

CITY OF NORTHFIELD, MINNESOTA  
STREET CONSTRUCTION SPECIFICATION

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## 1.00 SCOPE OF WORK

### 1.01 GENERAL

It is the intent of these specification requirements to provide the requirements for street construction in the City of Northfield, Minnesota.

### 1.02 WORK INCLUDED

The Contractor shall, unless specified otherwise, furnish all materials, equipment, tools and labor necessary to do the work required under this contract. The Contractor shall also remove any street surfacing as required; construct and maintain all bridges for traffic control; handle all drainage; provide barricades, guards, and warning lights; adjust castings, valves, and accessories; maintain traffic or provide detours; remove surplus excavated material; clean the site of the work; and restore the boulevards.

### 1.03 LOCATION OF THE WORK

The location of this work is as shown on the plans.

### 1.04 COORDINATION OF WORK

The Contractor shall be responsible for the satisfactory coordination of the construction of the street with other construction and activities in the area affected. Delays in work resulting from lack of such harmony shall not in any way be a cause for extra compensation by any of the parties.

### 1.05 REFERENCE TO SPECIFICATIONS

A part of the contract documents consisting of written descriptions of a technical nature of materials, equipment, construction systems, standards and workmanship. Reference made to Mn/DOT Specifications shall mean the most current edition of the Standard Specifications for Construction of the Minnesota Department of Transportation and all subsequent revisions. In addition, whenever reference is made to the Minnesota Department of Transportation Standard specification, the word "Owner" shall be substituted for "State" where appropriate and the word "Engineer" is understood to refer to the Engineer for the owner.

### 1.06 STANDARD PLATES

The Standard Plates included as part of these specifications take precedence over the referenced Minnesota Department of Transportation Standard Specification in all instances of conflict.

## 2.00 MAINTENANCE OF TRAFFIC

The Contractor shall maintain traffic during construction in accordance with Section 1404 of the current Minnesota Department of Transportation Standard Specification, except as modified or altered below:

- A. The Contractor shall maintain the streets with a motor patrol and dust control as directed by the Engineer or Street Division Manager.

- B. All equipment shall be in such a mechanical condition that it will operate in a manner satisfactory to the Engineer. All equipment which operates on bituminous or concrete surfaces shall be equipped with rubber tires.
- C. When a bid item for motor grader is included in the Proposal Form, the motor grader shall be of the self-propelled type equipped with pneumatic tires and shall weigh not less than 19,000 pounds. It shall have a mould board at least twelve feet (12') long with a suitable cutting edge, a suitable scarifier, if needed, and power operated controls.
- D. The water distributor shall be of a size and design to maintain a satisfactory uniform moist condition over the roadway.
- E. The Contractor may purchase water from the City of Northfield for the purpose of watering sod, seeding or any other purpose related to the project from the City of Northfield's Water Salesman, which is located at the City of Northfield Maintenance Facility.

### 3.00 UTILITIES

Unless specified otherwise, this work shall be entirely at the Contractor's expense.

- A. There shall be an inspection of the sanitary sewer, storm sewer and watermain utilities prior to the start of construction. The Contractor shall notify the Engineer twenty-four (24) hours in advance to aid in accomplishing this inspection. All deficiencies in these existing systems prior to beginning street construction must be immediately brought to the attention of the Engineer.
- B. After the manholes and valve boxes are cleaned, and raised to proper grade prior to paving, they shall be inspected to assure trouble free operation.
- C. Curb Boxes: The Contractor shall be responsible for locating all curb boxes within the limits of the project. The Contractor shall notify the Engineer at least twenty-four (24) hours in advance of this location work so that a representative of the Engineer can be present at all times while this work is being done. This work shall be done prior to start of construction. Prior to completion of the project, the curb boxes shall be adjusted to be flush with the surface.
- D. A final inspection of all utilities will be performed at the completion of the project for acceptance. Adjustments shall be made as follows:
  - 1. Sanitary Sewer - All sanitary sewer manhole castings shall be left in place during the paving operation. The castings shall be adjusted before the wear course is laid and shall be left between 1 inch below finished grade. Where the Engineer requires or where it is impossible to adjust the structure with the addition or removal of adjustment rings, reconstruction will be necessary. In such cases, it will be necessary to add or remove manhole sections.

2. Storm sewer - Existing storm sewer castings shall be adjusted where necessary to be 0.1 foot below finished gutter line except in areas of surmountable curb for which the top of casting shall match the top of curb.
3. Water Valve Boxes - All water valve boxes shall be adjusted prior to placement of wear course and left between 1 inch below finished grade. Thorough tamping of the material around the valve box is required. In the event the valve box cannot be adjusted without the use of extensions, the Contractor shall remove the upper section, place the necessary extension and replace the upper section.
4. Grouting Adjusting Rings - Whenever adjustment rings are grouted, the Contractor shall grout the rings; place the casting and remove all excess grout on the inside of the manhole by wiping smooth with a gloved hand or similar instrument.
5. Castings – All castings shall be cleaned after paving is completed. All pickholes shall be cleaned and all castings shall be able to be opened without extra effort.

#### 4.00 REMOVALS

##### 4.01 TRAFFIC CONTROL

All disturbed streets and driveways shall be opened to local traffic on weekends to the extent possible. Property owners shall be contacted 48 hours in advance to plan for interruptions in accessibility.

Through traffic may be diverted from streets under construction during hours of operation. Access for emergency vehicles shall be maintained or provided at all times.

Streets intersecting the Project Street shall be securely barricaded and advance warning of road closure shall be placed one block in advance of barricaded streets. It will be the Contractor's responsibility to maintain all traffic control devices and to have proper devices for necessary blocking and detouring of streets. The Contractor will not be allowed to begin any work until the proper traffic control devices are on the project and are functioning properly. The Contractor will also be responsible for having a contact person or persons available to maintain the traffic control devices that may be broken or moved during off-hours or weekends. **The name and phone number of contact people shall be furnished at the pre-construction meeting.** All traffic control shall be in conformance with Appendix B of the Minnesota Manual on Uniform Traffic Control Devices.

The Contractor shall maintain garbage and recycling service at all times. Costs for providing access or hauling containers to an accessible location shall be incidental to the contract.

All traffic control devices shall be incidental to the project unless there is a specific bid item.

#### 4.02 CONSTRUCTION LIMITS

The Contractor shall contain all their construction activities to the limits as specified by the Engineer. The construction limits will either be marked in the field by the Engineer or the Engineer's representative or as indicated in the plans and specifications. Field marking shall govern over plan marks or measurements. Any work outside of the construction limits will require written approval from the Engineer.

#### 4.03 SAWCUT

All pavements, curb & gutter, sidewalks, and other such structures shall be sawcut full depth at the construction limits. The Contractor shall be responsible for protection of the ends of the limits until the materials are replaced. Any damage beyond the construction limits shall be the responsibility of the Contractor. The damaged end shall be sawcut again and any additional removals shall be replaced at the Contractor's expense. All sawcuts shall be incidental to the project unless there is a specific bid item.

#### 4.04 SIGNS

All street signs or other items that require removal shall be carefully removed by the Contractor and transported to the City Street Maintenance Facility for storage during construction. The Contractor shall provide temporary stop signs and other signs as necessary, including proper anchorage. Any signs damaged by the Contractor shall be repaired, cleaned or replaced at the Contractor's expense. This work shall be incidental to the contract.

#### 4.05 SALVAGE CASTINGS

Castings shall be removed and salvaged to the City of Northfield as directed by the Engineer. Salvaged castings shall be transported by the Contractor to the City Street Maintenance Facility. All other shall be disposed of by the Contractor at the Contractor's expense.

#### 4.06 CONCRETE REMOVAL

All concrete indicated for removal shall be removed and disposed of off-site by the Contractor. Any temporary storage of the removed concrete on-site shall be done by stockpiling the material in one location. The stockpiled material shall be located in approved locations or as directed by the Engineer. The sawing, removal, hauling, and disposal shall be included in the removal price.

#### 4.07 ACCESS TO DRIVEWAYS

The Contractor shall establish and maintain access to all properties after removals have occurred. This shall include placing temporary ramps as required. Ramps shall be constructed to the satisfaction of the Engineer. Ramps may need to be reestablished as construction progresses. Additional granular material may be required due to weather conditions. All costs associated with this item shall be considered incidental to the contract.

#### 4.08 MAILBOX RESTORATION

The Contractor, at the Contractor's expense, shall replace and restore mailboxes disturbed by the work. Mailboxes shall be replaced in accordance with U.S. Post Office standards.

## 5.00 EXCAVATION AND EMBANKMENT - ROADWAY & PAVEMENT

### 5.01 SUMMARY

This section covers the furnishing of all labor, materials, tools, equipment and performance of all work and services necessary or incidental to the excavation and embankment for roadways and pavements as indicated on the drawings or as specified herein.

