarling</td>
<td>(651) 234-7052</td>
</tr>
<tr>
<td>Steve Grover</td>
<td>(651) 366-5540</td>
</tr>
<tr>
<td>Wendy Garr - Concrete</td>
<td>(651) 366-5423</td>
</tr>
<tr>
<td>Laboratory - Test Results</td>
<td>(651) 366-5560</td>
</tr>
<tr>
<td><strong>Materials Lab. Contacts</strong></td>
<td><strong>Independent Assurance</strong></td>
</tr>
<tr>
<td>-----------------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td><strong>District 1, Duluth</strong></td>
<td>Nadine Miller</td>
</tr>
<tr>
<td>Leila DeLuca, Linda Pearson,</td>
<td>(218) 725-2737</td>
</tr>
<tr>
<td>218-725-2738</td>
<td>Cell (218) 348-6297</td>
</tr>
<tr>
<td>Fax 218-725-2814</td>
<td></td>
</tr>
<tr>
<td><strong>District 2, Bemidji</strong></td>
<td>Thomas Lloyd</td>
</tr>
<tr>
<td>Jeff Long, 218-755-6544</td>
<td>(218) 755-6545</td>
</tr>
<tr>
<td>Jason Kissel, 218-755-6542</td>
<td>Cell (218) 766-6949</td>
</tr>
<tr>
<td>Fax 218-755-6540</td>
<td></td>
</tr>
<tr>
<td><strong>District 3A, Baxter</strong></td>
<td></td>
</tr>
<tr>
<td>Tom Boser, 218-828-5755</td>
<td>(218) 828-5753</td>
</tr>
<tr>
<td>Fax 218-828-5816</td>
<td>Cell (218) 232-6748</td>
</tr>
<tr>
<td><strong>District 3B, Saint Cloud</strong></td>
<td>Teresa Mertens, 320-223-6555</td>
</tr>
<tr>
<td></td>
<td>Cell (320) 493-3559</td>
</tr>
<tr>
<td>Fax 320-223-6582</td>
<td></td>
</tr>
<tr>
<td><strong>District 4, Detroit Lakes</strong></td>
<td>David Brunner</td>
</tr>
<tr>
<td>Brad Hanson, 218-846-3616</td>
<td>Dist. 4 Mat'l's</td>
</tr>
<tr>
<td>Bruce Bryngelson, 218-846-3614</td>
<td>(218) 846-3613</td>
</tr>
<tr>
<td>Wayne Koons, 218-846-3617</td>
<td>Cell (218) 849-7393</td>
</tr>
<tr>
<td>Fax 218-846-0744</td>
<td>Sandy Kay Wollschlager 4B Mat'l's</td>
</tr>
<tr>
<td></td>
<td>(320) 599-7300</td>
</tr>
<tr>
<td></td>
<td>Cell (320) 815-6660</td>
</tr>
<tr>
<td><strong>Metro District,</strong></td>
<td>Waters Edge Mat'l's</td>
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<td>Mike Evans, 651-366-5409</td>
<td>Steve Reinardy (651) 755-1581</td>
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<tr>
<td>Fax 651-366-5408</td>
<td>Mike Sroga (651) 775-0997</td>
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<td>Brandon Weick (507) 286-7584</td>
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<tr>
<td>Ken DeCramer, 507-286-7580</td>
<td>Cell (507) 251-0138</td>
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<td>Ken Pickett, 507-286-7586</td>
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<td>Mitch Jordahl (507) 304-6187</td>
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<td>Mark Schoeb, 507-304-6186</td>
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<td>Jon Vlaminck (320) 214-6348</td>
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<td>Jay Jorgensen, 320-214-6345</td>
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<td>Mark DeAustin, 507-537-2068</td>
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<td>1/2 pint plastic container for admixtures.</td>
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NOTES


2. ALL SIGNAL AND INTERCONNECT WORK SHALL BE PART OF S.A.P. 118-151-012.

3. THE KENWOOD VILLAGE DEVELOPMENT PROJECT WILL OCCUR CONCURRENTLY WITH THE PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH WEB BUILDERS, INC FOR SITE ACCESS AND AT PROJECT INTERFACES.
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**Notes:**

1. Excess material to be disposed of by the contractor off project site (cost of materials not included).
2. Select granular borrow (gravel) material so that the material has at least 95% passing 1" sieve and 70% passing 3/8" sieve.
3. Used for matching existing driveways.
4. Material shall be placed in two lifts, each not exceeding 3" in thickness.
5. Undisturbed quantity as needed for utility trenching. Disposal of excess borrow materials will be considered incidental.
6. Pulp fabric and coarse aggregate are incidental to this item.
7. Subgrades computed at 120 units/1000 square yards of subgrade.
8. Includes common excavation (incidental).
9. Includes payment for 4" Class 3 base under drain (incidental).
10. Includes common excavation (incidental).
11. Includes payment for 8" Class 5 base under drain (incidental).
12. Structures include bedding and grannular backfill (incidental).
13. Includes casting assembly (incidental).
14. Subject to (all pipe and all structures) transition and/or bedding, transition to be standard and bedding to be standard.
15. Expanded at a rate of 150 pounds per 1000 square yards.
16. Includes necessary grading and 4" topsoil, includes common excavation (0.33 cubic yard per 1000 square yards) and soil preparation (incidental).
17. Cones shall be factory painted (black).
18. Undisturbed quantity for foundation construction for all utility trenches. Disposal of excess borrow materials will be considered incidental.
# Statement of Estimated Quantities

## City Project 1468

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## County 24-27687

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## Arrowhead/Renwood Signal & Roadway Improvements

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## REMOVALS AND SAWCUTTING PAVEMENT

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<th>LOCATION</th>
<th>SQUARE FEET REMOVE</th>
<th>SQUARE FEET SAWCUT</th>
<th>REMOVED CONCRETE</th>
<th>REMOVED PAVEMENT</th>
<th>TOTALS</th>
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<tbody>
<tr>
<td>21st St.</td>
<td>1200-1250 to 2014-2553</td>
<td>135-200</td>
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<td>120</td>
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<tr>
<td>Cleveland St. (Road &amp; Utility)</td>
<td>1040-1750 to 1542-2300</td>
<td>280-430</td>
<td>150</td>
<td>230</td>
<td>380</td>
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<td>Arrowhead Rd. (Clap)</td>
<td>3442-3500 to 3444-400</td>
<td>320-350</td>
<td>250</td>
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**TOTALS:** 1280, 390, 250, 120, 550

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## PROPOSED CURB AND GUTTER, WALKS, AND DRIVEWAYS

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<th>SQUARE FEET REMOVE</th>
<th>B/R CONCRETE</th>
<th>GUTTER CEMENT</th>
<th>WALKS</th>
<th>TOTALS</th>
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**TOTALS:** 500, 300, 1000, 200, 1300
### Storm Drainage Removals

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<th>Bank Site (Martin Ave Alignment)</th>
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| Total | 10 | **1** | **30** | **1** |  |

### Storm Basins

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<tr>
<th>Name</th>
<th>Piano Top</th>
<th>Base at End</th>
<th>Extension Top</th>
<th>Extension Bottom</th>
<th>Construct String</th>
<th>Extension Top</th>
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<th>Construct String</th>
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City of Duluth

Arrowhead/Kenwood Signal & Roadway Improvements

City of Duluth

119
### CLEVELAND ST (CLEVELAND ST ALIGNMENT)

