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# SECTION 1 - STREET CONSTRUCTION/SITE WORK

## 1.1 **GENERAL**

### 1.1.1 Description

This work shall consist of clearing, grubbing, earthwork, topsoil placements, turf establishment, plantings, erosion control, the construction of streets, and all appurtenant miscellaneous construction. The work includes the removal, relocation, or adjustment of existing facilities as may be specified in the contract.

All work must be performed in accordance to these specifications, the Blaine Detail Plates, the plans, and applicable MnDOT Standard Plates.

MnDOT Specifications can be viewed on MnDOT's website at: <http://www.dot.state.mn.us/pre-letting/spec/index.html>

### 1.1.2 Applicable MnDOT Standard Plates

The following are MnDOT Standard Plates that apply to specific items as shown on the plans or referenced in the specifications. Though listed, each Plate may not be used on every project, and some projects may identify another Plate or modify an existing Plate.

7035N Concrete Walk  
7100H Concrete Curb and Gutters

## 1.2 **PRODUCTS**

1.2.1 Silt Fence - Silt fence shall meet the requirements of MNDOT 3886 for the type as specified in the bid and/or on the plans. If no type is specified, HI, Hand Installed, shall be used.

1.2.2 Filter Logs - Filter logs shall meet the requirements of MnDOT 3897 and applicable MnDOT Standard Detail Plates and City Standard Detail Plates as specified on the bid and/or on the plans.

1.2.3 Topsoil - Topsoil shall meet requirements of MNDOT 3877 for Common Topsoil Borrow except as modified or supplemented herein.

A. For City of Blaine owned projects:

1. Minimum organic matter shall be 5%.
2. Maximum combined total of silt and clay may not exceed 30%.

1.2.4 Mulch - Mulch shall meet the requirements of MnDOT 3882, the type as specified on the bid form and/or the plans.

1.2.5 Sod - Sod shall meet the requirements of MnDOT 3878, the type as specified on the bid form and/or the plans.

1.2.6 Seed - Seed mixture shall meet the requirements of MnDOT 3876, the mixture number as specified on the bid form and/or the plans.

1.2.7 Fertilizer - Fertilizer shall meet the requirements of MnDOT 3881, the type as specified on the bid form and/or the plans.

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- 1.2.8 Plant Stock - Plant stock such as trees and shrubs shall meet the requirements of MNDOT 3861.
- 1.2.9 Erosion Control Blanket - Wood fiber blanket shall meet the requirements of MNDOT 3885.
- 1.2.10 Granular Borrow, Select Granular Borrow, Stabilizing Aggregate - Material for granular borrow, select granular borrow, and stabilizing aggregate shall meet the requirements of MnDOT 3149.
- 1.2.11 Common Borrow - Material shall meet the requirements of MnDOT 2105.
- 1.2.12 Calcium Chloride - Calcium chloride shall meet the requirements of MnDOT 3911.
- 1.2.13 Concrete - All concrete must meet the requirements of MNDOT 2461 except as modified or supplemented herein.
  - A. The Contractor must submit a job-mix formula to the Engineer for approval ten (10) days prior to the use of the mix on the project.
- 1.2.14 Aggregate Base - Aggregate base for the class specified on the bid proposal shall meet the requirements of MnDOT 2211, except as modified or supplemented herein.
  - A. The Contractor must submit a certified gradation of the material to the Engineer for approval ten (10) days prior to the use of the material on the project.
  - B. Virgin aggregate material shall not be used.
- 1.2.15 Shoulder Base Aggregate - Shoulder base aggregate for the class as specified on the bid proposal, shall meet the requirements of MnDOT 2221, except as modified or supplemented herein.
  - A. The Contractor must submit a certified gradation of the material to the Engineer for approval ten (10) days prior to the use of the material on the project.
- 1.2.16 Bituminous Material for Seal Coat - Bituminous material shall meet the requirements of MnDOT 3151 for the type as specified on the bid form.
- 1.2.17 Bituminous Material for Tack Coat - Bituminous material shall meet the requirements of MnDOT 3151 for RC800.
- 1.2.18 Plant Mixed Asphalt Pavement - Materials for bituminous pavement shall meet the requirements of MnDOT 2360 "Plant Mixed Asphalt Pavement," type as specified on the bid form.
- 1.2.19 Aggregate for Seal Coat - Material shall meet the requirements of MNDOT 3127, type as specified on the bid form.
- 1.2.20 Pavement Markings - Materials shall meet the requirements of MnDOT 2582, except as modified or supplemented herein.
  - A. Glass beads shall meet the requirements of MNDOT "Specifications for Glass Beads, Drop-on Type for Reflectorizing Traffic Paint".
  - B. Paint for pavement markings shall meet the requirements of MNDOT "Specifications for White and Yellow, Three Minute Dry, Alkyd Traffic Paints".

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- C. Epoxy for pavement markings shall meet the requirements of MnDOT "Specifications for Epoxy Resin Pavement Markings".
  - D. Reflective polymer tape pavement markings shall be "3M High Performance A-380 Series", or approved equal, for all pavement markings except crosswalks and stop bars.
  - E. Reflective polymer tape pavement markings for crosswalks and stop bars shall be "3M Intersection Grade A420 Series", or approved equal.
- 1.2.21 Street and Traffic Signs - Street and traffic signs shall meet the requirements of MNDOT 3352 for VIP Reflective Sheeting, and the Minnesota Manual on Uniform Traffic Control Devices. See Blaine Standard Details for additional information.