### 5.02 METHOD OF MEASUREMENT AND PAYMENT

- A. Measurement and compensation for the following items shall be paid according to the referenced specification or as modified below:
1. Measurement and payment for Common Excavation shall be based upon the CUBIC YARD – PLAN QUANTITY - CY(P). Common excavation is computed to the face of any retaining walls. Excavation required for construction of the wall shall be incidental to the unit price bid for retaining wall. Common excavation includes any existing aggregate base removal.
  2. The quantities for Subgrade Excavation and Stabilizing Aggregate are strictly estimates and may be increased or decreased by any amount according to the conditions revealed. No direct compensation will be made for backfilling subcut areas with suitable material from the excavation.
  3. Measurement and payment for Subgrade Excavation and Stabilizing Aggregate shall be by the CUBIC YARD - EXCAVATED VOLUME - CY (EV).
  4. Measurement and payment for Select Granular Material shall be based upon the CUBIC YARD – PLANNED QUANTITY – CY(P). If the contractor intends to reuse millings in the select granular section, this shall be considered when determining the unit price bid.
  5. Measurement and payment for Geotextile Fabric – Type V shall be paid by the SQUARE YARD – SY installed.
- B. The furnishing and installing of specific items and/or the performance of work under certain circumstances shall not be individually paid. The costs shall be included in the unit price bid for the associated excavation items. Such items of work include but are not limited to:
1. Salvaging and separately stockpiling topsoil material, as determined by the Engineer.
  2. Salvaging and separately stockpiling suitable aggregate base material, as determined by the Engineer.
  3. Separating, salvaging, stockpiling and re-spreading topsoil to a minimum of 4 inches in turf areas.

4. Separating, salvaging, stockpiling and replacing clay borrow in roadway, structure, and embankment areas.
5. Earthwork balancing including adjustments for shrinkage loss, and excess materials resulting from the additional volume created from pipe bedding, utility pipe, and/or underground structures shall be included in the unit price bid for common excavation.
6. Protecting existing improvements and previously accepted in-process improvements from damage.
7. The avoidance of wetlands.
8. Subcutting the existing topsoil prior to placing embankment in all roadway, patio and trail locations.
9. Subgrade excavation, furnishing stabilizing aggregate, geotextile fabric installation, compaction, regrading and/or other efforts necessary to repair the subgrade for failing to protect the integrity of the subgrade after it has been accepted (test rolled).
10. Shaping, stockpiling, & seeding of all disposal sites shall be included in the price bid for common excavation.
11. Gradation and compaction testing and geotechnical inspection services to meet requirements of source and field quality control, if required.

### 5.03 MATERIALS

- A. Excavated material unsuitable for embankment and backfill construction shall become the property of the Contractor and shall be removed from the site and disposed of at a site secured by the Contractor.
- B. Stabilizing aggregates for use in backfilling subgrade excavations shall be material generally produced and referred to as "3-inch minus dust free aggregate" or other coarse aggregate found to be in general compliance by the Engineer. Aggregate base, Class 5 may also be used at the direction of the Engineer.

### 5.04 CONSTRUCTION REQUIREMENTS

- A. At the end of each day the Contractor shall eliminate surface indentations, including those caused by sheeps foot rollers and tractor cletes, and roll the surface with a steel wheel or rubber tired roller.
- B. Subgrade excavation shall be performed, as directed by the Engineer, for the removal of any unstable soils that may be encountered. Such excavation shall be backfilled with suitable excess common excavation material or stabilizing aggregate as directed by the Engineer. If the Contractor proceeds without approval from the Engineer or Owner, all

work and material to restore the roadbed to the proper grade shall be at the Contractor's expense.

- C. Once the subgrade has been test rolled and accepted by the Engineer, no traffic or construction equipment shall be permitted to operate directly on the subgrade without the prior approval of the Engineer. The subgrade shall be relatively smooth prior to the placement of aggregate base. All equipment shall be restricted to operating only in areas where the aggregate base has been installed to its full design depth.
- D. Material suitable for curb backfill shall be segregated and stockpiled at a site selected by the Contractor. Following curb construction, the material shall be placed behind the curb to the subgrade level of the topsoil.
- E. The Contractor shall salvage and stockpile all topsoil removed during the course of the construction. This topsoil shall be used where required for turf establishment as directed by the Engineer.
- F. Sufficient excavated material shall be utilized by the Contractor to replace loss volume due to soil shrinkage from trench excavation that may occur through the course of construction. The Contractor shall make his own determination of the amount of shrinkage that will occur.
- G. All embankment shall be compacted using the Specified Density Method:
  - 1. Under areas with proposed paved or structural improvements:
    - (a) 100% Standard Proctor from the proposed pavement subgrade elevation down 3 feet.
    - (b) 95% Standard Proctor from the bottom of excavation up to 3 feet below the subgrade elevation.
  - 2. Under areas with no proposed paved or structural improvements:
    - (a) 95% Standard Proctor.

## 6.00 AGGREGATE BASE

### 6.01 SUMMARY

This section covers the furnishing of all labor, materials, tools, equipment and performances of all work and services necessary or incidental to construct the aggregate base course as indicated on the drawings or as specified herein.

### 6.02 METHODS OF MEASUREMENT

- A. Measurement and compensation for the following items shall be paid according to the referenced specification or as modified below:
  - 1. All Class 5 placed under sidewalks and driveways is considered incidental to the driveway or sidewalk item bid.



- B. The furnishing and installing of specific items and/or the performance of work under certain circumstances shall not be individually paid. The costs shall be included in the unit price bid for the associated aggregate items. Such items of work include but are not limited to:
1. Protecting existing improvements and previously accepted in-process improvements from damage.
  2. Subgrade excavation, furnishing stabilizing aggregate, geotextile fabric installation, compaction, regrading and/or other efforts necessary to repair the subgrade after satisfying the rolling test and failing to protect the integrity of the subgrade.
  3. The cost of all labor, equipment and materials necessary for meeting the testing requirements of field quality control, if required, include in price bid for Aggregate Base.
  4. Furnishing and installing blue tops for gravel surface.

6.03 TEST ROLLING OF COMPACTED AGGREGATE BASE USING A FULLY LOADED AGGREGATE TRUCK (TANDOM). SPECIFICATION REFERENCES

- A. Mn/DOT Specification Section 2211 shall apply to the construction of aggregate base, except as modified herein.
- B. Unless noted otherwise, the provisions in this section are in addition to the referenced specification.

6.04 MATERIALS

- A. When no percent crushing is designated in on the *Schedule of Prices*, the material to be used shall conform to the Specifications for Aggregate Base Class 5 modified so that the percent passing the No. 200 sieve shall be 5 to 10 percent.
- B. Salvaged crushed concrete aggregate meeting the Class 5 aggregate gradation as per Section 3138 of the Minnesota Department of Transportation Standard Specification and as approved by the Engineer may be used in lieu of Class 5 aggregate for the street base material. The Contractor shall notify the Engineer in writing if they are planning to use salvaged crushed concrete aggregate.

6.05 CONSTRUCTION REQUIREMENTS

- A. At the end of each day the Contractor shall eliminate surface indentations, including those caused by sheeps foot rollers and tractor cletes, and roll the surface with a steel wheel or rubber tired roller.
- B. The depth and class of aggregate base to be constructed shall be as shown on the plans. Aggregate base construction shall take place only after the street subgrade condition and grade has been examined by the Engineer.

- C. All aggregate base shall be compacted to 100% standard Proctor density using the Specified Density Method:
- D. The grade will be tolerated by the Engineer after the Contractor informs the Engineer the grading operations are complete. The Engineer shall have 24-hours or one working day to check the grade prior to placement of additional layers of granular material or bituminous pavement. If scheduling or site conditions require the grade to be rechecked, the Engineer shall have adequate time to tolerance the grade again. Grades in an intersection can be adjusted in the field by the Engineer.
- E. Finish elevations shall be indicated on the plans. Any variations in the grade shall be averaged to produce a uniform thickness as indicated on the plans but in no case shall it vary by more than 3/4" (0.06') from the prescribed elevation at any point where a measurement is made.

## 7.00 CONCRETE CONSTRUCTION

### 7.01 MATERIALS

- A. All concrete shall be in accordance with MnDOT Spec. 2461, mix 3A32 for flat work and MnDOT Spec. 2461, mix 3A22 for curb & gutter with the following additional requirements:
  - 1. Type 3 air-entrained concrete
  - 2. 28-day compressive strength of 3,900 psi.
- B. White pigmented curing agent shall be in accordance with Mn/DOT Spec. 3754.
- C. Aggregate base shall be Class 5 granular material conforming to Mn/DOT Spec. 2211.
- D. Contractor shall be responsible for the making the suppliers aware of these additional requirements. Any concrete not meeting these specifications shall be rejected.

### 7.02 CURB AND GUTTER

All concrete curb and gutter shall be constructed in accordance with Section 2531 of the current Minnesota Department of Transportation Standard Specifications, except as modified or altered below:

- A. All curb and gutter shall be B618, unless otherwise specified on the plan or special provisions.
- B. Driveway openings in the curb shall be constructed as shown on the plans, standard plates, or as directed by the Engineer in the field.
- C. An expansion joint shall be placed at the radius point or all changes in direction.

- D. The Contractor shall construct concrete gutters as detailed on the standard plate at the end of these specifications, and as located on the plans.
- E. Delete that portion of Section 2531 which requires that the concrete curb and gutter joints be sealed with joint sealer material.
- F. The Contractor shall provide all concrete samples needed for test cylinders, slump tests, air entrainment tests, and other tests ordered by the Engineer.
- G. All honeycombed areas shall be back plastered as directed by the Engineer.

#### 7.03 CONCRETE VALLEY GUTTER

Concrete valley gutters shall be placed as indicated on the plans or as staked in the field by the Engineer. Valley gutters shall be a minimum of three feet (3') wide and have a 2% cross slope.