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<th>Pipe</th>
<th>Location</th>
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<th>Depth (ft)</th>
<th>Cover D (ft)</th>
<th>Sand Cover (in)</th>
<th>Green Band (in)</th>
<th>Clout Band (in)</th>
<th>Max Fill (ft)</th>
<th>Pipe Type</th>
<th>Notes</th>
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### BANK SITE (SAMP. 118-10-01 CLEVELAND ST ALIGNMENT)

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### CASTING ASSEMBLIES

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<th>Casting Description</th>
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<th>Diameter (in)</th>
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**KEY NOTES:**
1. Manhole depth paid for on another item.
2. Includes 4" slump.
3. TE last 3 joints (Inclined).
4. Castings for design G and H structures are incidental.
### Water Main and Services

<table>
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<tr>
<th>State</th>
<th>Address</th>
<th>Distance</th>
<th>Diameter</th>
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### Temporary Erosion Control

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### Permanent Turf Restoration & Planting

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*CITY OF DULUTH*
### ADA REMOVALS

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<th>REMOVE SHELL</th>
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**TOTALS:** 1500

### ADA CONSTRUCTION

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**TOTALS:** 1500

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City: Duluth

[City of Duluth Logo]

Arrohead/Kenwood Signal & Roadway Improvements

[Signature]

| Sheet | 119 |

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**CITY OF DULUTH**

**ARROWHEAD/KENWOOD SIGNAL & ROADSIDE IMPROVEMENTS**

**TABLES**
INPLACE TYPICAL SECTIONS

KENWOOD AVE/HOWARD OENSEN RD
STA 100+48.00 TO STA 107+86.57
STA 107+86.57 TO STA 114+49.0

12" AGGREGATE BASE (C), CLASS 5 SPEC 2211
3'-4" SUBBASE EXCAVATION SPEC 2105
BACKFILL WITH SELECT GRANULAR MATERIAL
MEETING REQUIREMENTS FOR SPEC 3149.25

3.5" BIMINUS PAVEMENT
COTTONFILL FABRIC
TYPE 3 NON-MOVABLE

SELECT GRADING MATERIAL

PROPOSED SURFACING SECTIONS

KENWOOD AVE
STA 95+50.00 TO STA 99+16.00

12" AGGREGATE BASE (C), CLASS 5 SPEC 2211
3'-4" SUBBASE EXCAVATION SPEC 2105
BACKFILL WITH SELECT GRANULAR MATERIAL
MEETING REQUIREMENTS FOR SPEC 3149.25

3.5" BIMINUS PAVEMENT
COTTONFILL FABRIC
TYPE 3 NON-MOVABLE

SELECT GRADING MATERIAL

7.5" TYPE SP 9.5 WEARING COURSE SPHEROSHAPE (SA)
3.5" TYPE SP 12.5 WEARING COURSE SPHEROSHAPE (I)2
2" TYPE SP 12.5 NON-WEARING COURSE IV SPHEROSHAPE (I)
4'-9" COMPACTED FIELD MATERIAL

MIXING STAGE
FULL DEPTH RECLAMATION
1.5" BIMINUS PAVEMENT AND
5" AGGREGATE BASE CLASS V
GENERAL NOTES:

ALL STATIONING CALL OUTS ARE BASED UPON KENWOOD ALIGNMENT UNLESS OTHERWISE NOTED.

LANDINGS WILL BE CONNECTED TO EXISTING SIDEWALKS MAINTAINING A 4.0’ RAMP (MINIMUM) PEDESTRIAN ACCESS ROUTE WITH CROSS SLOPE THAT DOES NOT EXCEED 2.0% AND A RUNNING SLOPE THAT DOES NOT EXCEED 8.3%.

APPROXIMATE SIDEWALK AND CONCRETE PAVEMENT PLACEMENT LIMITS ARE SHOWN IN THE PLANS. ACTUAL LIMITS TO BE DETERMINED IN THE FIELD.

PROVIDE A SAMCUT AT THE REMOVAL LIMIT OR THE NEAREST JOINT OF THE CONCRETE CURB AND GUTTER. FOR CONCRETE PAVEMENT USE EXISTING JOINTS FOR REMOVAL LIMITS. ALL SAMCUTS INCLUSIVE.

COORDINATES AND ELEVATIONS ARE TO THE CENTERLINE OF GUTTER AND DO NOT INCLUDE DRAINAGE SLOPES.

THE OUTSIDE EDGE OF CROSSWALK MARKINGS SHALL LINE UP WITH THE OUTSIDE EDGE OF TRUNCATED DOMES.

PROFILE Grade of the existing street way Precede writing all ADA slope requirements. the contractor shall minimize cross slopes at ramps and landings to the maximum extent feasible.
CONCRETE PAVEMENT
EXISTING TOPOGRAPHY
PROPOSED CONSTRUCTION
TRUNCATED GOMES
PEDESTRIAN ACCESS ROUTE (AAR)
LANDING AREA
4'-6" MIN. DIMENSIONS AND MAX
2.0% SLOPE IN ALL DIRECTIONS
DIRECTION OF CURBLINE FLOW
PROPOSED SIGNAL POLE
PROPOSED APS PEDESTRIAN
PUSH BUTTON
INDICATES PEDESTRIAN RAMP SLOPE
SHALL BE BETWEEN 5.0% MINIMUM
AND 8.3% MAXIMUM IN THE DIRECTION
SHOWN AND CROSSED SLOPE SHALL
NOT EXCEED 2.0%
INDICATES PEDESTRIAN RAMP SLOPE
SHALL BE GREATER THAN 2.0% AND
LESS THAN 5.0% IN THE DIRECTION
SHOWN AND CROSSED SLOPE SHALL
NOT EXCEED 2.0%
WATCH EXISTING

GENERAL NOTES:
ALL STATIONING CALL OUTS ARE BASED UPON KENWOOD ALIGNMENT UNLESS OTHERWISE
NOTED.
LANDINGS SHALL BE CONNECTED TO EXISTING SIDEWALKS MAINTAINING A 4'-6" WIDE
MANHOLE PEDESTRIAN ACCESS ROUTE WITH CROSSED SLOPE THAT DOES NOT EXCEED 2.0%
AND A RUNNING SLOPE THAT DOES NOT EXCEED 8.3%.
APPROXIMATE SIDEWALK AND CONCRETE PAVEMENT PLACEMENT LIMITS ARE SHOWN IN THE
PLANS. ACTUAL LIMITS TO BE DETERMINED ON THE FIELD.
PROVIDE A SAWCUT AT THE REMOVAL LIMIT OF THE NEAREST JOINT OF THE CONCRETE
CURB AND GUTTER. FOR CONCRETE PAVEMENT USE EXISTING JOINTS FOR REMOVAL
LIMITS. ALL SAWCUTS INCIDENTAL.
COORDINATES AND ELEVATIONS ARE TO THE CENTERLINE OF GUTTER AND DO NOT INCLUDE
RAINWATER Sumps.
THE OUTSIDE EDGE OF CROSSED WALK MARKINGS SHALL LINE UP WITH THE OUTSIDE EDGE
OF TRUNCATED GOMES.
PROFIL E GRADE OF THE EXISTING STREET MAY PRECLUDE METING ALL AAR SLOPE
REQUIREMENTS. THE CONTRACTOR SHALL MANIACE CROSS SLOPES AT RAMP S AND
LANDINGS TO THE MAXIMUM EXTENT FEASIBLE.
NOTES:

1. LANES AND SIDEWALKS ARE LOCATED ALONG THE PEDESTRIAN ACCESS ROUTE CHASING DIRECTION AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5%, AND IF THE APPROACHING RAMP IS INCLINE GRADING.