Flanged channel sign posts for traffic signs shall meet the requirements of MNDOT 3401 and shall be 3.0 pounds per linear foot. Posts shall not be galvanized. The posts shall be coated with an approved rust inhibitive green paint.

Posts for street signs shall be 2 3/8" O.D., 12 gauge galvanized steel. A nylon washer shall be installed adjacent to sign face. Street signs shall not be installed on stop sign or other traffic control sign posts.

Break-away post connections shall be "Kleen Break Model 425" sign post couplers or approved equal.

Street sign brackets shall be "Lyle Signs" No. E-450, with extensions, or approved equal.

- 1.2.22 Modular Block Retaining Wall – This specification covers segmental masonry units for use in the construction of mortarless retaining walls. Approved materials may be viewed on the MnDOT website at: [www.mrr.dot.state.mn.us/pavement/concrete/products.asp](http://www.mrr.dot.state.mn.us/pavement/concrete/products.asp). The units shall meet the applicable specifications of MnDOT 2411 and MnDOT Standard Plan 5-297.640 and the following:

- A. The precast segmented block walls shall be 4 to 6-inches high, 18-inches long, and 10-inches deep.

The wall system shall be dark buff with a split face textured surface. Product information shall be supplied to the Engineer to approve the color and texture.

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.

- B. Each manufacturing facility shall provide the State Materials Engineer with a copy of their quality control plan and procedures, including testing rates and material sources. Each manufacturing facility shall also supply test reports and documentation to verify compliance with this specification.

The units shall conform to ASTM C 1372, except that:

1. The minimum compressive strength requirements shall be 5,500 psi for any individual unit, and 5,800 psi for the average of three units.
2. The freeze/thaw durability of wall units tested in accordance with ASTM C 1262 in a 3% saline solution shall be the minimum of the following: a) the weight loss of

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each of five test specimens at the conclusion of 90 cycles shall not exceed 1% of its initial weight; or b) the weight loss of four out of five test specimens at the conclusion of 100 cycles shall not exceed 1.5% of its initial weight.

3. The freeze/thaw durability of cap units test tested in accordance with ASTM C 1262 in a 3% saline solution shall be the minimum of the following: a) the weight loss of each of five test specimens at the conclusion of 40 cycles shall not exceed 1% of its initial weight; or b) the weight loss of four out of five test specimens at the conclusion of 50 cycles shall not exceed 1.5% of its initial weight.
4. Cap units must meet the requirements of (1) and (3).
5. ASTM C 1262 test results shall be recorded and reported in 10 cycle intervals showing the weight loss of all specimens and not just the mean value.

C. Sampling and Testing – Shall conform to ASTM C 140, except that:

1. Section 6.2.4 shall be deleted and replaced with: “The specimens shall be coupons cut from the finished side or back shell of each unit and sawn to remove any face shell projections. The coupon size shall have a height to thickness ratio of 2 to 1 before capping and a length to thickness ratio of 4 to 1. The coupon shall be cut from the unit such that the coupon height dimension is in the same direction as the unit height dimension. Compressive testing of full size units will not be permitted. The compressive strength of the coupon shall be assumed to represent the net area compressive strength of the whole unit.”
2. Cap units and wall units shall be sampled and tested as separate block types.
3. Each manufacturing facility is required to sample and test each block type at the rate of one sample per 5,000 units of continuous production or fraction thereof (if production is interrupted) as part of their overall quality control testing.

Example: If 12,000 wall units are produced in a continuous production run, 3 sets of samples would be required. If 6,000 units are produced in each of two production runs (12,000 total) then 2 sets of samples would be required from each separate production run (4 sets of samples total).

4. Minimum manufacturer testing shall include 5 randomly selected units and the following testing:
  - a. Compressive strength (average of 3 units)
  - b. Freeze-thaw durability (average of 5 units)

D. Acceptance and Use – All block manufacturers complying with the requirements of Sections A, B, and C above shall submit test results supporting this compliance to the MnDOT Foundations Engineer. Upon review of the test results the product and manufacturing facility will be placed on an approved products list will be on file in the MnDOT Foundations Unit.

Block types and manufacturing facilities not on this list shall not be allowed for use on City projects.

All block submitted for use on City projects shall be accompanied by a certificate of compliance attached to each pallet of block (MnDOT specification 1603). The certificate of compliance shall include the name and address of the manufacturing facility and date of manufacture in addition to all other required information.

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Project personnel shall submit samples for testing as specified in the Schedule of Materials Control. Final acceptance and payment shall be based on testing of field samples.

- E. Segmental Masonry Retaining Wall Surface Sealing – All segmental masonry retaining walls shall have their surfaces sealed. Segmental masonry retaining wall surface sealing shall consist of preparation, furnishing, and applying the surface sealer to the top, exposed front face, and back side of the upper three courses of all walls.

Surface sealers shall meet the requirements on file in the MnDOT Concrete Engineering Unit (651/366-5575). The list may also be viewed on the MnDOT website at: [www.mrr.dot.state.mn.us/pavement/concrete/products.asp](http://www.mrr.dot.state.mn.us/pavement/concrete/products.asp)

Due to the potentially hazardous ingredients contained in sealer formulations, extreme care must be exercised in their handling and use, and the manufacturer's recommendations shall be closely followed.