#### 7.04 CONCRETE SIDEWALK

Typical sidewalks that are within City right-of-way shall be 5 feet wide unless it is a carriage walk. At no point should any walk, including walks beyond the right-of-way, be installed at a slope greater than 5% longitudinally or a 2% cross slope. It shall be the Contractor's responsibility to maintain slopes within these tolerances, **and also to establish and confirm these grades.**

**At no point will steps be allowed in the right-of way unless approved by the Engineer.**

All sidewalk and pedestrian ramps shall be concrete and constructed in accordance with Mn/DOT 2521, Walks, with the following modifications:

- A. A spray membrane type of curing agent shall be used. The spray membrane shall be in accordance with Mn/DOT 3754 (White pigmented).
- B. Joint sealers are not required.
- C. Typical walk panels shall be 25 ft<sup>2</sup> with a contraction joint on each end of the panel unless otherwise specified or approved.

Joints shall align with like joints in adjoining work unless the work is separated by an 1" expansion joint. Sidewalk adjacent to curb and gutter shall have expansion material placed between the two unless the Engineer approves otherwise. When new sidewalk is to be placed adjacent to new curb and gutter and the deletion of expansion material is approved by the Engineer, the Contractor must exercise extreme care in jointing the curb and gutter such that the sidewalk joints result in an aesthetically pleasing pattern and provide uniformity. Adjustments of joint spacing in the curb and gutter and/or sidewalk may be necessary. Special attention shall also be taken in spacing joints near driveways, corners and changes in direction to achieve uniformity of panels.

- D. Expansion joints shall be installed on each side of the driveway, between walk and curb section at intersections, at changes in direction, at a maximum spacing of 50 feet, and in accordance with detail plates. The Engineer may order expansion material placed between existing walks and at other locations as required in the field.
- E. Sidewalk thickness shall be a minimum of 4” and be increased to 6” through all driveways.
- F. Places where sidewalk may be subjected to vehicle loads, the Engineer shall require the sidewalk to be increased to a 6” thickness.
- G. Curb boxes, which are in sidewalks, must remain accessible by use of two (2) part lid or a collar to keep concrete free of the lid. The style used should be a Power Seal Single Cover Water lid or approved equal.
- H. The furnishing and installing of specific items and/or the performance of work under certain circumstances shall not be individually paid. The costs shall be included in the unit price bid for the associated walks - concrete items. Such items of work include but are not limited to:
  - 1. Subcutting the excavation to the required depth, furnishing, placing and compacting suitable material to sub-grade, backfilling with topsoil and related work.
  - 2. Cold weather concrete protection methods and materials required.
  - 3. Provide adequate barricades and personnel to protect fresh concrete from pedestrian traffic and graffiti.
  - 4. Provide temporary walk ways spanning fresh concrete where required to maintain access into building entrances.
  - 5. Placing of aggregate base class 5, as specified in the details under concrete walks and driveways.
  - 6. Scoring of concrete walk special as shown on sheet 4.01 and 9.01 of the construction plans.

Refer to standard plates for typical sections and width requirements. Also see the Driveway and Sidewalk Construction Policy for additional details.

#### 7.05 PEDESTRIAN RAMPS

All sidewalk and pedestrian ramps shall be concrete and constructed in accordance with Mn/DOT 2521, Walks, with the following modifications:

- A. A spray membrane type of curing agent shall be used. The spray membrane shall be in accordance with Mn/DOT 3754 (White pigmented).

- B. Joint sealers are not required.
- C. Typical panels shall be 25 ft<sup>2</sup> with a contraction joint on each end of the panel unless otherwise specified or approved. See the Standard Plate for additional details.

Joints shall align with like joints in adjoining work unless the work is separated by an expansion joint. A 1" expansion joint shall be placed between the pedestrian ramp and the curb and gutter unless the Engineer approves otherwise. When a pedestrian ramp is placed adjacent to new curb and gutter and the deletion of expansion material is approved by the Engineer, the Contractor must exercise extreme care in jointing the curb and gutter such that the pedestrian ramp joints result in an aesthetically pleasing pattern and provide uniformity.

- D. Truncated Domes shall be Neenah R4984 Detectable Warning Plate, powder-coated gray, or approved equal.
- E. Pedestrian ramps and other places that sidewalk may be subjected to vehicle loads shall be thickened to a 6" thickness.
- F. Pedestrian ramps shall be constructed per the detail shown on the plans.

#### 7.06 CONCRETE CARRIAGE WALK

Typical widths for carriage walks are 4 feet unless carriage walk previously exists and then the Contractor shall match the existing width. Carriage walks shall not have a slope greater than 5% longitudinally or a 2% cross slope. It shall be the Contractor's responsibility to maintain slopes within these tolerances, **and also to establish and confirm these grades.**

All carriage walks shall be concrete and constructed in accordance with Mn/DOT 2521, Walks, with the following modifications:

- A. A spray membrane type of curing agent shall be used. The spray membrane shall be in accordance with Mn/DOT 3754 (White pigmented).
- B. Joint sealers are not required.
- C. Typical walks shall have a contraction joint every four feet (4') unless otherwise specified or approved.

Joints shall align with like joints in adjoining work unless the work is separated by an 1" expansion joint. Carriage walks adjacent to curb and gutter shall have expansion material placed between the two unless the Engineer approves otherwise. When a new carriage walk is to be placed adjacent to new curb and gutter and the deletion of expansion material is approved by the Engineer, the Contractor must exercise extreme care in jointing the curb and gutter such that the sidewalk joints result in an aesthetically pleasing pattern and provide uniformity. Adjustments of joint spacing in the carriage walk may be necessary.

Special attention shall also be taken in spacing joints near driveways, corners and changes in direction to achieve uniformity of panels.

D. Carriage walk thickness shall be a minimum of 4”.

#### 7.07 CONCRETE DRIVEWAY

The driveway slab shall form a smooth transition from the street to property line and shall provide drainage to the street.

Excess material developed in grading the driveway subbase shall be disposed off site by the Contractor and at the Contractor’s expense.

When grading driveways, it may be necessary to excavate the existing driveway beyond the property line. The existing driveway material will have to be replaced and shall be done at the contract unit price bid.

Driveway subbase shall be brought to a smooth grade by excavating or filling to allow for the placing of four inches of Class 5 gravel. Where the four inch gravel base is already existing but is loose or unstable, the top one inch of base shall be excavated, replaced with Class 5 gravel, and compacted prior to the installation of the bituminous mat.

The concrete material shall conform to Section 2531 of the current Minnesota Department of Transportation Standard Specification. A spray membrane type of curing agent shall be used. The spray membrane shall be in accordance with Mn/DOT 3754 (White pigmented).

Existing concrete driveways shall be cut with a concrete saw to the length designated by the Engineer in the field to allow placement of the new slab. The existing concrete to be removed shall be removed prior to construction of the curb and gutter. Where directed, the Contractor shall install concrete driveway pavement to the property line or to the existing concrete driveway. A one-half inch (1/2”) expansion joint shall be installed between the curb and gutter or concrete apron and new concrete slab and between the new concrete slab and existing driveway.

Refer to standard plates for typical sections and width requirements. Also see the Driveway and Sidewalk Construction Policy for additional details.

#### 7.08 CONCRETE STEPS

Concrete steps are not allowed within the street right-of-way unless approved in writing by the City Engineer. The steps shall be at least as wide as the carriage walk. A typical step has a 7-3/4 max rise and a 10” minimum tread width unless otherwise specified in the plans and specifications. If handrails are required, they shall be between 34” and 38” above the front step height. Steps shall conform to any applicable Americans with Disabilities Act standards. See Standard Plate No. 15.

All steps shall be formed and the forms shall be inspected and approved prior to pouring the concrete.

#### 7.09 SUBGRADE AND AGGREGATE BASE

Prior to placement of the aggregate base, the Contractor shall prepare the subgrade to the grade, stability and compaction as per Section 2112 of the Minnesota Department of Transportation Standard Specification. The subgrade shall be toleranced by the Engineer before aggregate is placed.

Class 5 aggregate used for subgrade below sidewalks, pedestrian ramps, carriage walks, and driveways shall be 6 inches thick unless otherwise specified in the plans and specifications. All Class 5 aggregate shall be compacted to 100% dry density. A mechanical tamper or any other approved method will be required for compaction of subgrade. Class 5 gravel shall be included in the price bid for concrete walk, steps, and driveway pavement.

#### 7.10 WORKMANSHIP

Concrete shall not be placed when stormy or inclement weather will prevent good workmanship. No aggregates containing frozen lumps may be used, and concrete shall not be placed on frozen subgrade. Concrete may be placed when the air temperature in the shade and away from artificial heat is not less than 33<sup>0</sup> F and rising. Concrete shall not be placed when the temperature is 36<sup>0</sup> F or less and falling. The temperature of the concrete shall not be less than 50<sup>0</sup> F nor more than 90<sup>0</sup> F when placed on the subgrade. If temperatures drop below freezing after the newly poured is laid, the concrete shall be covered with blankets.

Application of white pigmented curing compound shall be at a rate no less than one gallon per 200 square feet. Placement of the curing compound shall follow the placement of the concrete and be applied to all uncovered surfaces. Placement of the curing compound shall not be delayed for several hours or until another day unless approval is granted by the Engineer.