2. INITIAL CURB RAMPS LANNOS shall be constructed with a 1% from the BACK OF CURB ON ALL DIAMETERS OF PEDESTRIAN ROUTES. SECONDARY CURB RAMPS LANNOS are required for every 0.25 VERTICAL UNIT OF PEDESTRIAN ROUTE LENGTH. LANNOS shall be constructed along all grade breaks.

3. ALL GRADE BREAKS WITHIN THE PAIR SHALL BE PERPENDICULAR TO THE 60° OF TRAVEL. 10% RUNNING RAMP AND LANES ARE PROPERLY CONNECTED. LANNOS MAY BE CUT PERPENDICULARLY. 30' LANNOS REQUIRE DETAILED PLAN DETAILS ON SHEET 2.

4. WHEN LANNOS ARE CUT SEPARATELY, ALL LANNOS ARE ABSOLUTE, RATHER THAN RELATIVE TO SEGMENTS/ROADWAY GRADES. A 3% LANNOS WALK MUST BE PROVIDED ALONG THE COMPLETE LENGTH OF THE PEDESTRIAN ROUTE. 10% RUNNING RAMP AND LANES ARE PROPERLY CONNECTED. LANNOS MAY BE CUT PERPENDICULARLY. 30' LANNOS REQUIRE DETAILED PLAN DETAILS ON SHEET 2.

5. SEE STANDARD PLAN 100-04 AND SHEET 4 OF 3 FOR ADDITIONAL DETAILS ON DETECTABLE WARNING.

6. KEEP CURE HOMLS.

7. FULL CURB HOMLS.

8. 3% MINIMUM CURB HOMLS-1. 4% PREFERRED.

9. 1.25" PERFORATED MASONRY TILES, 250 PSF OR 250 L|M², 2.5" CORNER TILES SHALL BE PLACED IN THE BACK OF CURB AND ADJACENT DIAMETERS. 30' LANNOS REQUIRE DETAILED PLAN DETAILS ON SHEET 2.

10. DETECTABLE WARNING SIGNS SHALL BE SET BACK 3 MM TO 8 MM FROM THE BACK OF CURB.

11. SEE PEDESTRIAN ACCESS ROUTE CURB AND GUTTER DETAIL FOR INFORMATION ON CONSTRUCTING CURB AND GUTTER AT CURB OPENINGS. SEE SHEET 5 OF 3.

12. 3" BY 4" MIN. LANDING WITH MAX. 2.0 SLOPE IN ALL DIRECTIONS.

13. 4% LONGITUDINAL SLOPE MUST BE STRAIGHT 3.0", 4" 3/4" MIN. LANDING WITH MAX. 2.0 SLOPE IN ALL DIRECTIONS REQUIRED.

14. V CURB IF USED, SHALL BE PLACED OUTSIDE THE GUTTER CONCRETE EDGE WHEN RIGHT OF WAY ALLOWS.

15. SEE SHEET 4 OF 3. VARIOUS SIDEWALK OPTIONS FOR DETAILS ON PLANS AND DETAIL.

16. 5% SLOPE IN ALL DIRECTIONS IN FRONT OF CURB BREAK AND DUMP TO FLOW LINE. 10% RUNNING RAMPS AND GUTTER. 30' LANNOS REQUIRE DETAILED PLAN DETAILS ON SHEET 2.

17. RECTANGULAR DETECTABLE WARNING SIGNS MAY BE SET BACK 3 MM FROM CURB. 6" CONCRETE RUNS 3" FROM CURB. IF 6" SETBACK IS USED USE RECTANGULAR DETECTABLE WARNING.

18. WHEN NO CONCRETE IS REQUIRED, THE CURB MAY BE CHANGED TO CONCRETE ADJACENT TO THE CURB BEHIND THE CURB EDGE. 30' LANNOS REQUIRE DETAILED PLAN DETAILS ON SHEET 2.

19. FRONT EDGE OF DETECTABLE WARNING SIGN IS SET BACK 2" LANNOS WHEN ALONG NO ADJACENT TO FRONT EDGE. 30' LANNOS REQUIRE DETAILED PLAN DETAILS ON SHEET 2.

20. THE 4" CONCRETE RUNS MUST BE STRAIGHT 3.0", 4" 3/4" MIN. LANDING WITH MAX. 2.0 SLOPE IN ALL DIRECTIONS.

LEGEND:

1. INDIKATES PEDESTRIAN RAMPS - SLOPE TO BE BETWEEN 5% AND 8%. 5% MINIMUM SLOPE TO MEASURE AT THE CURB EDGE IN THE DIRECTION SHOWN. 5% MINIMUM LANNOS TO MEASURE AT THE CURB EDGE IN THE DIRECTION SHOWN. 5% MINIMUM SLOPE TO MEASURE AT THE CURB EDGE IN THE DIRECTION SHOWN. 5% MINIMUM LANNOS TO MEASURE AT THE CURB EDGE IN THE DIRECTION SHOWN. 5% MINIMUM SLOPE TO MEASURE AT THE CURB EDGE IN THE DIRECTION SHOWN.
2. INDIKATES PEDESTRIAN RAMPS - SLOPE TO BE BETWEEN 5% AND 8%. 5% MINIMUM SLOPE TO MEASURE AT THE CURB EDGE IN THE DIRECTION SHOWN. 5% MINIMUM LANNOS TO MEASURE AT THE CURB EDGE IN THE DIRECTION SHOWN. 5% MINIMUM SLOPE TO MEASURE AT THE CURB EDGE IN THE DIRECTION SHOWN. 5% MINIMUM LANNOS TO MEASURE AT THE CURB EDGE IN THE DIRECTION SHOWN. 5% MINIMUM SLOPE TO MEASURE AT THE CURB EDGE IN THE DIRECTION SHOWN.
3. INDIKATES PEDESTRIAN RAMPS - SLOPE TO BE BETWEEN 5% AND 8%. 5% MINIMUM SLOPE TO MEASURE AT THE CURB EDGE IN THE DIRECTION SHOWN. 5% MINIMUM LANNOS TO MEASURE AT THE CURB EDGE IN THE DIRECTION SHOWN. 5% MINIMUM SLOPE TO MEASURE AT THE CURB EDGE IN THE DIRECTION SHOWN. 5% MINIMUM LANNOS TO MEASURE AT THE CURB EDGE IN THE DIRECTION SHOWN. 5% MINIMUM SLOPE TO MEASURE AT THE CURB EDGE IN THE DIRECTION SHOWN.

CITY OF DULUTH
PEDESTRIAN CURB RAMPS DETAILS (2 OF 5)
ARROWHEAD/KENWOOD SIGNAL & ROADWAY IMPROVEMENTS
CONSTRUCTION DETAILS

8-6-2014 STANDARD PLAN 5-297.250 2 OF 5

SHEET 24 OF 117
EXISTING WATER MAIN CAST TRANSITION COUPLING CONNECTION

ELEVATION

PROPOSAL

FINAL FC NOTE:
1. EXISTING 10" STEEL WATER MAIN TO REMAIN
2. EXISTING 8" C.I. WATER MAIN TO BE ABANDONED
3. REMOVE EXISTING 4" X 6" CROSS FITTING
4. PLUG AND ABANDON 6" WATER MAIN
5. EXISTING 12" STEEL MAIN 1/2" ELBOW
6. CONNECT TO EXISTING AUGERMAN LONG CAST TRANSITION COUPLER
PERFORATED PIPE DETAIL