### 1. Construction Requirements

- a. The Contractor shall comply with the manufacturer's written instructions for preparing, handling and applying the surface sealer.
- b. The surface to be treated shall receive a light waterblast to the extent that the surface is clean and free of oils.
- c. Before the surface sealer is applied, the surface to be sealed shall be dry and free of all dust, debris, and frost.
- d. Surface sealers shall be applied at the heaviest application rate specified by the manufacturer.

All materials and work performed as specified above will be incidental to construction of the wall.

## 1.3 EXECUTION

### 1.3.1 General

- A. All areas disturbed by project construction shall be restored to original condition or better, unless specified or directed otherwise.
- B. Unless construction of the street section is specifically provided for by the contract documents, the street section will be constructed plus or minus 0.2 feet of subgrade prior to the beginning of construction on the project. The Contractor shall examine the subgrade construction prior to his beginning construction and notify the Engineer of any area not within the subgrade tolerances. Once construction has disturbed the subgrade, it will be assumed the Contractor has accepted the previous work, and no additional compensation for subgrade construction will be made.

The Contractor will do all fine grading on the project to complete the subgrade section. Separate payment shall not be made for fine grading. The cost shall be included in the unit prices of the associated items.

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- C. Street shall be closed to the public, except for local traffic, immediately after the Contractor moves onto the project site and shall remain closed until the project has been completed.

Traffic Control shall be accomplished as shown on the plans, as in the Special Conditions or as in the General Conditions.

- D. During construction, the Contractor shall maintain the streets and control dust when directed by the Engineer. Dust control shall also apply in the same manner to stockpiles of topsoil, dirt, or other materials, throughout the period of construction.
- E. If directed by the Engineer, access to properties shall be maintained with 4 inch of Class 5 Aggregate Base on a temporary basis. Payment shall be as specified herein for Class 5 Aggregate Base.

- 1.3.2 Air, Land, and Water Pollution Control - Pollution of natural resources of air, land and water by operations under this contract shall be prevented, controlled, and abated in accordance with the Minnesota Construction Site Erosion and Sediment Control Planning Handbook, and as supplemented herein.

- A. Temporary Pollution Control

1. The Contractor shall not contaminate or pollute air, surface water, groundwater, soil, and subsoil. The Contractor shall not produce other undesirable environmental impacts due to performance or the work. This shall specifically apply to the maintenance and storage of equipment and materials. The Contractor shall protect existing trees not designated for removal. See each project specific Storm Water Pollution Prevention Plan (SWPPP) for additional requirements. Closed concrete wash outs are required on all projects with concrete items..
2. The Contractor shall be responsible for all site drainage and shall provide sedimentation basins or control structures as necessary, as approved by the Engineer, to prevent sediments from reaching any natural drainage course or storm sewer.
3. The Contractor shall furnish material, labor and equipment for temporary control measures as shown in the Plans or ordered by the Engineer and shall provide for the acceptable maintenance thereof during the life of the contract, to effectively prevent water pollution through the use of berms, dikes, dams, sediment basins, fiber mats, netting, gravel, mulches, grasses, slope drains, and other erosion control devices or methods.
4. Temporary pollution control may include construction work outside the right-of-way where such work is necessary as a result of borrow pit operations, haul road construction equipment storage, and plant or waste disposal sites.
5. The temporary pollution control provisions contained herein shall be coordinated with the permanent erosion control features specified elsewhere in the contract to the extent practical to assure economical, effective, and continuous erosion control throughout the construction and post-construction period.
6. At the Pre-Construction Conference, or prior to the start of the applicable construction, the Contractor shall submit for acceptance his proposed schedules for accomplishment of temporary and permanent erosion control work, as are applicable for clearing and grubbing; grading; construction of bridges and other



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structures at watercourses; paving and miscellaneous construction. He shall also submit for acceptance his proposed method of erosion control on haul roads and at borrow pits and his plans for disposal of waste material. No work shall be started until the applicable erosion control schedules and methods or operation have been accepted by the Engineer.

### B. Materials for Temporary Control

1. Mulches may be hay, straw, fiber mats, netting, wood cellulose, corn or tobacco stalks, bark, corn cobs, wood chips, or other suitable material acceptable to the Engineer and shall be reasonably free of noxious weeds and other deleterious matter.
2. Slope drains may be constructed of pipe, fiber mats, rubble, portland cement concrete, bituminous concrete, plastic sheets, or other suitable material acceptable to the Engineer.
3. Grass shall be quick-growing species (such as Rye or cereal grasses) suitable to the area that will provide a temporary cover which will not later compete with the grasses sown for a permanent cover.
4. Fertilizers and soil conditioners shall be a standard commercial grade acceptable to the Engineer.
5. Other materials as approved for use by the Engineer.