All joints shall be formed or sawn within 24-hours of placement of the concrete.

The finish of the concrete shall be uniform and aesthetically pleasing. No variations of more than ¼” when tested with a ten foot straight edge placed parallel to the center line of the pavement shall be acceptable. The Engineer may direct the Contractor to replace any areas that do not meet this criteria at the Contractor’s expense.

### 8.00 PLANT-MIXED BITUMINOUS SURFACTING

#### 8.01 SUMMARY

- A. This section covers the furnishing of all labor, materials, tools, equipment and performances of all work and services necessary or incidental to the construction of plant-mixed bituminous surfacing as indicated on the plans or as specified herein.
- B. This is a Certified Plant Project. The supplier shall have sufficient testing facilities and qualified personnel including Certified Technicians. If requested by the Engineer, the required tests shall be performed in a timely manner and with a good quality control program.

## 8.02 METHOD OF MEASUREMENT AND PAYMENT

- A. Measurement and compensation for the following items shall be paid according to the referenced specification or as modified below:
1. Payment shall be at the unit price bid per GALLON of bituminous tack coat installed. The amount bid shall include all material and work required to mix and place the tack coat specified.
  2. Payment shall be at the unit price bid per TON of bituminous surfacing for the respective bituminous courses. The amount bid shall include all material and work required to mix and place the bituminous course specified.
- B. The furnishing and installing of specific items and/or the performance of work under certain circumstances shall not be individually paid. The costs shall be included in the unit price bid for the associated bituminous paving items. Such items of work include but are not limited to:
1. Equipment and materials necessary for meeting the testing requirements of Source Quality Control for the bituminous tack coat, if required, include in price bid for bituminous tack coat.
  2. The cost of all labor, equipment and materials necessary to comply with the testing requirements of the "Certified Plant" designation, include in price bid for Plant-Mixed Bituminous Surfacing.
  3. The cost of all labor, equipment and materials necessary for constructing clean, vertical, solid edge at the adjacent asphalt surface, include in the price bid for Plant-Mixed Bituminous surfacing.
  4. **The cost of all labor, equipment and materials to adjust all castings and gate valves twice; once during base course construction and once at wear course construction.**
- C. Plant mixed asphalt pavement shall conform to the current Mn/DOT Specification 02350/2360 Plant Mixed Asphaltic Pavement, dated December 23, 2009. A copy of Mn/DOT's current specifications is located in the Appendix C.
1. Mn/DOT Specification Section 2357 shall apply to the construction of bituminous tack coat, except as modified herein.
  2. Mn/DOT Section 02360.7C (Pavement Smoothness Specification – IRI (International Roughness Index)) is hereby DELETED.
  3. Unless noted otherwise, the provisions in this Section are in addition to the referenced specification.



8.03 MATERIALS

- A. The bituminous material for tack coat shall be CSS-1H.
- B. Bituminous material and aggregate shall be as shown on the typical sections in the plans.

8.04 CONSTRUCTION REQUIREMENTS

- A. Bituminous Tack Coat
  - 1. The material shall be applied at the rate of 0.05 gallons per square yard.
  - 2. The contact surfaces of all fixed structures, the edge of the in-place mixture in all courses at transverse joints, and the wearing course at longitudinal joints shall be given a uniform coating of Liquid Asphalt or Emulsified Asphalt before placing the adjoining mixture. The bituminous material shall be applied by methods that will ensure uniform coating and in no case shall the application be excessive.
- B. The bituminous wearing course shall be constructed in the construction season following the season in which the underground utilities, aggregate base and bituminous base course have been constructed.
- C. The Contractor is required to use the self-propelled pneumatic tire roller as an intermediate roller on the wearing courses.
- D. The bituminous surfacing shall be constructed with maximum deviation of plus or minus 1/4-inch from the planned compacted thickness.
- E. Cut the adjacent asphalt surface prior to construction of the bituminous surface course to obtain a clean, vertical, solid edge.
- F. Compaction of all bituminous mixtures shall be by the Maximum Density Method.

8.05 SOURCE QUALITY CONTROL

- A. The bituminous mix shall be designed using Contractor Trial Mix Designs. A current Mn/DOT mix design may be accepted provided it represents the aggregate source and bituminous plant being used for the project, and is approved by the Engineer. No bituminous mixture shall be placed without an approved mix design.
- B. Testing of the material bituminous tack coat may be required, if determined by the Engineer, that the material appears suspect.

8.06 FIELD QUALITY CONTROL

- A. Three (3) inch diameter core samples shall be taken by the Owner to verify the thickness of the compacted finished bituminous structure. Sample locations shall be designated by the Engineer and made with a drilling device that produces clean sharp, vertical edges.

- B. If any cores prove deficient, the Contractor may, at its own cost and expense, take additional core samples to further define the extent of the deficiency.
- C. The Engineer shall calculate deficient pavement areas using the locations and thickness results of all core samples and prorating the thickness profile.
- D. A \$0.50 deduction per square yard will be made for each 1/8-inch deficiency of thickness beyond the specified tolerances.
- E. Reduction in payment for bituminous courses constructed to more than the a maximum permissible thickness shall be in accordance with Mn/DOT Section 2360.7, except that the thickness tolerances specified herein apply.
- F. Testing:

Should any of the specified tests fail, the Contractor shall notify the Engineer immediately and shall arrange and pay for additional test as may be necessary to satisfy the Engineer that the requirements have been met.

#### 9.00 BITUMINOUS DRIVEWAY CONSTRUCTION

The driveway slab shall form a smooth transition from the street to property line and shall provide drainage to the street.

Excess material developed in grading the driveway subbase shall be disposed off site by the Contractor and at the Contractor's expense.

When grading driveways, it may be necessary to excavate the existing driveway beyond the property line. The existing driveway material will have to be replaced and shall be done at the contract unit price bid for the type of material being replaced.

The bituminous material used for driveway slabs shall conform to Section 2360 of the Minnesota Department of Transportation Standard Specification with the exception that the maximum aggregate size may be one-half inch (1/2") in diameter.

Driveway subbase shall be brought to a smooth grade by excavating or filling to allow for the placing of 6 inches of Class 5 gravel and a 3 inch bituminous mat. Where a 4 inch gravel base already exists but is loose or unstable, the top 1 inch of base shall be excavated, replaced with Class 5 gravel, and compacted prior to the installation of the bituminous mat. All Class 5 aggregate shall be compacted to 100% dry density. A mechanical tamper or any other approved method will be required for compaction of subgrade.

Refer to standard plates for typical sections and width requirements. Also see the Driveway and Sidewalk Construction Policy for additional details.

## 10.00 SEAL COATING

### 10.01 GENERAL

It is the intent of these specification requirements to provide the requirements for seal coating in the City of Northfield, Minnesota. Also reference Mn/DOT Specification 2356.

### 10.02 PROJECT SWEEPING

Sweeping of all streets to be sealed shall be completed by the Contractor immediately before they are sealed. Streets that are swept and not sealed the same day, regardless of reason, shall be re-swept whenever work resumes.

Upon completion of seal coat and aggregate placement, streets will be re-swept by the Contractor. Sealed street must set for a minimum of twenty-four (24) hours from the time the final rolling is completed to when excess material can be swept up. After all materials have been placed on the designated streets and final rolling completed, final sweeping must occur within seventy-two (72) hours.

Sweepers used on project shall be capable of sweeping, picking up and dumping of materials.

All sweeping operations including sweeping, trucking and traffic control will be considered incidental to the contract.

Excess material swept up prior to construction shall be hauled to the City Compost Site. Aggregates picked up by sweeping operation after seal coating is completed shall be delivered to the Street Maintenance Facility. Exact stockpile location at Street Maintenance Facility will be designated by Street Division Manager prior to construction.

### 10.03 WEATHER LIMITATIONS

Seal coating operation (including traffic restrictions on the freshly constructed seal coat) will be conducted:

- 1) Not before June 1 nor after August 31,
- 2) Only during daylight hours,
- 3) When the air and pavement temperature is 60 degrees F and rising,
- 4) When the relative humidity is less than 75 percent, and
- 5) When the road surface is dry and clean.

In addition, seal coating operations will not be conducted in foggy or rainy weather. Seal coating operations will not be allowed to start and will be suspended if any of the above conditions cannot be met.

### 10.04 TRAFFIC CONTROL

Traffic control shall be the responsibility of the Contractor. The Contractor will install, maintain and remove all traffic control devices. Traffic control devices shall include all channelizing devices, advanced warning signs and flaggers necessary to keep the work area safe for public as

well as Contractor's employees. Traffic control devices should be of such nature that they can be moved easily with the construction process. An agreement on the traffic control configuration shall be reached between the City Street Division Manager and Contractor, prior to any construction work beginning. Work may be suspended if at any point, the Street Division Manager determines that additional traffic control is necessary.

Upon completion of seal coating streets shall be posted with temporary 25 mph speed limit signs at the beginning and the end of the project area. Temporary 25 mph speed limit signs may also be required at various intermediate locations along the longer stretches of the project. Final placement of 25 mph temporary signs will be determined in the field by the Street Division Manager. Temporary speed limit signs shall be picked up by the Contractor immediately after sweeping is completed.

#### 10.05 MATERIALS

The following materials shall be used for this project. Materials not described here shall be in accordance with the City's Standard Specifications.