REVISED/APPROVED 2/01/2013
CITY OF DULUTH STANDARD DETAIL
DEPT. OF PUBLIC WORKS AND UTILITIES
NO SCALE

STR-1

DRIVEWAY & ALLEY ENTRANCES

REVISED/APPROVED 1/6/2016
CITY OF DULUTH STANDARD DETAIL
DEPT. OF PUBLIC WORKS AND UTILITIES
NO SCALE

STR-5

NOTES:
1. WHERE THERE IS NO SIDEWALK OR THERE IS A GRASS BOULEVARD BETWEEN THE SIDEWALK AND THE BACK OF CURB THE CREST OF THE DRIVEWAY MUST BE AT LEAST 5" ABOVE GUTTER TO CONTAIN RUNOFF.
2. WHERE THERE IS SIDEWALK DIRECTLY BEHIND THE CURB, DRIVEWAY PROFILE SLOPE SHALL BE FLATTENED TO MEET ADA ACCESSIBLE ROUTE STANDARDS.
CATCH BASIN/CURB BOX CASTINGS

21 W. Superior St., Ste. 500 | Duluth, MN 55802 | 218.727.8446

NOTES:
1. COMPONENT NO’S: FRAME 5002, GRATE MHD 816 (STD PLATE 4154B), CURB BOX 823A (STD PLATE 41600).
2. MATERIAL: CAST GRAY IRON ASTMA-48, CLASS 35B.
3. WEIGHT: FRAME APPROX. 257#, GRATE 123#, CURB BOX 105#.
4. ALL GUTTERS UPSTREAM OF CATCH BASINS SHALL BE STAMPED, "NO DUMPING, LEADS TO LAKE" WITH A CITY SUPPLIED STAMP.

CATCH BASIN CASTINGS

REVIEWED/APPROVED 2/1/2013
NO SCALE

REVIEWED/APPROVED 1/8/2016
NO SCALE
WRAP GEOTEXTILE FABRIC (TYPE V NON-WOVEN) ENTIRELY AROUND HOPE ADJUSTING RINGS AND TOP OF FLANGE (TAPE IN PLACE AND BACKFILL) REQUIRED ON ALL CATCH BASINS (INCIDENTAL)

NOTES:
1. TRACER WIRE REQUIRED ON ALL PLASTIC STORM SEWER PIPES
2. CONCRETE (MIX NO. 34X3) COLLAR TO ENCASE CASTING AND ADJUSTMENT RING
3. CONCRETE COLLAR SHALL BE CIRCULAR LAYOUT. PAVEMENT AND BASE SHALL BE CUT OUT WITH ROADING CUTTING DEVICE
4. FINISH CONCRETE EDGE WITH 1/4" RADIUS SEAL JUNCTION BETWEEN PAVEMENT AND COLLAR
5. MAINTAIN 3/8" BOXER ON REINFORCEMENT

NOT TO SCALE
WATER VALVE BOX - HDPE MAIN

NOTES:
1. VALVES SHALL BE CONNECTED DIRECTLY TO HOPE WITH HOPE TO MECHANICAL JUJT ADAPTEPS.
2. USE EPOXY COATING ON EXTERIOR OF VALVES.
3. ALL BOLTS SHALL BE CON-TITE WITH 8 OUNCE ZINC ANODE CAPS CONFORMING TO ASTM B-418 FOR ALL MECHANICAL JUJT FITTINGS.
4. FOR OPEN CUT PIPE INSTALLATIONS, ELECTROFUSION COUPLINGS ARE NOT ALLOWED FOR CONNECTION OF HOPE TO NJ ADAPTEPS. FOR DIRECTIONAL DRILLED INSTALLATIONS, ONE ELECTROFUSION COUPLING MAY BE USED PER VALVE.
5. DATE VALVES WITH HOPE STUBS MAY BE USED IN LIEU OF NJ VALVES. ANODE SHALL BE CONNECTED DIRECTLY TO THE VALVE IONNET BOLTS.

REVISED/APPROVED 1/8/2016

W-17A

CITY OF DULUTH STANDARD DETAIL
DEPT. OF PUBLIC WORKS AND UTILITIES
NO SCALE

CONCRETE ENCASED VALVE BOX COLLAR W/ TRACER BOX ALTERNATIVE

NOTES:
1. CONCRETE (MIX NO. 3H3) COLLAR TO ENCASE VALVE BOX CASTING.
2. CONCRETE COLLAR SHALL BE CIRCULAR LAYOUT, PAVEMENT AND BASE SHALL BE CUT OUT WITH ROTATING CUTTING DEVICE.
3. FINISH CONCRETE EDGE WITH 1/4" RADIUS. SEAL JOINT BETWEEN PAVEMENT AND COLLAR.
4. MAINTAIN 31/2" COVER ON REINFORCEMENT.

REVISED/APPROVED 1/8/2016

W-19

CITY OF DULUTH STANDARD DETAIL
DEPT. OF PUBLIC WORKS AND UTILITIES
NO SCALE
CONSTRUCTION NOTES

After removal of temporary groomed surface, the contractor shall verify that the base material is properly graded and compacted for pavement construction. The contractor shall obtain approval from the engineer prior to placing any concrete materials. Failure to obtain approval from the engineer will be considered unauthorized work as per WSDOT 103.1.2.

Construction shall be phased to match phasing and traffic control layouts. See pg 60-64.

Watch inplace joint spacing.

Roadway will not be opened to traffic until at least 48 hours after final finishing.

KEY NOTES

[Diagram labels and notes]

REINFORCE WALLS LBS AS PER STD PLATE 71120.
EROSION CONTROL NOTES

1. WYATT (2015 Edition). SWPA Spec. 177.2. Stormwater management and erosion control shall be carried out in accordance with the City of Duluth’s requirements. The project contractor’s signature on the SWPA must be signed by the owner. During construction, the contractor shall ensure that erosion control measures are in place to protect the site from erosion.

2. All erosion control devices shall be installed before the site is cleared of vegetation.

3. The contractor shall maintain all erosion control devices as required by City of Duluth regulations.

4. The City of Duluth reserves the right to inspect the site at any time during the construction period.

5. The City of Duluth may require the contractor to install additional erosion control measures if necessary.

6. The contractor shall submit a final erosion control plan to the City of Duluth within 30 days after project completion.

7. The City of Duluth reserves the right to fine the contractor for non-compliance with erosion control regulations.

8. The City of Duluth reserves the right to revoke the contractor’s permit if erosion control measures are not in place.

9. The City of Duluth reserves the right to require the contractor to remove any material that has been deposited on the site without prior written permission.

10. The City of Duluth reserves the right to require the contractor to pay all fines assessed by the City for non-compliance with erosion control regulations.

CONSTRUCTION PRACTICES TO MINIMIZE STORM WATER CONTAMINATION

1. All areas that are not covered shall be kept in a clean condition to allow sheet flow of storm water over concrete and/or asphalt, and all exposed surface shall be kept clean. The City of Duluth reserves the right to fine the contractor for non-compliance with erosion control regulations.

2. The contractor shall ensure that all storm water drainage systems are in good working order and are properly maintained.

3. The contractor shall ensure that all storm water drainage systems are properly connected to the storm sewer system.

4. The contractor shall ensure that all storm water drainage systems are properly maintained.

5. The contractor shall ensure that all storm water drainage systems are properly connected to the storm sewer system.

6. The contractor shall ensure that all storm water drainage systems are properly maintained.

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18. The contractor shall ensure that all storm water drainage systems are properly maintained.