### C. Construction Requirements

1. The Engineer shall have authority to limit the surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and fill operations and to direct the Contractor to provide immediate permanent or temporary control measures to prevent contamination of adjacent streams and other watercourses, lakes, ponds, and areas of water impoundment. Cut slopes shall be seeded and mulched as the excavation proceeds to the extent considered desirable and practicable time as outlined in his accepted schedules. Temporary pollution control measures will be used to correct conditions that develop during construction that were not foreseen during the design state; that are needed prior to installation or permanent erosion control features; or that are needed temporarily to control erosion that develops during normal construction practices, but are not associated with the permanent control features on the project.
2. The Engineer will limit the area of excavation, borrow and embankment operations in progress commensurate with the Contractor's capability and progress in keeping the finish grading, mulching, seeding and other such permanent erosion control measures current in accordance with the accepted schedules. Should seasonal limitations make such coordination unrealistic, temporary erosion control measures shall be taken immediately to the extent feasible and justified.
3. In the event of conflict between these requirements and any pollution control laws, rules, or regulations of other federal, state or local agencies, the more restrictive requirements shall apply.
4. Construction of pollution control measures shall be in accordance with MnDOT 2573 and details contained herein or on the plans except as modified or supplemented herein.

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5. The Contractor shall maintain temporary erosion control measures as necessary until they are no longer needed as directed by the Engineer. Maintenance consists of keeping the measures functioning properly and removing trapped sediment as necessary. The Contractor shall replace or correct plugged, torn, and damaged measures to the satisfaction of the Engineer.
- 1.3.3 Clearing and Grubbing - Clearing and grubbing shall be performed in accordance to the requirements of MnDOT 2101 except as modified or supplemented herein.
- 1.3.4 Removals - Removal work shall be performed in accordance with the requirements of MnDOT 2104, except as modified or supplemented herein.
- A. Items not marked or otherwise indicated for removal shall be protected by the Contractor.
- B. Weeds, grasses, and other plants that have grown into cracks in pavement, curbing and sidewalks shall be removed by the Contractor as directed.
- C. Bituminous and concrete pavements shall be removed to straight line horizontal and vertical cuts at the limits of removal, or the nearest joint, as directed by the Engineer.
- Pavements shall be removed two feet beyond undisturbed existing base courses. The existing straight line cut edge shall be protected by the contractor against break-off. The Engineer may require a new line to be cut if damage has occurred. Disposal of material shall be outside the City of Blaine.
- D. Curbs, gutters, signs, structures, and any other items indicated for removal shall be done in a manner to do the least disturbance to the area beyond the limit of removal. Where a portion of an existing item is to remain, the limit of removal shall be at an existing joint, or the Contractor shall prepare the item such that the removal shall leave a straight and clean surface unless otherwise provided for in the contract documents.
- E. The Contractor shall assume full responsibility for any damages caused by the use of drop weight equipment for breaking pavement. The pavement breaking operation shall not be allowed to become a nuisance to the public or a source of damage to underground or adjacent structures. The Engineer's right is reserved to order discontinuance of drop weight breaking operations at any time.
- F. Any reusable materials or materials for recycling, such as asphalt, concrete, aggregate, sod, topsoil, shall be segregated from other waste materials and be stockpiled so as to maintain suitability and permit proper reuse.
- G. Any items designated for salvage for use on the project or to become property of the City of Blaine shall be removed in a workmanlike manner and protected from damage by the Contractor. All salvaged items designated to become the property of the City shall be delivered by the Contractor to the City's Public Works Maintenance garage.
- 1.3.5 Excavation and Embankment - All excavation and embankment work shall be performed in accordance with MnDOT 2105 except as modified or supplemented herein.
- A. All excavation shall be common excavation unless separate items are provided on the bid proposal.
- B. Areas of excavation or embankment shall be well drained and free from standing water at all times.

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- C. In areas of peat and muck excavation, the Contractor shall be fully responsible for removal of all peat and muck down to underlying layers of suitable material. If the elevation of this suitable material is in question, the Engineer shall determine where the acceptable bottom of excavation lies. Excavation shall be carried out to limits as stated by the Engineer and in accordance to Blaine Detail Plates. The Contractor shall allow excavation limits to be restaked when the bottom of the peat is found, and shall not consider the initial staked limits to be final.
- D. The following compaction requirements shall be met:
1. Areas outside the street right-of-way shall be compacted using the Specified Density Method to 95 percent of Standard Proctor Density.
  2. Areas within the street right-of-way shall be compacted as follows using the Specified Density Method:
    - a. The upper three feet of an embankment measured directly below finished subgrade to three feet below finished subgrade shall be compacted to 100 percent of Standard Proctor Density.
    - b. The area from the bottom of the embankment to three feet below the finished subgrade shall be compacted to 95 percent of Standard Proctor Density.
- E. If provided for in the bid proposal, ditch cleaning shall be performed according to cross sections indicated on the plans or as staked by the Engineer. Miscellaneous brush and debris not indicated for removal under clearing and grubbing items shall be removed as incidental to ditch cleaning and disposed of outside the City of Blaine. Where allowed, the excavated material shall be spread uniformly on banks within the easement limits. Turf establishment and erosion control measures shall be as provided for in the bid proposal.
- 1.3.6 Water - Water shall be applied for dust and moisture control in accordance to MnDOT 2130 except as modified or supplemented herein.
- A. The Contractor shall be responsible for obtaining all water required for dust control. The water may be obtained from the City's Public Works Department in which case the City shall furnish the Contractor a water meter. The prime Contractor shall be responsible for the meter and all City charges regarding use of the water meter as well as the water used. The meter shall not be removed from the project at any time. If subcontractors are involved in using the meter, the prime Contractor shall notify the Blaine Public Works Department upon transfer of the meter from one subcontractor to another. All meter readings shall be verified by the prime contractor and the City when the meter is transferred. The meter shall be turned into the City by the prime Contractor within two days after the completion of all watering work.
- The Engineer shall designate which hydrant(s) that may be used by the Contractor.
- 1.3.7 Calcium Chloride - Calcium chloride shall be applied in accordance with MNDOT 2131, type 1, except as modified or supplemented herein.
- A. The application of calcium chloride shall be as directed by the Engineer for use as dust control. It shall only be applied at the project site to the road surface.
- 1.3.8 Subgrade Preparation - Subgrade preparation shall be performed in accordance with MNDOT 2112 except as modified or supplemented herein.