A. BITUMINOUS MATERIALS:

Bituminous material to be used shall be CRS-2 in accordance with Mn/DOT Specifications 2356 and 3151.

B. SEAL COAT AGGREGATE:

Aggregate material shall meet gradation requirements specified in Mn/DOT Specification 3127 for FA-2. All aggregate to be used for bituminous seal coat shall conform to Class A, B, C or D as described in Mn/DOT Standard Specification 3137.2B.

#### 10.06 CONSTRUCTION REQUIREMENTS

A. EQUIPMENT:

Distributor: The Distributor shall meet requirements described in Mn/DOT Specification 2321.3C1.

Aggregate Spreader: Aggregate will be spread with approved mechanical-type aggregate spreader that is capable of distributing the aggregate uniformly to required width and at the designated ratio, with the application being sharply defined at the edges.

Pneumatic-Tire Roller: A sufficient number of self-propelled pneumatic-tire roller will be used for rolling aggregates after spreading such that the entire width of the treatment area is covered in one pass of the rollers. In most cases, this will require a minimum of three (3) rollers. Each roller will have a total compacting width of not less than sixty (60) inches and will have a minimum ground contact pressure of eighty (80) pounds per square inch.

Brooms: Brooms shall be self-propelled with means of controlling down pressure on the broom, capable of cleaning the road surface prior to spraying bituminous material, and removing loose particles after the seal coating operation is completed.

B. ROAD SURFACE PREPARATION:

The entire roadway surface to be sealed will be cleaned by the Contractor. The Contractor will sweep the pavement with a motorized broom to remove all loose materials. All depressions not reached by the power broom will be cleaned by the Contractor using hand brooms. Seal coating will not be allowed to proceed until road surface to be treated are approved by the Street Division Manager.

All gate valves and manholes shall be covered to prevent bituminous materials from being applied to them. Suitable coverings would be roofing felt, sand, or cut-to-fit plywood disks. The Contractor shall remove all covering material within two (2) hours after seal coating is completed.

C. APPLICATION OF BITUMINOUS SEALANTS:

Bituminous sealants shall be applied on surfaces that are dry and clean. The Street Division Manager will make final approval on all streets prior to sealants being applied.

Bituminous sealants shall be applied at a rate of 0.25 gallons per square yard.

The Contractor shall take special care not to have excessive sealant overspray on the concrete gutters. Excessive overspray of sealant would be considered a band on the curb exceeding 2" wide.

D. APPLICATION OF COVER AGGREGATE:

Aggregates shall be distributed over the entire treated pavement surface at a rate of 25 pounds a square yard. Aggregates shall be spread within 1-minute after bituminous sealer has been applied. The speed of spreader shall be set so stones do not roll over when hitting treated pavement.

All aggregates will be moistened prior to placement to provide aggregate that are uniformly damp at time of placement on the roadway.

The aggregate will be spread in one operation, in such a manner that an 18" strip of emulsified asphalt is left exposed along the longitudinal center to form a lap for succeeding applications of emulsion. Any bare spots in the spread of aggregates will be corrected immediately by hand spreading or other methods.

Special care should be taken so that there are not any bumps or overlaps in the roadway caused from the seal coating operation.

E. ROLLING OPERATIONS:

A maximum of 3 (three) minutes will be allowed between application of aggregates and completion of the initial rolling of the aggregates. Rollers will move in a longitudinal

direction not exceeding 5 (five) miles per hour. Extra rollers may be required if it is anticipated or demonstrated that the aggregates are not being embedded in the aggregate before the sealant breaks.

Traffic will not be permitted on newly rolled surfaces until the Street Division Manager is assured tires will not pick up or disturb the pavement surface.

F. **FINAL SWEEPING:**

The Contractor shall sweep up the excess aggregate starting five (5) calendar days, but not more than ten (10) calendar days, after completion of the first day's seal coat application. This sweeping shall be with a pick-up power sweeper and shall continue until all loose aggregate is completely cleaned up to the satisfaction of the City Engineer.

The excess aggregate shall be disposed of at a site designated within the City by the City Engineer.

G. **MANHOLE AND VALVE COVER PROTECTION:**

It shall be the Contractor's responsibility to cover all manholes and valves with a protective material or device to keep the bituminous material from sealing the covers to the frame during the seal coat process.

**10.07 METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

Payment will be by the square yard for street surfaces sealed. Measurement will be from the edge of the concrete gutter to the edge of concrete gutter, times the centerline length.

Bid price shall include all labor, materials, equipment, traffic control and sweeping to complete project described within these specifications.

**11.00 CRACK ROUTING AND SEALING**

**11.01 GENERAL**

It is the intent of these specification requirements to provide the requirements for crack routing and sealing in the City of Northfield, Minnesota. Also reference Mn/DOT Specification 3720 and 3725.

**11.02 PROJECT SWEEPING**

Sweeping of all streets to be sealed shall be completed by the Contractor immediately before they are sealed. A minimum of three (3) days notice of work starting shall be given to the Street Division Manager. Necessary sweeping after streets have been sealed will be completed by City forces.

### 11.03 WEATHER LIMITATIONS

Crack sealing operation (including traffic restrictions on the freshly constructed seal coat) will be conducted:

- 1) Not before May 1 nor after October 31,
- 2) Only during daylight hours,
- 3) When the air and pavement temperature is 40 degrees F and rising,
- 4) When the relative humidity is less than 75 percent, and
- 5) When the road surface is dry and clean.

In addition, crack sealing operations will not be conducted in foggy or rainy weather. Crack sealing operations will not be allowed to start and will be suspended if any of the above conditions cannot be met.

### 11.04 TRAFFIC CONTROL

Traffic control shall be the responsibility of the Contractor. The Contractor will install, maintain and remove all traffic control devices. Traffic control devices shall include all channelizing devices, advanced warning signs and flaggers necessary to keep the work area safe for public as well as Contractor's employees. Traffic control devices should be of such nature that they can be moved easily with the construction process. An agreement on the traffic control configuration shall be reached between the City Street Division Manager and Contractor, prior to any construction work beginning. Work may be suspended if at any point, the Street Division Manager determines that additional traffic control is necessary.

### 11.05 MATERIALS

The following materials shall be used for this project. Materials not described here shall be in accordance with the City's Standard Specifications.

#### A. CRACK SEALANT:

Sealant shall be low modulus rubberized asphalt, meeting Mn/DOT Specification 3720 and 3725. The crack sealant compound shall be packaged in sealed containers. Each container shall be clearly marked with the name of the manufacturer, trade name of the sealant, batch and lot number, pouring temperature, and the safe heating temperature.

A copy of the manufacturer's recommendations that pertain to heating and applying the joint sealant shall be submitted to the Street Division Manager prior to any work commencing. The manufacturer's recommendation shall be strictly followed by the contractor. Sealant shall never be heated above the manufacturer's safe heating temperature. The same sealant material shall not be continuously heated in excess of six (6) hours and never re-heated.

Mixing of different manufacturer's sealant materials will not be prohibited.

#### 11.06 CONSTRUCTION REQUIREMENTS

All cracks to be sealed shall be marked in the field by the Street Division Manager as work is progressing.

Routing, cleaning and sealing of cracks shall be done in one continuous operation. Traffic will not be permitted to drive on any surfaces that have been routed or cleaned, or both and not sealed. The Contractor shall not permit traffic on any areas that have been sealed until material has exceeded manufacturer's recommended set-up time.

Any cracks that exceed ¾" as determined by the Street Superintendent will not be routed. Cracks that exceed ¾" width will be cleaned and sealed only using "blow and go method".

A. ROUTING:

Cracks shall be routed to a depth and width of ¾" x ¾". Equipment that is designed to "plow" cracks to desired depth and width will not be permitted. Wet sawing will also not be permitted.

B. CLEANING:

Immediately prior to sealing, the crack and 6" of the street surface on either side shall be cleaned. Initial cleaning of surface shall be done with hand broom or oil-free compressed air. Final cleaning of crack and surface area shall be done with a hot air lance. The heat lance shall emit at a minimum of 2000 lps that is heated to a minimum of 2,800 degrees F. Cleaning shall leave the routed crack and surface area clean of all foreign matter, loosened particles, oil or water. Cleaning shall meet Street Division Manager's approval prior to any sealant being applied.

C. SEALING:

Sealant shall be placed evenly to the surface or in such a manner that the overband and routed crack total 2 ½" wide after striking off excess material. For any areas that the "blow and go" method is used on total overband shall be created that is 3X the total width of the crack.

Sealant shall be allowed sufficient time to set-up prior to traffic being permitted on it. If material is pulled out or picked up from the sealed cracks, repairs will be completed at the Contractor's expense.

#### 11.07 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Payment will be made by the lineal foot of cracks that are routed, cleaned and sealed. For any cracks that are in excess of ¾" and are cleaned and sealed only, payment will be 60% of the lineal foot bid price of routing and sealing.

Bid price should include all necessary costs for materials, labor, traffic control, and equipment necessary to complete crack sealing described in these documents.