19. The contractor shall ensure that all storm water drainage systems are properly connected to the storm sewer system.

20. The contractor shall ensure that all storm water drainage systems are properly maintained.
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**NOTES:**


2. Field conditions may require modifications of this layout as deemed necessary by the engineer.

3. The installation of traffic control devices shall depend upon the sequence of the contractor's operation.

4. Installing and maintaining the devices in this traffic control plan unless otherwise stated.

5. The contractor is responsible for protecting any traffic areas near traffic in accordance with Minnesota.

6. The contractor shall provide complete revised traffic control plans to the MnDOT.

7. The contractor shall provide complete revised traffic control plans to be approved by the engineer.

8. All traffic control devices, including overhead signs on roads open to traffic that are not consistent with traffic operation, shall be covered, removed or revised as directed by the engineer.

9. "Road work ahead" signs shall be mounted approx. 250 FT (1 BLOCK) in advance of the construction and shall have a type "A" low intensity flashing amber warning light mounted on them.

10. "Road work ahead" signs shall be erected approx. 250 FT (1 BLOCK) in advance of the closure.

11. "Road closed to thru traffic" signs shall be installed on type II barricades and shall be located at a point in the street as to permit local traffic use but effectively discourage thru traffic use.

12. When a "road closed to thru traffic" sign is used, the "stop" or "yield" sign at that intersection shall be left in place or moved to a suitable location where the driver can still see the sign.

13. "Road closed" signs may be used where the roadway is closed to all traffic except contractor's equipment or officially authorized vehicles.

14. Type "A" low intensity amber warning lights shall be mounted on all advance warning signs.

15. Additional signage may be required for separate lane closures. The signage shall be in conformance with "Temporary Traffic Control Zone Layouts" field manual dated January 2014 and shall be considered essential to traffic control.
TRAFFIC STAGING—NB KENWOOD CLOSURE

ROAD REPAIRS AND CONCRETE PAVEMENT CONSTRUCTION AT
ARROWHEAD—KENWOOD INTERSECTION. (SOUTH HALF CLOSURE)

TRAFFIC IMPACTS

1. NB KENWOOD — CLOSED — USE COLLEGE ST. DETOUR
2. EB KENWOOD — CLOSED — USE COLLEGE ST. DETOUR
3. EB ARROWHEAD — SINGLE LANE — NO RIGHT TURN AT KENWOOD — USE RICE LANE RD DETOUR
4. WS ARROWHEAD — SINGLE LANE — NO LEFT TURN AT KENWOOD — USE COLLEGE ST. DETOUR

TPAR = THE CONTRACTOR SHALL PROVIDE TEMPORARY PEDESTRIAN ACCESS ROUTES DURING CONSTRUCTION.
TRAFFIC STAGING- NORTHSIDE CLOSURE

CRP REPAIRS AND CONCRETE PAVEMENT CONSTRUCTION AT
ARROWHEAD-KENWOOD INTERSECTION. (SOUTH HALF CLOSURE)

TRAFFIC IMPACTS

1. NW KENWOOD - CLOSED - USE COLLEGE ST DETOUR
2. SB KENWOOD - CLOSED - USE COLLEGE ST DETOUR
3. ED ARROWHEAD - SINGLE LANE - NO RIGHT TURN AT KENWOOD - USE RICE LANE TO DETOUR
4. WS ARROWHEAD - SINGLE LANE - NO LEFT TURN AT KENWOOD - USE COLLEGE ST DETOUR

SCALE IN FEET

Tips:
- Detour routes are marked with arrows.
- The map shows the closure areas and detour options.
- Street names are indicated: Arrowhead Rd., Cleveland St., and others.

Legend:
- TIPAR = The contractor shall provide temporary pedestrian access routes during construction.
- Examples of traffic impacts and detour layouts are provided on the map.

Drawn by: [Signature]

Date: 08/10/16

City of Duluth
Engineering Division
130 W. 1st St., Suite 211
Duluth, MN 55802

City Project No.: 1488
State Aid Project No.: 15-151-012,118-160-023
Sheet No.: 61 of 117

Traffic Control

Note: This sheet was prepared by the City of Duluth and reviewed by the City Engineer. It is intended for use by city engineers and others involved in the project.
DULUTH
THE CITY OF MINNESOTA

TRAFFIC IMPACTS

1. NO KENWOOD - SINGLE LANE
2. SR KENWOOD - LANE SHIFTS TURN RESTRICTIONS
3. EN ARROWHEAD - NO RESTRICTIONS
4. WR ARROWHEAD - SINGLE LANE WE - NO RESTRICTIONS

CLEVELAND STREET CONSTRUCTION - EAST AND WEST OF KENWOOD

TRAFFIC IMPACTS

1. NO KENWOOD - KENWOOD PLAZA ACCESS ADJUSTMENTS
2. SB KENWOOD - KENWOOD PLAZA ACCESS ADJUSTMENTS
3. EN CLEVELAND - LANE RESTRICTIONS
4. WR CLEVELAND - LANE RESTRICTIONS

TRAFFIC STAGING (NE QUAD)

TRAFFIC STAGING (NW QUAD)
1. No Kenwood - Closed at Cleveland - Use College St Detour
2. SB Kenwood - Closed at Cleveland - Use College St Detour
3. Ed Arrowhead - No Lane Restrictions - No Access to Kenwood (SB)
   Detour at Arlington, or Mac Lake Rd.
4. Ed Arrowhead - No Lane Restrictions - No Access to Kenwood (NB)
   Detour at Cahave St to College.
CONSTRUCTION NOTES AND PROPOSED TYPICALS

FULL DEPTH RECLAMATION CONSISTS OF A 3" MILLING AND A 6" RECLAM
CSAM 34 MILL AND OVERLAY IS A 2.0" MILL AND 2.0" OVERLAY
NOTE: ALL DIMENSIONS ARE MINIMUMS.
A TWO PIECE POST MAY BE USED.
WITH 3/8" OVERLAP AND APPROVED
CONNECTORS.

STAINLESS STEEL WASHER & NYLON
WASHER (T=1/16" MIN., L=3/8" MAX.,
O.D.=7/8" MAX.)

POST

SIGN PANEL

— 5/16" STAINLESS STEEL
BOLT WITH NYLON INSERT
LOCK NUT.

NOTE: SEE SPECIAL PROVISIONS FOR
SIGN AND POST SPECIFICATIONS.
SIGN PANEL TO POST CONNECTION

ALL MATERIALS AND LABOR USED
TO REPLACE EXISTING SIGN AS SHOWN.
SHALL BE INCLUDED IN THIS PAY ITEM.

SPEC. 2564.602, REMOVE AND REINSTALL SIGN, EACH

DULUTH STANDARD DETAIL T-2
2 3/4" x 2 3/4" 12 GAUGE PREPUNCHED GALVANIZED STEEL SQUARE TUBE RISER

CONCRETE FILL

3/8" STAINLESS STEEL BOLT

MINIMUM 3/4" OF ANCHOR BELOW CONCRETE FOR DRAINAGE

NOTES:
1. DRILL AN 8" DIAMETER HOLE THE FULL DEPTH OF THE ANCHOR.
2. DRILL 3/8" HOLES ON OPPOSITE SIDES OF THE UNPUNCHED GALVANIZED STEEL SQUARE TUBE ANCHOR APPROX. 1" FROM THE BOTTOM OF THE ANCHOR.
   INSERT A 3/8" STAINLESS STEEL BOLT THROUGH THE HOLES AND SECURE WITH A STAINLESS STEEL LOCK NUT WITH NYLON INSERT. THE PREPUNCHED GALVANIZED STEEL SQUARE TUBE RISER TO BE INSERTED INSIDE THE UNPUNCHED GALVANIZED SQUARE TUBE ANCHOR WILL REST ON BOLT.
3. INSERT THE ANCHOR IN THE HOLE.
4. AFTER INSTALLATION OF THE UNPUNCHED GALVANIZED STEEL SQUARE TUBE ANCHOR, FILL THE HOLE WITH A CONCRETE MIX APPROVED BY THE ENGINEER AND LEVEL OFF THE TOP OF CONCRETE.
5. MAXIMUM SIGN PANEL SIZE IS 42" WIDE X 48" HIGH.
6. SIGN PANEL TO BE MOUNTED 7 FT ABOVE THE GROUND.