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- A. The subgrade shall be fine graded to within a tolerance of 0.05 feet of the specified subgrade elevation.
  - B. At the direction of the Engineer, soft spots shall be scarified, wetted or dried, and the top 3.0 feet compacted to 100 percent of Standard Proctor Density.
  - C. Final compaction shall be with a smooth drum vibratory roller.
  - D. Material that cannot be consolidated to provide a stable roadbed shall be removed and replaced with suitable material.
- 1.3.9 Aggregate Base - Aggregate base shall be installed in accordance with the requirements of MnDOT 2211 except as modified or supplemented herein.
- A. Compaction shall be by the Specified Density Method, to 100 percent of the Standard Proctor Density. Final compaction shall be with a smooth drum steel vibratory roller.
  - B. If indicated on the plans, driveways shall be constructed with Class 5 aggregate to a thickness and width as shown on the plans or as indicated on a Blaine Detail Plate.
- 1.3.10 Mill Pavement Surface - Work shall be performed on milling bituminous surface and milling concrete pavement surface in accordance with MnDOT 2232 except as modified or supplemented herein.
- 1.3.11 Full Depth Reclamation – Work shall be performed in accordance with MnDOT 2215 except as modified or supplemented herein.
- 1.3.12 Plant Mixed Asphalt Pavement - Work shall be performed in accordance with the requirements of MnDOT 2360, "Plant Mixed Asphalt Pavement," except as modified or supplemented herein. See Attachment No. 1 at the end of this section.
- A. Job Mix Formula (JMF) - The Contractor must submit the JMF to the City for approval. The City reserves the right to have MnDOT verify the JMF if necessary. The JMF must be received by the City fourteen (14) days prior to the use of the mixture on the project.
  - B. Compaction Control - Compaction shall be by the Maximum Density Compaction Method. Incentive payments will not apply to this project.
  - C. Driveways - Bituminous driveways shall be constructed in accordance to the details on the plans.
  - D. On projects where more than one lift of bituminous is being installed, all sod and seeding work must be completed prior to the installation of the final bituminous lift.
  - E. Pavement smoothness requirements of 2399 will not apply on this Project.
  - F. Plates shall be used to cover all manhole lids or gate valve covers during paving operations. Contractor shall ensure all pick holes are clean and clear after paving.
  - G. No paving shall be allowed after October 31<sup>st</sup>. No paving is allowed unless the temperature is 51° F and rising as determined by the Engineer. No paving is allowed on frozen subgrade.
- 1.3.13 Bituminous Seal Coat - Seal coating shall be done in accordance to MNDOT 2356 except as modified or supplemented herein.
- A. The Contractor shall barricade all streets prior to beginning the seal coat operation.

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- B. The Contractor shall protect all manhole lids and gate valve lids from bituminous material prior to the application of the bituminous material. If any aggregate remains on the lids after sweeping, the Contractor shall be responsible for removing the aggregate.

1.3.14 Bituminous Tack Coat - Bituminous tack coat shall be applied in accordance with MNDOT 2357 except as modified or supplemented herein.

- A. Bituminous tack coat shall be applied at a rate not to exceed 0.05 gallons per square yard.
- B. Bituminous tack coat shall be applied to all exposed faces of concrete surfaces as directed.
- C. Bituminous tack coat distributor must meet the requirements of MNDOT 2357.3.B.2.d:

B.2.d Distributor

Provide a distributor capable of uniformly applying material up to 15 feet wide and equipped with the following:

- (1) An accurate volume measuring device with tachometer,
- (2) Pressure gauges,
- (3) Thermometer for measuring temperatures of tank contents,
- (4) Power-operated pump, and
- (5) Full circulation spray bars with lateral and vertical adjustments.

1.3.15 Walks - Walks shall be constructed in accordance with MNDOT 2521 for each type of walk as specified on the bid proposal except as modified or supplemented herein.

A. Concrete Walks and Pedestrian Curb Ramps

- 1. The method of cure shall be by spray membrane, except after October 1, when the blanket curing method shall be used, unless otherwise directed by the Engineer.
- 2. Joint sealers are not required.
- 3. All walk panels shall be six (6) feet square with a contraction joint on each side of the panel.
- 4. Expansion shall be installed on each side of driveways, and between walk and curb sections in accordance with Blaine Detail Plates, and as directed by the Engineer in the field.
- 5. The concrete shall have a brushed finish.
- 6. All pedestrian ramps shall be constructed using truncated domes per MnDOT Standard Plate 7036F, and per City detail plate. The truncated domes shall run the full width of the sidewalk or trail.

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### B. Bituminous Walks

1. Bituminous walks shall be constructed with materials as described in these specifications and to the depth and width as shown on the plans or details.