## 12.00 BITUMINOUS PAVEMENT RECLAMATION

### 12.01 SUMMARY

This section covers the furnishing of all labor, materials, tools, equipment and performance of all work and services necessary or incidental to reclaiming the specified streets as shown on the plan to a depth of 12 inches. The exact project limits will be determined in the field by the Engineer. Upon completion of the reclamation process, 100% of the reclaimed material must pass through a 1 ½" sieve. Immediately upon completion of reclamation the bituminous material should be graded to create a level-driving surface. Particles of reclaimed material in excess of 1 ½" shall be removed from the street surfaces immediately after reclaiming process is completed. Prior to any new bituminous being placed the reclaimed streets shall be reshaped and re-compacted. Reshaping will consist of removing excess material from the surface, removing any oversized particles, shaping and compacting the street slope to the typical section shown on the plans. If it is deemed necessary by the Engineer, blue topping of the street's centerline may be required. Blue topping shall be provided by the Contractor and will be done a minimum of every 50' along the street's centerline. Any material not used in the construction subgrade sections shall be loaded and delivered to the City Street Maintenance Facility. The Contractor will be responsible for loading, hauling and stockpiling material at the Maintenance Facility. Stockpiled material shall be pushed up into a uniform pile. The Contractor will also be responsible for removing any chunks of reclaimed material in excess of 1 ½" along with any large areas that are not reclaimed such as around manholes, radius and gate valves. Large chunks of bituminous or concrete removed from the project shall be hauled to an approved landfill or recycling facility. Prior to the placement of the bituminous, the subgrade must be test rolled and approved by the Engineer or his approved representative.

### 12.02

Measurement and compensation for the following items shall be paid according to the referenced specification of as modified below:

1. Measurement and payment for reclamation (12" depth) shall be paid per SQUARE YARD (SY) and shall include all work associated with reclaiming the existing street surface to a depth of 12" or depth identified on the plans.

### 12.03

The furnishing and installing of specific items and/or the performance of work under certain circumstances shall not be individually paid. The costs shall be included in the unit price bid for the associated reclamation item. Such items of work include:

1. Removing, salvaging and stockpiling excess reclaim material as necessary to bring the subgrade material to final grade. All excess material not used for stabilizing in subgrade excavation areas should be hauled to the City Street Maintenance Facility and become property of the Owner.
2. Upon completion of hauling the excess reclaim material to the City Street Maintenance Facility, Heavy Duty silt fence shall be installed around the perimeter of the stockpile, and is incidental to the price bid for bituminous pavement reclamation.

## 13.00 PAVEMENT MILLING

### 13.01 SUMMARY

- A. This section covers the furnishing of all labor, materials, tools, equipment and performances of all work and services necessary or incidental to the milling of concrete or bituminous pavement as shown on the drawings or as specified herein.

### 13.02 METHOD OF MEASUREMENT AND PAYMENT

- A. Measurement and compensation for the following items shall be paid according to the referenced specification or as modified below:
- B. Payment for milling the surface shall be made at the SQUARE YARD unit price bid for the thickness specified and shall include:
1. Payment for transition milling the surface shall be made at the SQUARE YARD unit price bid for the thickness specified at the lip of the gutter and the width of the transition.
  2. Installation of salvaged milled materials in lieu of select granular material.
- C. The furnishing and installing of specific items and/or the performance of work under certain circumstances shall not be individually paid. The costs shall be included in the unit price bid for the milling items, as indicated. Such items of work include but are not limited to:
1. The loading, hauling, stockpiling and removal of milled materials include in the price bid for pavement milling.
  2. Interference of underground structures and utilities, include in the price bid for pavement milling.
    - (a) The removal and restoration, or protection of existing utilities that are shown on the plans and for which there is no bid item for removing and restoring, or working around the utility.
  3. Protecting existing improvements and surfaces from damage include in the price bid for pavement milling.
  4. Protecting the inverts of utility pipes from the accumulation of debris and soil, the removal of blockages which threatens to damage property, and/or the cleaning of both the newly constructed lines and the existing lines of all debris and soil which accumulated during the construction, include in the unit price bid for pavement milling.
  5. Milling headers when matching into existing perpendicular pavement roadways or surfaces, include in the price bid for pavement milling.
  6. Milling around manhole and catch basin castings and valve boxes, include in the price bid for pavement milling.

### 13.03 SPECIFICATION REFERENCES

- A. Mn/DOT Specification Section 2232 shall apply to the milling of all pavements, except as modified herein.
- B. Mn/DOT Specification Section 2211 shall apply to the installation of milled materials as an aggregate base, except as modified herein.
- C. Unless noted otherwise, the provisions in this section are in addition to the referenced specification.

### 13.04 MATERIALS

- A. All excess materials shall remain the property of the Owner and shall be loaded, hauled, and placed at the City Street Shop.

### 13.05 CONSTRUCTION REQUIREMENTS

- A. All millings intended for reuse in the select granular section shall have 100% passing a 2" sieve.

## 14.00 CLEANUP

Streets shall be swept, as directed by the Engineer, to control dust and to eliminate pollution runoff.

All excess concrete, rocks, and other debris shall be removed from the project prior to grading operations.

All castings shall be cleaned of excess concrete, bituminous or dirt. The pickholes shall be thoroughly cleaned and all castings shall be readily accessible.

All traffic control devices shall be promptly removed from the project when they are no longer required for any portion of the work.

## 15.00 OTHER WORK IN THE RIGHT-OF-WAY

### 15.01 CONCRETE BLOCK RETAINING WALLS

This work shall consist of furnishing and installing a pre-cast concrete wall in accordance with the applicable specifications of Mn/DOT Spec. 2411, Technical Memorandum No. 98-15-MRR-06 and the following:

The pre-cast walls shall be constructed in the location and configuration as shown on the cross sections. The Engineer reserves the right to alter this alignment to improve constructability and aesthetics.

Shown in the Plans are Plan and Elevation views including all horizontal and vertical controls. Soil information, if not provided, including boring locations, soil types, and bearing information needed to design the wall(s) may be available from the Engineer. If not available it shall be the responsibility of the wall designer to obtain the information. See Mn/DOT Spec. 1205 regarding use of the soils information.

The pre-cast walls shall be segmented block walls similar to those manufactured by the following or an approved equal:

- Keystone Retaining Wall Systems
- Rockwood Wall Systems
- Anchor Wall System
- Versa-lok
- Allan Block

The wall system shall be salmon with a rough textured surface. **Product information shall be submitted to the Engineer to approve the color and texture.**

The blocks shall have a minimum compressive strength of 3000 psi and a maximum absorption of 6 percent for all local projects. All Mn/DOT funded projects shall have block with a minimum compressive strength of 5800 psi and a maximum absorption of 5 percent.

If a fence is required along the top of the wall, the wall shall be designed to include the additional loading. The geogrid shall be designed and reinforced around the openings for fence footings.

When the longitudinal slope of the footing is greater than 10:1, the footing may be stepped.

Utilities shall be located outside the construction limits of the retaining wall. Any utilities needing to be located within this area shall be installed as the wall is being constructed. Once the geotextile layers are installed, neither the geotextile nor the utility shall be disturbed at any time. Any future maintenance on the utility will require dismantling the wall.

When the exposed height of the wall is less than 4.0 feet the following shall apply:

The pre-cast wall system shall be constructed in accordance with the manufacturer's recommendations upon approval of the design methodology by the Engineer.

When the exposed height of the wall is greater than or equal to 4.0 feet, or will support a roadway or structure within a distance from the top of the wall equal to the design height of the wall, the following shall apply:

- A. The wall shall be designed and the detailed drawings prepared by a Professional Engineer experienced in retaining wall design that is registered in the State of Minnesota. The design computations and the plans shall be certified by the Engineer and submitted to the

wall Owner for their permanent record. The design shall be per AASHTO and the Mn/DOT Road Design Manual.

- B. The detailed drawings shall contain all the necessary information for the construction of the wall. Included shall be a typical section detailing excavation limits, geotextile locations, block embedments, leveling pad dimensions, backfill, etc. Include as many sections and other views necessary for the construction and inspection of the wall. The information on embedment, geotextile locations, and geotextile lengths as they relate to wall heights may be shown in tabular form. Also included shall be the pertinent information on the individual blocks, the geotextile material and compaction requirements.
- C. All plan sheets shall clearly identify the name of the responsible engineering firm and the name of the person certifying the plan. Each sheet shall be certified.
- D. The typical section shall conform to figure 9-4.03A (Mn/DOT Mechanically Stabilized Retaining Wall) and keynotes in the Mn/DOT Road Design Manual.
- E. When the exposed height of the wall is greater than or equal to 10.0 feet, of will support a roadway or structure, the final certified retaining wall plan must be approved by State Aid Bridge Office prior to the construction of the modular block retaining wall.

The measurement for the pre-cast concrete wall shall be the area in square feet of the entire wall face above the footing furnished and installed as specified. Payment shall be at the Contract price per square foot under Concrete Block Retaining Wall and shall be compensation in full for all costs to construct the wall complete in-place. The footing block, a minimum of 1 row, shall be incidental to the cost of the wall.

#### 15.02 SIGNS

All signs and collars will be placed by the Northfield Street Division. The Contractor must inform the City when work has been completed to a point when the collars can be installed and allow adequate time for the collars to be placed. This shall include time for one-call locates to be established. Installation of street sign collars shall take place prior to placement of turf. In the case a sign collar is to be placed in concrete, the collar shall be installed prior to the placement of the concrete.