TYPE C SIGNS, DELINEATORS & MARKERS IN CONCRETE
1. Use 3 lb/ft stub posts, shall conform to MNDOT 340L.
2. Use 2.5 lb/ft riser posts, stringers, knee braces and lateral braces. All shall conform to MNDOT 340L.
3. See sign data sheets for number of posts, knee braces, post lengths and spacings, as determined from tem charts 6.3 and 6.4.
4. If more than two posts are needed, the minimum spacing shall be 45° between posts.
5. Type D sign panels shall be bolted to stringers at 24° pitch from horizontal interval length. Two panels shall be bolted together. See MNDOT standard signs and markings manual.
6. Mounting (flush) code for type C sign panels shall be as indicated in the MNDOT standard signs and markings manual, Unless otherwise specified.
7. All riser (vertical) U posts shall be spliced. Driven stub posts shall be at least 7' long.
8. Use stainless steel 5/16" bolts, washers and nuts. Insert lock nuts as shown for all ground mounted and overhead mounted signs.
9. Stainless steel washer with same dimensions shall be provided between all nylon washers and bolt heads.
10. Bracing stubs shall be no more than 4' above ground and embedded at least 42".
11. A-frame brackets shall be steel conforming to MNDOT 3306 and galvanized in accordance with MNDOT 3394.
12. Collars shall be used to shim overloads and legend components away from panel where interference with bolt heads is encountered. MNDOT 3352, 246.
13. Two post type C signs shall be reinforced with at least one lateral brace. Installations where the total panel height is 60" or more shall have two lateral braces located approximately at the quarter points.
14. Where 2 single post type C signs are installed side by side, they shall be reinforced laterally by at least 2 braces, bolted at each post and located approximately at the quarter points.
15. Where 3 or more type C signs are installed side by side, they shall be reinforced laterally by at least 2 braces, bolted at each post and post section and located approximately at the quarter points as shown in modified type C installation.
LATERAL BRACE OR STRINGER SPLICE DETAIL (EXPLODED VIEW)

SECTION A-A

A-FRAME BRACKET
(Steel MnDOT 3306 Galvanized Per MnDOT 3394)

SECTION B-B

STRUCTURAL SPLICE
(Use when it is necessary to fabricate the correct length of post from two pieces)
### PEDESTRIAN CROSSWALK MARKINGS

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<th>Width of Inside Lane</th>
<th>Width of Painted Area</th>
<th>Width of Space</th>
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<td>3.0'</td>
<td>3.5'</td>
<td>-</td>
<td>-</td>
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</tbody>
</table>

**DESIGNER'S NOTES:**

1. PAINTED AREAS TO BE CENTERED ON CENTERLINE AND LANE LINES.
2. A MINIMUM OF 1.5 FT CLEAR DISTANCE SHALL BE LEFT ADJACENT TO THE CURB FACE. IF LAST PAINTED AREA FALLS INTO THIS DISTANCE IT MUST BE OMITTED.
3. ON TWO LANE TWO WAY STREETS, USE SPACING SHOWN FOR AN 11 FT INSIDE LANE.
4. FOR DIVIDED ROADWAYS, ADJUSTMENTS IN SPACING OF THE BLOCKS SHOULD BE MADE IN THE MANNER SO THAT THE BLOCKS ARE MAINTAINED IN THEIR PROPER LOCATION ACROSS THE TRAVELED PORTION OF THE ROADWAY.
5. AT SKEWED CROSSWALKS, THE BLOCKS ARE TO REMAIN PARALLEL TO THE LANE LINES AS SHOWN.
6. THE BLOCKS SHALL BE PLACED SO THAT THEY ARE NOT LOCATED IN THE WHEEL PATH OF THE VEHICLES.
7. THE BLOCKS SHALL BE A MINIMUM OF 6' LONG AND AT LEAST AS LONG AS THE TRUNCATED DOMES, FOR FANNED TRUNCATED DOMES THE BLOCKS SHALL BE AT LEAST AS LONG AS THE APPROACHING SIDEWALK OR SHARED USE PATH.
8. THE ALTERNATE (B) AND (C) MAY BE USED WHEN BLOCKS LONGER THAN 6'00 ARE USED.

### MULTI-LANE UNDIVIDED ROADWAY

**SECTION D-D**

- **SHLD.**
- 500 CYCLE
- **D**

- **SHLD.**
- 4" DOUBLE LINE YELLOW
- **D**
- **SHLD.**
- 4" BOUNDARY LINE WHITE
- **D**
- **SHLD.**
- 4" SOLID LINE WHITE
- **D**
- **SHLD.**
- 4" BOUNDARY LINE WHITE
- **D**

**Published by OSU, 20 May 2025**
NOTES:
1. 4" SOLID LINE WHITE = EPOXY (GROUND IN) (MR)
2. 4" DOUBLE SOLID LINE WHITE = EPOXY (GROUND IN) (MR)
3. 4" SOLID LINE WHITE = EPOXY (GROUND IN) (MR)
4. 8" SOLID LINE WHITE (10' SPACING AT 45°) = THERMOPLASTIC (GROUND IN)
5. 4" DOUBLE SOLID LINE YELLOW = EPOXY (GROUND IN) (MR)
6. 8" SOLID LINE YELLOW (10' SPACING AT 45°) = THERMOPLASTIC (GROUND IN)
7. PAVEMENT MESSAGE (LEFT TURN ARROW) = THERMOPLASTIC (GROUND IN)
8. PAVEMENT MESSAGE (RIGHT TURN ARROW) = THERMOPLASTIC (GROUND IN)
9. 12" SOLID LINE WHITE = THERMOPLASTIC (GROUND IN)
10. 24" SOLID LINE WHITE (10' SPACING AT 45°) = THERMOPLASTIC (GROUND IN)
11. PAVEMENT MESSAGE (PED) = THERMOPLASTIC (GROUND IN)
12. FURNISH & INSTALL
13. INLACE
14. SIGNS
15. REMOVE SIGNS TYPE C
16. INSTALL
TYPICAL MAST ARM CAMERA MOUNTING DETAILS

MAST ARM

LUMINAIRE SHAFT EXTENSION

6' CAMERA EXTENSION ASSEMBLY

UPPER CHORD

LOWER CHORD

1-1/2" DIA COUPLING INSIDE THREADED

TRAFFIC SIGNAL MAST ARM

APPROX 20' 3' 1/2'