1.3.16 Concrete Curbing and Concrete Driveways - Concrete curb and gutter, concrete curb, valley gutter, concrete driveway, and concrete medians shall be constructed in accordance with MNDOT 2531, all applicable MNDOT Standard Plates, and Blaine Detail Plates, except as modified or supplemented herein.

- A. Joint sealers are not required.
- B. The Contractor shall provide all concrete needed for concrete test cylinders, slump tests, air treatment tests and any other tests taken by the Engineer.
- C. The method of cure shall be by spray membrane.
- D. The concrete shall have a brushed finish.
- E. Full depth expansion joints shall be installed where indicated on the detail plates, at fixed objects, and at 200-foot intervals, unless otherwise directed by the Engineer.
- F. Contraction joints shall be installed at 10-foot intervals to a depth of 1/3 the thickness of the concrete, and at locations as directed by the Engineer.
- G. Any cavities that are present when forms are removed shall be subject to removal and replacement at the Contractor's expense as directed by the Engineer.
- H. Backfilling behind concrete work shall be completed within approximately 5 working days after placement. Only select material on site may be used as backfill. There shall be no concrete or debris left behind the new work.
- I. Final grading and compacting behind the concrete work shall take place prior to the bituminous wear course installation.
- J. In areas where the curb is installed adjacent to water services, the curb shall be stamped with a "w" to indicate the location of the curb stop. The stamp shall be in the face of the curb and be 3 inches in height and ¼" deep. The stamping shall be done in the face after the brushing of the curb.
- K. No curb and gutter shall be installed after October 31st. No curb and gutter installation is allowed unless the temperature is 40° F and rising for a minimum of 72 hours as determined by the Engineer. No curb and gutter shall be installed on frozen subgrade.

1.3.17 Street and Traffic Signs - The signs shall be installed in accordance with MNDOT 2564 for each type of sign specified, except as modified or supplemented by Blaine Standard Detail Plates or herein.

- A. All signs and posts must be installed within 14 days of the initial construction of the concrete curb and gutter, or in the absence thereof, 14 days from the construction of the aggregate base.
- B. Street signs shall be installed on a dedicated street sign pole and shall not be mounted on stop sign posts or any other traffic sign post.

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1.3.18 Plant Installation - All plant installations shall conform to MNDOT 2571 and Blaine Detail Plates except as modified or supplemented herein.

- A. All plantings shall include a minimum of 6 inches of topsoil between the ball or root structure, and natural soils. All trees 5 feet or taller shall be staked and secured with cables three ways at 120 degrees to each other, at the midpoint of the tree height. Cables shall be encased with a rubber hose where they contact the tree trunk.

After planting has been completed and the plantings maintained for 60 growing days, the live plantings shall be accepted for payment in full. The Contractor shall provide a one year warranty as stated in these specifications except for transplanted trees exceeding 6 inches in diameter measured at a point 2 feet above the ground. Trees exceeding 6 inches in diameter shall be maintained to the 60 day maintenance period but shall not be subject to the one year warranty provisions of the Contract. The Contractor shall replace any plantings that fail during the warranty period.

1.3.19 Turf Establishment - All turf establishment shall be installed in accordance with MNDOT 2575 except as modified or supplemented herein.

- A. Prior to sodding or seeding, existing weeds shall be killed by spraying with an approved herbicide, and not be disturbed for a period specified by the spray manufacturer to insure the killing action. Seeded areas shall be sprayed for weed control 90 growing days after the maintenance period. Sodded areas shall be sprayed at the end of the maintenance period.
- B. Fertilizer shall be applied at a rate of 450 pounds per acre.
- C. Sod shall be installed in full roll widths only. When matching to existing sod areas, a sod cutter shall be used to make a straight line cut.
- D. The Contractor may use existing hydrants on the project site to obtain water as designated by the Engineer after obtaining a meter from the Public Works Department. See 1.3.6 in these specifications for obtaining water.
- E. On projects where more than one lift of bituminous is being installed, all sod and seeding work must be completed prior to the installation of the final bituminous lift.
- F. On new developments, topsoil may be omitted under sod placed behind new curbing, unless the sod is being placed adjacent to existing lawns, and/or as shown on the plans.
- G. Filter logs shall be installed in accordance with MnDOT 2573 and applicable MnDOT Standard Detail Plates and City Standard Detail Plates as indicated on the plans.
- H. After turf establishment operations, the contractor shall clean any structures affected by the operations such as mailboxes, signs, etc., as directed.

1.3.20 Pavement Markings - Pavement markings shall be installed in accordance to MnDOT 2582.

1.3.21 Modular Block Retaining Wall – The modular block retaining wall shall be constructed in the location and configuration as shown on the Plans. The Engineer reserves the right to alter this alignment to improve constructability and aesthetics. The modular block retaining wall shall be constructed in accordance to the manufacturer's recommendations, and the following:

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A. 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 further maintenance on the utility will require dismantling the wall.

B. When the exposed height of the wall is less than two feet, the following shall apply:

The precast 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 two feet and less than six feet and does not support a roadway or structure, the following shall apply:

The precast wall system shall be designed and the detail drawings prepared by a Professional Engineer experienced in retaining wall design who 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.