#### 15.03 TREES

The Contractor shall be responsible for the protection of all trees not scheduled for removal. Protection shall include fencing, wrapping, shoring, tunneling or other measures. Exposed and broken roots shall be neatly saw cut at the break and removed prior to backfill. Damage to trees above the ground surface shall be pruned, painted or otherwise repaired by the Contractor. Trimming of trees, where required, shall be coordinated with the City and the property owner or under their direction. In tight working conditions, the Contractor may be required to utilize smaller equipment, which will minimize damage to trees/shrubs.

Trees that are to be planted shall conform to Mn/DOT Specification 3861. The type of tree planted shall be from the attached tree list or as stated in the plans and specifications, but the exact variety of tree to be planted will be determined based on availability and residents in the project area.

Trees shall be planted in accordance with Mn/DOT Specification 2571. The Contractor will be responsible for all necessary watering and protection measures, in accordance with Mn/DOT Specification 2571, for a 30-day establishment period.

Payment for trees shall include labor, materials, and equipment necessary for planting, staking, and maintaining trees during the required maintenance period.

All clearing and grubbing shall be performed in accordance with and the basis of payment shall be made as per Section 2101 of the Minnesota Department of Transportation Standard Specifications, with the following amendment: All costs associated with clearing and grubbing shall be considered incidental to the project unless a separate bid item is included in the proposal form. Clearing shall be under the direction of the Engineer in the field and care will be required to protect all trees not removed. All timber, stumps, roots and other debris or by-products resulting from the clearing and grubbing operation shall be disposed of off the site, at an approved disposal site.

Tree pruning for the entire project shall be completed by qualified personnel. The Contractor shall submit to the Engineer prior to the pre-construction meeting the proposed method of tree pruning and the qualifications of the person or persons who will be doing the tree pruning. A field inspection of the trees, which the Contractor wishes to be pruned, shall be made by the Contractor and the Engineer. No tree pruning shall be performed without the written consent of the Engineer. Tree Pruning will be considered incidental.

#### 15.04 FENCE RESTORATION

Removal and relocation or restoration of any fences disturbed shall be considered incidental to the cost of the project unless a bid item exists in the construction documents.

#### 15.05 PUBLIC UTILITIES

All castings, hydrants, curb stops and other such items shall be set to finish grade. The turf or concrete surrounding these structures shall be level and at the same grade. The grade shall not vary from the surrounding grade in order to match the structure. If this is the case, the structure shall be adjusted to meet the required grade.

#### 15.06 PRIVATE UTILITIES

The Contractor shall coordinate with the private utility companies for the installation of power poles, guy wires, utility boxes, castings, vaults, conduit, and any other related items. The lack of coordination between the utility company and the Contractor shall not entitle the Contractor to additional work days or additional compensation.

### 15.07 GRADING

Material for topsoil borrow shall conform to Mn/DOT Spec. 3877. 100% of the material, including soil clumps must pass a 1" sieve. Prior to sod installation, all topsoil borrow material must be approved by the Engineer. The grading shall consist of a uniform and smooth surface. Any sags or rises shall be corrected prior to the placement of sod or seed.

### 16.00 TURF ESTABLISHMENT

All turf establishment shall be in accordance with Section 2575 of the current Minnesota Department of Transportation Standard Specification, except as modified or altered below:

#### A. Sodding

1. The Contractor shall furnish and install sod and topsoil to the areas designated by the Engineer. Sod shall be Sodding Type Mineral. Any sod grown in peat will not be acceptable.
2. The Contractor shall use a sod cutter to make a straight line cut at full sod widths to match existing sod areas. Waste material shall then be removed and the area prepared to allow a depth of four inches (4") for topsoil placement.
3. The topsoil shall not be placed until the Engineer has inspected the area and approved the subgrade preparation and topsoil materials. Sod shall be placed ½" below flush level with concrete sidewalks or other features to allow proper drainage.
4. The topsoil fine grading shall not be completed more than twenty-four (24) hours prior to the sod laying operation. The Contractor shall be required to remove topsoil placed on unapproved areas or topsoil which does not meet Mn/DOT Spec. 3877 with such removal at the Contractor's expense.
5. The Contractor shall not dump the topsoil on the street.
6. At all times during grading, preparation and sod laying, it shall be the Contractor's responsibility to see that all catch basins in the working area are kept clean. Gutters shall be cleaned and free of dirt and other materials at the end of each working day to ensure proper drainage.
7. Watering of the sod shall be the responsibility of the Contractor. The watering of sod shall conform to Mn/DOT Specification 2575.3. Water can be purchased from the City of Northfield Water Salesman located at the City of Northfield Maintenance Facility,
8. Fertilizer, analysis 15-15-15, shall be applied to all sod areas at the rate of 200 lbs/acre.

#### B. Seeding/Hydro Seeding

1. The Contractor shall furnish and install seed and four inches (4") of topsoil to the areas designated by the Engineer. Imported topsoil may be required.

2. Seed shall be in accordance with Mn/DOT Technical Memorandum: 05-03-ENV-01. Seed mixture 250 shall be used in all rural seeding operations as determined by the Engineer and seed mixture 270 shall be used in all urban seeding operations as determined by the Engineer. Seed Mixtures are as followed:

<b>MIXTURE: 250 (GENERAL ROADSIDE)</b>			
<b>COMMON NAME</b>	<b>BULK RATE</b>		<b>% OF MIX</b>
	<b>kg/ha</b>	<b>lb/ac</b>	<b>COMPONENTS</b>
Brome grass, smooth	11.0	9.8	14.0
Bluegrass, Kentucky "Certified Park"	22.7	20.3	29.0
Bluegrass, Canada	11.0	9.8	14.0
Switch grass	2.4	2.1	3.0
Wheat-grass, slender	3.1	2.8	4.0
Rye-grass, perennial	16.5	14.7	21.0
Timothy	2.4	2.1	3.0
Redtop	2.4	2.1	3.0
Alfalfa, creeping	4.7	4.2	6.0
White Clover	2.4	2.1	3.0
<b>GRAND TOTALS</b>	<b>78.6</b>	<b>70.0</b>	<b>100.0</b>
General Roadside mix			

<b>MIXTURE: 270 (RESIDENTIAL TURF)</b>			
<b>COMMON NAME</b>	<b>BULK RATE</b>		<b>% OF MIX</b>
	<b>kg/ha</b>	<b>lb/ac</b>	<b>COMPONENTS</b>
Bluegrass, Kentucky - Elite	33.6	30.0	25.0
Bluegrass, Kentucky - Improved	33.6	30.0	25.0
Bluegrass, Kentucky - Low Maintenance	33.6	30.0	25.0
Red fescue, creeping	10.8	9.6	8.0
Rye-grass, perennial	22.8	20.4	17.0
<b>GRAND TOTALS</b>	<b>134.4</b>	<b>120.0</b>	<b>100.0</b>
Residential Turf mix			

3. The seeding shall not be done until the Engineer has inspected the area and approved the subgrade preparation and topsoil materials.
4. If so directed by the Engineer, the Contractor shall reseed, at the Contractor's cost, any area on which the original seed has failed to grow, using the type of seed directed by the Engineer.
5. Fertilizer, analysis 15-15-15, shall be applied to all seed areas at the rate of 200 lbs/acre.



6. Type 1 mulch shall be applied in accordance with Section 2575.3 of the Minnesota Department of Transportation Standard Specification when seeding operations are taking place. Type 6 (hydro mulch blend) shall be in accordance with Section 3884 of the Minnesota Department of Transportation Standard Specification. Areas to be mulched shall be as shown on the plan or as directed by the Engineer in the field.
7. Watering of the seed shall be the responsibility of the Contractor. The watering of seed shall conform to Mn/DOT Specification 2575.3. Water can be purchased from the City of Northfield Water Salesman located at the City of Northfield Maintenance Facility.

C. Topsoil

Topsoil used for sodding and seeding areas shall be in accordance with Section 3877 of the Minnesota Department of Transportation Standard Specification.

D. Street Sweeping

The Contractor shall sweep the streets following the completion of the sodding and seeding operations. All sweeping shall be completed within three (3) calendar days after completion of the sodding and seeding operation. This sweeping shall be with a pick-up power sweeper and shall continue until all loose material is completely cleaned up to the satisfaction of the City Engineer. Also, all catch basins shall be cleaned to the Engineer's satisfaction within the same time requirements stated above.

E. Traffic Control

The Contractor shall be responsible for all traffic control related to delivery, unloading, stockpiling, and placement of the sod. Proper traffic control devices shall be installed prior to any of these activities taking place. If the road needs to be closed, proper signage and advanced warnings shall be installed before any operations take place.

## 17.00 MATERIALS

### 17.01 BITUMINOUS PRIME COAT

The bituminous material for bituminous prime coat shall be MC-30, installed in accordance with Section 2358 of the Minnesota Department of Transportation Standard Specification. The rate of application shall be 0.30 gallons per square yard in one (1) operation or as otherwise approved by the Engineer.

### 17.02 BITUMINOUS TACK COAT

The bituminous material for tack coat shall be applied in accordance with Section 2357 of the Minnesota Department of Transportation Standard Specification. The rate of application shall be 0.05 gallons per square yard of surface or as approved by the Engineer.

### 17.03 ASPHALTIC MATERIALS

Asphaltic materials for base and surface bituminous mixtures shall be in accordance with those specified in Articles 8.00 and 9.00.

#### 17.04 PLANT MIXED BITUMINOUS SURFACING

Plant mix bituminous surfacing shall be in accordance with Section 2360 of the Minnesota Department of Transportation Standard Specification.