1-1/2" DIA COUPLING INSIDE THREADED

3/16"}

MAST ARM CAMERA INSTALLATION

NOTES:
1) ALL CAMERA DETECTION EQUIPMENT SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR.
2) IT IS DESIRABLE FOR CABLES BETWEEN THE CAMERA AND THE TRAFFIC SIGNAL CONTROL CABINET TO BE CONTINUOUS. HOWEVER, A SPLICE APPROVED FOR OUTDOOR USE WILL BE ALLOWED IN THE TRANSFORMER BASE OF THE SIGNAL POLE.
3) CAMERA DETECTOR CABLES SHALL BE RUN THROUGHOUT INSIDE OF POLE AND MAST ARM OVER TO CAMERA (NO SPLICE).
4) CABLES FOR CAMERA OPERATION SHALL BE AS INDICATED IN THE SPECIAL PROVISIONS AND SHALL BE IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF THE MANUFACTURER OF THE VIDEO DETECTION SYSTEM USED.
5) WHERE THE CABLES ARE ROUTED THROUGH THE MAST ARM, PROVIDE BUSHINGS TO PROTECT THE CABLES.
6) THE 6-FOOT CAMERA MOUNTING EXTENSION ASSEMBLY SHALL CONSIST OF A MAST ARM MOUNTING BRACKET THAT IS CONSTRUCTED OF CAST ALUMINUM. THE MAST ARM MOUNTING BRACKET SHALL BE ATTACHED TO THE MAST ARM WITH STAINLESS STEEL STRAPS.
7) A 1 1/2" HALF COUPLING, 1 1/2" PIPE NIPPLE AND CONDUIT OUTLET BODY FOR CAMERA CABLES SHALL BE FIX ON THE UNDER SIDE OF MAST ARM SEE SIGNAL LAYOUT FOR LOCATION OF HUB.

TYPICAL INTERSECTION LAYOUT USING CAMERAS
(DRAWING NOT TO SCALE)
NOTES:

PLACEMENT AND ORIENTATION OF THE PUSH BUTTON STATION IS CRITICAL. MOUNT THE BUTTON SO THAT THE FACE IS PARALLEL WITH THE ASSOCIATED CROSSWALK, XII, IN CHAUP TO A TIGHTENED POSITION BEFORE MOUNTING ACCESSIBLE PEDESTRIAN PUSH BUTTON UNIT TO THE SHAFT.

ORIENT ACCESS OPENING ON THE BREAKAWAY PEDESTAL DIRECTLY BELOW THE APS BUTTON.

PLUMB THE PUSH BUTTON STATION WITH LEVELLING SQUIBS IN ACCORDANCE WITH THE LEAD PLATE 8229.

INSTALL BLIND THREADED INSERTS USING MANUFACTURERS SPECIFIC INSERTION TOOL.

USE ZINC PLATED STEEL 1/4 - 20 UNC BLIND THREAD INSERTS SUITABLE FOR MOUNTING ON SURFACE WALL THICKNESS OF .375, APPROVED BLIND INSERTS ARE LISTED ON WIDOWS APPROVED/QUALIFIED PRODUCTS LIST WEBSITE FOR TRAFFIC SIGNALS.

USE APS 1/4 - 20 STAINLESS STEEL MOUNTING BOLTS, APPLY CHROOM ON ANTI SEIZE COMPOUND TO BOLTS PRIOR TO ASSEMBLY.

APPLY A HEAD OF LOOSILICOSEQ SEALANT ALONG THE TOP OF THE PUSH BUTTON UNIT WHERE IT COMES IN CONTACT WITH THE 4" SHAFT.

USE WHITE REFRACTIVE SHEETING AT INTERSECTION CORNERS AND YELLOW REFRACTIVE SHEETING ON MOUNTING BRACKET PILED ON WIDOWS APPROVED/QUALIFIED PRODUCTS LIST WEBSITE FOR SIGNING.

AN 10" X 6" FIBER FORMING TUBE MAY BE USED FOR THE LOWER HALF OF THE FOUNDATION WHEN CONDITIONS DO NOT ALLOW FOR THE 10" X 6" HOLE TO STAND OPEN.

THE PUSH BUTTON STATION FOUNDATION IS MONOLITHIC (POURED AT ONE TIME) WITH THE SIDEWALK, PROVIDING 1/2 INVAION SLIDE GRASS WHERE THE S AND SIWALKS DEPTH TRANSITIONS TO THE 12" MD Foundation DEPTH. MAINTAIN THE COMPAKTED AGGREGATE BEDDING AND THICKNESS USED FOR THE SLAWARES THROUGHOUT THE SLOPE AND FOUNDATION GRADING, PROVIDE 1/2 INVAION SLIDE OR DEGREES FOR THE TRANSITION FROM THE SIDEWALK TO THE FOUNDATION WHEN THE FOUNDATION IS NOT LOCATED NEAR EDGE OF SIDEWALK AND IS SURROUNDED BY CONCRETE WALK.

ENSURE CONCRETE CONTROL JOINTS AND EDGE OF CONCRETE WALK ARE A MINIMUM 9" FROM THE CENTER OF THE PUSH BUTTON FOUNDATION.
MODIFIED FRAME AND COVER CASTING DETAIL

NOTE 1:
1. ALL CASTINGS SHALL BE GREY IRON AS PER SPEC. 333.1, CLASS 333.
2. SPECIFICATION REFERENCE: PAR. 3.2.
3. REFERENCE STANDARD PLATE WELDING: SEE DETAILS ON P. 128.

NOTE 2:
1. ALL MACHINES SHALL BE MACHINED WITH MOUNTED FRAMES AND COVER CASTINGS (SEE SPECIFICATIONS). THE DIAMETER OF EACH MACHINABLE SHAPE SHALL BE A MINIMUM OF 6" TO A MAXIMUM OF 8" BORE AND SET PARALLEL TO FINISHED GRACE OR SURFACE (E.G. TOP CASTING).
2. EACH MACHINABLE SHAPE MUST HAVE A SQUARE CONCRETE PAD SUPPORTING THE COVER CASTING. THE DIMENSIONS SHALL BE 6" X 6" X 6" PRIORITY FOR EACH SHAPE, SEE DETAILS. TRUCKS AND TRAFFIC CONCRETE SHAPE BE TYPE V1 SEE SPECIAL PROVISIONS.
TYPICAL PAD WITH CONTROLLER CABINET AND SERVICE CABINET

S.E. INTERSECTION LAYOUT FOR CABLE INFORMATION NOT TO SCALE

PLAN VIEW

SIDE VIEW

GROUNING ELECTRODE SYSTEM

CONTINUOUS W/6 AND GREEN INSULATED COPPER CONDUCTORS (SEE NOTE 6)

EXOTHERMIC WELDED CONNECTION

EXPOSED ABOVE THE PAD TO ACCOMMODATE THE W/6 AND GREEN INSULATED COPPER CONDUCTOR OUT OF THE CONCRETE AND TERMINATED TO THE GROUND BUS BAR IN THE SERVICE CABINET (SEE NOTE 7)