When the exposed height of the wall is greater than or equal to six 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:

1. The wall shall be designed and the detailed drawings prepared by a Professional Engineer experienced in retaining wall design who 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 MnDOT Road Design Manual.
2. 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.
3. 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.
4. The typical section shall conform to Figure 9-4.03A (MnDOT Mechanically Stabilized Retaining Wall) and keynotes in the MnDOT Road Design Manual.
5. When the exposed height of the wall is greater than or equal to 10 feet, or will support a roadway or structure, the final certified wall plan must be approved by State Aid Bridge Office prior to the construction of the modular block retaining wall.

### 1.4 **METHOD OF MEASUREMENT AND PAYMENT**

Measurement and payment for each item shall be in accordance to MNDOT Standard Specifications for Construction, 2016, and current supplements, unless modified or supplemented herein. The specifications numbering references used herein shall refer to MNDOT Specifications.



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Payment shall be at the Contract Bid price for each item shown on the bid form. The bid price shall include furnishing, installing and removal as specified. All bid items shall include labor and materials for a complete job.

Principal components are listed in each description and do not necessarily include all component parts required. All component parts required by the plans, specifications and detail plates shall be considered included in the Contract Bid Price. Payment for the items shown on the bid form shall be payment in full for a complete job as specified.

Work required by this contract, and obviously necessary for the timely and successful completion of the project, but not specifically provided for in the bid proposal, shall be included in the bid prices of the associated construction items.

- 1.4.1 Clearing and Grubbing - Measurement and payment shall be in accordance to MNDOT 2101 except as modified or supplemented herein.
- 1.4.2 Removals - Measurement and payment shall be in accordance to MNDOT 2104 except as modified or supplemented herein.
  - A. Disposal of all items not designated for salvage shall be outside of the Blaine City Limits.
  - B. Saw cutting is incidental to project unless there is an item on the bid proposal. Saw cutting of concrete curb and gutter for removal is incidental.
  - C. Excavation, backfilling, removal and disposal of excess soil materials generated during removals shall be incidental.
- 1.4.3 Common Excavation - Measurement and payment shall be in accordance to MNDOT 2105 except as modified or supplemented herein.
  - A. Excess material shall be deposited outside the City of Blaine unless otherwise directed in writing by the Engineer. Any material deposited in the City of Blaine in excess of 100 cubic yards but under 5,000 cubic yards requires a Land Reclamation Permit from the City. Any material deposited in the City in excess of 5,000 cubic yards requires a Conditional Use Permit from the City.
  - B. Unless provided for in the bid proposal, common excavation shall include bituminous pavement removal.
  - C. Common Excavation performed beyond the limits of removal required for construction, or as shown on the plans, shall be incidental work.
- 1.4.4 Muck Excavation - Measurement and payment shall be in accordance to MNDOT 2105 except as modified or supplemented herein.
  - A. Excess material shall be deposited outside the City of Blaine unless otherwise directed in writing by the Engineer. Any material deposited in the City of Blaine in excess of 100 cubic yards but under 5,000 cubic yards requires a Land Reclamation Permit from the City. Any material deposited in the City in excess of 5,000 cubic yards requires a Conditional Use Permit from the City.
  - B. Bid price shall include dewatering as required, excavating, stockpiling, and reinstallation as directed.
  - C. Measurement shall be based on excavated volume from cross sections taken on the field in accordance with the plans.

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- 1.4.5 Granular Borrow - Measurement and payment shall be in accordance to MNDOT 2105 except as modified or supplemented herein.
- 1.4.6 Subgrade Preparation - Subgrade preparation shall be incidental to the cost of the project.
- 1.4.7 Water - Measurement and payment for water shall be in accordance to MNDOT 2130 except as modified or supplemented herein.
- A. Water for dust control shall be incidental to the project unless otherwise indicated on the bid proposal.
- 1.4.8 Calcium Chloride - Calcium chloride used for dust control shall be incidental to the cost of the project.
- 1.4.9 Full Depth Reclamation – Measurement and payment for full depth reclamation shall be in accordance with MNDOT 2215 except as modified or supplemented herein.
- 1.4.10 Aggregate Base - Measurement and payment for aggregate base, class as specified on the bid proposal, shall be in accordance to MNDOT 2211 except as modified or supplemented herein.
- A. Aggregate base shall be measured in tons for each class properly installed on the project. Payment shall be based on weight slips for each load delivered to the job site, collected on the day of delivery by a representative of the city. Weight slips will only be collected that contain the following information: truck number, date, leave time, gross weight, tare weight and net weight.
- B. Measurement and payment of aggregate for driveways shall be per ton in accordance to Section 1.4.10.A.
- 1.4.11 Aggregate Shouldering - Measurement and payment for aggregate shouldering, class as specified on the bid proposal, shall be in accordance to MNDOT 2221 except as modified or supplemented herein.
- A. Aggregate shouldering shall be measured in tons for each class properly installed on the project. Payment shall be based on weight slips for each load delivered to the job site, collected on the day of delivery by a representative of the city. Weight slips will only be collected that contain the following information: truck number, date, leave time, gross weight, tare weight, and net weight.
- 1.4.12 Plant Mixed Asphalt Pavement - Measurement and payment for all types of bituminous pavement shall be in accordance to MNDOT 2360, "Plant Mixed Asphalt Pavement," except as modified or supplemented herein. See Attachment No. 1 at the end of this section.
- A. Payment shall be based on weight slips for each load delivered to the job site, collected on the day of delivery by a representative at the city. Weight slips will only be collected that contain the following information: truck number, date, leave time, gross weight, tare weight, and net weight.
- B. Measurement and payment for bituminous driveways shall be per square yard or per ton of bituminous properly installed and includes all grading, removals, cutting of existing matching surface, material, and labor necessary. See Bid Proposal for method of measurement and payment of Bituminous Driveways.
- C. All costs of Contractor Testing of Bituminous mixtures will be considered incidental and no direct payment will be made therefor.