#### 17.05 AGGREGATE SURFACING

Aggregate surfacing shall be in accordance with Section 2118 of the Minnesota Department of Transportation Standard Specification.

#### 17.06 BITUMINOUS SEAL COAT

The bituminous seal coat shall be constructed in accordance with Section 2356 of the current Minnesota Department of Transportation Standard Specifications, except as modified or altered below:

- A. Preparation of Surface: Immediately prior to the applications of any bituminous material, the road surface shall be cleaned of all dirt, dust, and other objectionable matter by a pick-up power sweeper. All debris removed shall be disposed of by the Contractor. This work shall be entirely at the Contractor's expense and considered incidental to the project cost.
- B. Bituminous Material: Bituminous material for seal coat shall be CRS-2, applied at the rate of 0.24 plus or minus 0.01 gallon per square yard.

NOTE: "0.24" refers to asphalt content of the material including wetting agent. The wetting agent shall not be more than 30% of the total mixture.

- C. Aggregate: Aggregate for seal coat shall be FA-2. Aggregate at the time of application shall not contain more than four (4) percent free moisture.

Cover aggregate shall be applied at the rate of one (1) pound per each 0.01 of a gallon of bituminous material spread.

- D. Traffic: Traffic rerouting shall be the responsibility of the Contractor, which shall include all flaggers, barricades, warning signs and traffic cones, to adequately protect the work. Traffic cones shall be spaced not more than 100 feet along the inner longitudinal edge of the freshly constructed seal coat.

No pilot car will be required to guide vehicular traffic.

- E. Final Sweeping: The Contractor shall sweep up the excess aggregate starting five (5) calendar days, but not more than ten (10) calendar days, after completion of the first day's seal coat application. This sweeping shall be with a pick-up power sweeper and shall continue until all loose aggregate is completely cleaned up to the satisfaction of the City Engineer.

The excess aggregate shall be disposed of at a site designated within the City by the City Engineer.

- F. Manhole and Valve Cover Protection: It shall be the Contractor's responsibility to cover all manholes and valves with a protective material or device to keep the bituminous material from sealing the covers to the frame during the seal coat process.

## 18.00 PAVEMENT MARKING

### 18.01 SUMMARY

This section covers the furnishing of all labor, materials, tools, equipment and performance of all work and services necessary or incidental to the application of pavement markings as indicated on the drawings or as specified herein.

### 18.02 METHOD OF MEASUREMENT AND PAYMENT

- A. Measurement and compensation for the following items shall be paid according to the referenced specification or as modified below:
1. Pavement markings of the specified width will be measured separately by LINEAL FOOT of each type constructed complete in place as specified. Broken line will be measured by the actual length of line marked and will not include the gap between the broken lines.
  2. Pavement messages will be paid for by the unit bid price for EACH.
- B. The furnishing and installing of specific items and/or the performance of work under certain circumstances shall not be individually paid. The costs shall be included in the unit price bid for the associated pavement markings items. Such items of work include but are not limited to:
1. All costs of preparing the surface, including sandblasting and removing of existing (old) pavement markings on existing pavement areas where a new marking layout is to occur.
  2. Controlling and protecting traffic.

### 18.03 MAINTAINING THE WORK, TOGETHER WITH ANY OTHER EXPENSES INCURRED IN COMPLETING THE WORK THAT ARE NOT SPECIFICALLY INCLUDED FOR PAYMENT UNDER OTHER CONTRACT ITEMS. SPECIFICATION REFERENCES

- A. Mn/DOT Specification Section 2581 shall apply to temporary, removable pavement markings, except as modified herein.
- B. Mn/DOT Specification Sections 2582, 3354, 3590, 3591 and 3592 shall apply to permanent and painted pavement markings, except as modified herein.

- C. The following Mn/DOT Specifications, attached hereto, shall apply to permanent, preformed pavement markings, except as modified herein:
  - 1. Specification - High Durability Preformed Pavement Markings - (including stop lines and crosswalks)
  - 2. Specifications – No. 1 Patterned Preformed Polymer Pavement Marking Tape with improved retention of reflectivity for lines and selected symbols and legends
- D. Unless noted otherwise, the provisions in this section are in addition to the referenced specification.

18.04 MATERIALS

- A. Interim Pavement Markings for application on bituminous base course prior to the construction of the bituminous wearing course shall be:
  - 1. High Solids Water Based Traffic Paints, in accordance with the referenced specification.
- B. Permanent Pavement Markings for application on the final bituminous wearing course shall be:
  - 1. Epoxy Resin Pavement Markings, in accordance with the referenced specification.

18.05 EQUIPMENT

- A. Application equipment for latex and epoxy resin systems shall consist of a machine of the spray type capable of applying the material under pressure at a controlled temperature through nozzles equipped with remotely controlled cutoff mechanisms and suitable line guides that will produce clean cut lines and prevent excessive material drift.
- B. For highway and street applications, the marking material shall be applied with truck mounted traveling units properly equipped to apply the stripes as required. Where two or more lines are to be applied closely spaced, the machine shall be equipped to apply those stripes simultaneously. For application of broken lines, the applying unit shall include an automatic feed to control device capable of being set to produce the specified stripe gap ratio.

18.06 CONSTRUCTION REQUIREMENTS

- A. At the time of applying the marking material, the application area shall be free of contamination. The contractor shall clean the surface prior to the line application in a manner and to the extent required by the Engineer.
- B. The Contractor shall sandblast or otherwise remove existing (old) pavement markings on existing pavement areas where a new marking layout is to occur.

- C. Pavement markings shall not be applied when the wind or other conditions cause a film of dust to be deposited on the pavement surface after cleaning and before the marking material can be applied.
- D. The filling of tanks, pouring of materials or cleaning of equipment shall not be performed on unprotected pavement surfaces unless adequate provisions are made to prevent spillage of the material.
- E. No striping operations will be permitted between sundown and sunrise without written permission from the Engineer.
- F. All material shall be placed in a workmanlike manner, which shall result in a clearly defined line.
- G. All pavement striping shall be 4-inches wide, unless noted otherwise on the plans.
- H. Application for the marking material shall be such as to provide uniform film thickness throughout the coverage area. Stripe ends shall be clean cut and square, with a minimum of material beyond the cutoff.
- I. All pavement markings not conforming to the requirements of the Contract shall be removed and replaced or otherwise repaired to the satisfaction of the Engineer. Removal of unacceptable work shall be accomplished with suitable blasting or grinding equipment unless other means are approved by the Engineer.

19.00 METHOD OF PAYMENT

19.01 GENERAL

The unit of measurement and basis of payment for the following items shall be made as per the referenced Section of the current Minnesota Department of Transportation Standard Specification listed below except as modified or altered herein:

<u>Item</u>	<u>Referenced Section</u>	<u>Modification</u>
A. Water (Dust Control)	2130	The cost shall be considered incidental to the project unless a bid item is included in the proposal.
B. Subgrade Correction	2116	Includes core excavation and backfill material.
C. Aggregate Base	2211	None
D. Bituminous Prime Coat	2358	None

E.	Bituminous Tack Coat	2357	None
F.	Bituminous Base	2350	None
G.	Plant Mixed Bituminous Surfacing	2350	None
H.	Concrete Driveway Pavement	2531	None
I.	Sodding	2575	None
J.	Roadside Seeding	2575	The unit of measurement and basis of payment shall be by the square yard or acre. The contract price bid for the roadside seeding shall include the cost of furnishing and installing seed, mulch and commercial fertilizer.
K.	Seed, Mixture 250 & 270	2575	The cost shall be considered incidental to Roadside Seeding unless a specific bid item is provided.
L.	Commercial Fertilizer	2575	The cost shall be considered incidental to Roadside Seeding unless a specific bid item is provided.
M.	Mulch Material	2575	The cost shall be considered incidental to Roadside Seeding unless a specific bid item is provided.
N.	Subgrade Preparation	2112	The cost shall be considered incidental to the project unless a specific bid item is provided.
O.	Water (Sod)	2575	The cost shall be considered incidental to the bid price submitted for sodding.
P.	Adjust Ring Frame and Casting	2506	None
Q.	Concrete Curb and Gutter	2531	None

R.	Concrete Valley Gutter	2531	None
S.	Aggregate Surfacing	2118	None
T.	Bituminous Material for Seal Coat	2356	The unit of measurement and basis of payment shall be by the square yard. Although not required for payment quantity calculation, weight slips shall be furnished by the Contractor for each load of bituminous material delivered on the job. Deductions may be made for under-run of materials supplied on a square yardage yield.
U.	Seal Coat Aggregate	2356	The unit of measurement and basis of payment shall be by the square yard. Although not required for payment quantity calculation, weight slips shall be furnished by the Contractor for each load of aggregate delivered to the job. Deductions may be made for under-run of materials supplied on a square yardage yield.

19.02 MOTOR PATROL

The cost of furnishing and operating a motor patrol in accordance with Street Specification 2.00 shall be considered incidental to the project unless a separate bid item is included in the proposal form.

19.03 ADJUST WATER VALVE BOX

Adjustment of water valve box assemblies shall be paid for at the contract unit price bid including extensions if required.

19.04 MISCELLANEOUS ITEMS

The cost of any additional labor, materials, tools, and supplies not covered in the specifications but required to complete the project as per the plans and specifications shall be considered incidental to the project.