EXOTHERMIC WELDED CONNECTION

NOTES:
1. THE ANCHOR RODS, NUTS, RINGERS AND RUBBER GASKET FOR THE CONTROLLER CABINET SHALL BE FURNISHED BY THE CONTRACTOR.
2. THE OUTER EDGE OF THE ENTIRE EQUIPMENT PAD AND SERVICE WALK SHALL BE BURIED OR CHAMFERED IN A BEATTY MANNER AS DIRECTED BY THE ENGINEER.
3. THE TOP OF THE CONCRETE SHALL BE CAPPED UNTIL CABLES ARE PULLED IN.
4. CONDUIT SHALL PROJECT A MINIMUM OF 2" ABOVE THE CONCRETE AND SHALL BE LOCATED INSIDE THE CABINET FOR W/6 AND GREEN INSULATED COPPER CONDUCTORS, OR IN THE CABINET DIVIDERS, IF ANY, SUPPORTING MEMBERS, ETC.
5. CONCRETE MIX 9/4/5 OR EQUAL SHALL BE USED FOR THE EQUIPMENT PAD AND SIDEWALK.
6. SUPPLY TWO 20-FOOT GROUND ROG ELECTRODES IN ACCORDANCE WITH 2441.36. PROVIDE ONE GROUND ROD IN THE EQUIPMENT PAD IN ACCORDANCE WITH 2441.3.3 AND THE OTHER OUTSIDE OF THE PAD WITH A MINIMUM OF 8 FEET SEPARATION BETWEEN ELECTRODES. BOND THE TWO GROUND RODS TOGETHER WITH ONE CONTINUOUS LENGTH OF COPPER CONDUCTOR FROM THE OUTER MOST GROUND ROD TO THE GROUND BUS IN THE SERVICE CABINET.
7. BOND A W/6 AND GREEN INSULATED GROUNDING CONDUCTOR TO THE REBAR GRID PRIOR TO CONCRETE PLACING OPERATIONS. ENSURE THE CONDUCTOR IS PLACED IN THE LOAD SIDE OF THE CABINET AND TERMINATED TO THE GROUND BUS IN THE SERVICE CABINET.
8. CONDUIT WITH BOTH ENDS TERMINATING WITHIN THE PAD SHALL NOT BE PLACED BELOW THE CONCRETE.
9. THE EXACT LOCATION OF CONDUIT WITHIN THE PAD SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.
10. CONDUCT IN WENDY OF CONDUIT TO THE LEFT OF THE S.E. CABINET DIVIDER IS CRITICAL.
11. ANCHOR RODS SHALL PROJECT A MINIMUM OF 3" ABOVE THE CONCRETE BUT SHAL NOT INTERSECT WITH THE CABINET FUNDING SUPPORTING MEMBERS, ETC.
12. CABLES TO BE CENTERED (LEFT & RIGHT) ON THE FAD.
13. BRUSH ON ANTI-SIZE LUBRICANT MUST BE APPLIED TO ALL ANCHOR ROD THREAD PROTRUSIONS ABOVE THE CONCRETE PAD BEFORE THE CABINET IS SET.
14. CENTER THE 8.6" X 3.6" H/40 REINFORCEMENT REBAR GRID IN THE 3.6" X 4" X 10" CONCRETE PAD.
TYPICAL PAD WITH CONTROLLER CABINET

SIX INTERSECTION LAYOUT FOR CABLE INFORMATION (NOT TO SCALE)

PLAN VIEW

1" RIGID PVC CONDUIT 1/2" & NO RIGID INSULATED STEEL RISING CONDUCTORS

SIDE VIEW

GROUNDING ELECTRODE SYSTEM

CONTINUOUS 6" & 8" RIGID INSULATED COPPER CONDUCTORS (SEE NOTE 6)

GROUNDED WELDED CONNECTION

EXOTHERMIC WELDED CONNECTION

EXOTHERMIC WELDED CONNECTION

EXOTHERMIC WELDED CONNECTION

NOTES

1. The anchor rods, nuts, washers and rubber gasket for the controller cabinet shall be furnished by the contractor.

2. The outer edge of the entire equipment pad and concrete walk shall be vibrated or tamped in a neat manner as directed by the engineer.

3. The top of the conductors shall be capped until cables are pulled in.

4. Conduit shall project a minimum of 2" above the concrete and shall be located inside the cabinet door/interior, with the cabinet functions supporting members, etc.,

5. Concrete mix 1:3:6 or equal shall be used for the equipment pad and sidewalk.

6. Supply two 6-covered ground rods in accordance with 2425.2 and 2425.2.1 for the equipment pad as per 2425.3.3 and the other outside of the pad with a minimum of 6' of separation between electrodes. Bond the two ground rods together with one continuous 10 gauge uninsulated conductor from the outer most ground rod to both inside ground rods, exteriorly weld the ends and stramped green insulated copper conductors to ground rods, place the bonding connection to the equipment pad ground rod above the concrete, apply 1/16" expansion to the grounding connections after final assembly.

7. Bond a 6" & 8" insulated grounding conductor to the rebar grid to provide a double bonding operation, terminate the insulated grounding conductor in the cabinet with grounded connections, and terminate the grid bar in the cabinet (see note 7).

8. Not listed clamps suitable for concrete encasement or exothermic welded connection (see note 1).

9. The exact location of conductors within the pad shall be determined by the engineer in the field.

10. Anchor rods shall project a minimum of 3" above the concrete and shall not be stripped with the cabinet functions (supporting members, etc.)

11. Cabinet to be centered left & right on the pad.

12. Brush on anti-seize lubricant must be applied to all anchor rod threads protruding above the concrete pad before the cabinet is set.

13. Center the 4" x 4" x 18" HDPE reinforcement rebar grid in the 4" x 4" x 18" concrete pad.

14. Contractor shall bond ground lug to neutral lug in controller cabinet for system B.

15. Equipment Pad:

3/4" MIN WELD

1 RIGID PVC NO DES ELBOW

18" MIN WELD

5/8" DIA X 10' GROUND ROD

3/4" MIN WELD

1 RIGID PVC NO DES ELBOW

18" MIN WELD

3/4" MIN WELD
**MAST ARM MOUNTED SIGNS**

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**SPECIFIC NOTES:**
1. Spacing between signs shall not exceed 25 feet and shall be uniformly spaced.
2. Signs shall not be placed on the same pole.
3. Signs shall not be placed on the same pole.
4. Signs shall not be placed on the same pole.
5. Signs shall not be placed on the same pole.
6. Signs shall not be placed on the same pole.

**GENERAL NOTES:**
1. Signs shall not be placed on the same pole.
2. Signs shall not be placed on the same pole.
3. Signs shall not be placed on the same pole.
4. Signs shall not be placed on the same pole.
5. Signs shall not be placed on the same pole.
6. Signs shall not be placed on the same pole.

**MAST ARM SIGN LOCATION**

[Diagram showing sign locations and distances]
General Notes:
1. Do not lift entire pull vault by lifting slats with cover attached.
GENERAL NOTES

1. ADD CABLE IDENTIFIERS TO COLOR CODED ELECTRICAL TAPE WITH A PERMANENT MARKER AS SHOWN ON THIS DETAIL.
   E.G.: KENWOOD NORTH 365M 01330M
   KENWOOD = CABLE IDX
   NORTH = DIRECTION
   365M = CABLE FIBER COUNT
   01330 = NEAREST CABLE LENGTH MARKING TO WHERE THE TAPE IS APPLIED.

2. ELECTRICAL TAPE COLORS:
   NB (BLUE)
   BD (GREEN)
   ED (YELLOW)
   WB (ORANGE)
   P I T A L S (WHITE)

3. THE ELECTRICAL TAPE WITH THE IDENTIFIERS IS ADDED TO
   - CABLES WITHIN 1/8" OF THE ENTRANCE CONDUIT ON THE OUTER JACKET OF THE FIBER OPTIC CABLE.
   - VAULTS WITHIN 1/8" OF THE SPICE ENCLOSURE AND THE ENTRANCE CONDUIT.

4. NEATLY TAPE THE FIBER OPTIC CABLES TOGETHER AS NEEDED NEAR THE FIBER ENCLOSED THEN THROUGHOUT THE LENGTH OF SACK.

5. NEATLY COIL THE FIBER OPTIC CABLES INTO THE FIBER OPTIC HARDWARE BRACKETS INSIDE THE VAULT.

6. THIS DRAWING IS INTENDED TO SHOW THE FIBER OPTIC CABLES IN THEIR FINAL POSITION.

OUTDOOR FIBER SPICE ENCLOSURE IS SHOWN OUTSIDE OF THE VAULT. THE ACTUAL PLACEMENT IS WITHIN THE VAULT.