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- 1.4.13 Bituminous Seal Coat - Measurement and payment shall be in accordance with MNDOT 2356 except as modified or supplemented herein.
- A. Bituminous Material for Seal Coat - Payment shall include furnishing and applying bituminous material and sweeping the streets prior to application.
  - B. Seal Coat Aggregate - Payment shall be per ton of aggregate installed, and includes furnishing and applying aggregate as specified, and sweeping streets to remove excess aggregate. Weight slips for each load delivered to the job site shall be collected each day by a representative of the city. Weight slips will only be collected that contain the following information: truck number, date, leave time, gross weight, tare weight, and net weight.
- 1.4.14 Bituminous Tack Coat - Bituminous tack coat is incidental to the cost of the project.
- 1.4.15 Walks - Measurement and payment for each type of walk specified shall be in accordance with MNDOT 2521 except as modified or supplemented herein.
- A. Excavation, backfilling, removal and disposal of excess soil materials generated during sidewalk or pedestrian ramp removal and/or installation shall be incidental.
- 1.4.16 Concrete Curbing and Concrete Driveways - Measurement and payment for each type of curbing specified and each thickness of driveway specified shall be in accordance with MNDOT 2531 except as modified or supplemented herein.
- A. Valley gutter shall be paid for by area of valley gutter installed.
  - B. Curb stamping for water services shall be incidental.
  - C. Excavation, backfilling, removal and disposal of excess soil materials generated during concrete curb and gutter and driveway removal and/or installation shall be incidental.
- 1.4.17 Bituminous Curb - Measurement and payment shall be in accordance with MNDOT 2535 except as modified or supplemented.
- A. Excavation, backfilling, removal and disposal of excess soil materials generated during curb installation and/or removal shall be incidental.
- 1.4.18 Street and Traffic Signs - Measurement and payment shall be in accordance with MNDOT 2564, for the type as specified on the bid proposal, except as modified or supplemented herein.
- A. Street signs shall be measured and payment made on a per each basis.
  - B. If indicated on the bid proposal as a lump sum item, all signs as shown on the plans shall be measured and paid for under this item.
- 1.4.19 Plant Installation - Measurement and payment shall be in accordance with MNDOT 2571 except as modified or supplemented herein.
- 1.4.20 Air, Land, and Water Pollution Control - Measurement and payment shall be in accordance with MNDOT 2573 except as modified or supplemented herein.
- A. All temporary and permanent erosion and pollution control measures necessitated by the Contractor's operations outside the right-of-way, and all temporary erosion and pollution control measures necessitated by the Contractor's negligence, carelessness,

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or failure to properly coordinate the installation of permanent controls as part of the work scheduled within the right-of-way, shall be performed as ordered by the Engineer at the Contractor's own expense.

- B. In case of failure on the part of the Contractor to control erosion, pollution, and siltation as ordered, the City reserves the right to employ outside assistance or to use its own forces to provide the necessary corrective measures. All expenses so incurred by the City, including its engineering costs, that are chargeable to the Contractor as his obligation and expense, will be deducted from any monies due or coming due the Contractor.
- C. Where the Engineer orders installation of either temporary or additional permanent erosion or pollution control measures, in the absence of any negligence, carelessness, or failure on the Contractor's part to properly schedule and carry out the measures provided for in the Contract, and except for such work which is necessitated by the Contractor's operations outside the right-of-way, the work shall be performed at the City's expense and payment will be made therefore at appropriate Contract Bid Prices for like work, or as Extra Work if there is no comparable item of work in the Contract.

1.4.21 Turf Establishment - Measurement and payment shall be in accordance with MNDOT 2575 for each item as specified on the bid proposal except as modified or supplemented herein.

- A. Unless the Bid Proposal contains an item for topsoil borrow, the bid price for turf establishment items shall include four (4) inches of topsoil furnished and installed.
- B. The bid price for seeding and sodding items shall include all fertilizer and weed spraying.
- C. Mulch shall be measured and paid for per acre of material installed for each type as specified in the bid proposal. Bid price for disk anchoring type 1 mulch shall be included with the cost of the mulch.

1.4.22 Pavement Markings – Measurement and payment shall be in accordance with MnDOT 2582 for each item as specified on the bid proposal except as modified or supplemented herein

1.4.23 Traffic Control

- A. Measurement and payment shall be on a lump sum basis and includes furnishing, installing, maintaining, relocating and removal as necessary to provide traffic control.
- B. Partial payments shall be made on a percentage basis of the total original contract versus total work performed to date times the unit price bid for traffic control.
- C. If not provided for in the bid proposal, the cost of traffic control shall be incidental to the project.

1.4.24 Topsoil Borrow - Measurement and payment for topsoil borrow shall be in accordance to MnDOT 2105 except as modified or supplemented herein.

- A. Bid quantity is calculated as compacted volume.

1.4.25 Modular Block Retaining Wall - Measurement and payment for the modular block retaining wall shall be the area in square feet on the entire wall face above the footing, furnished and installed as specified, and shall be compensated in full for all costs to construct the wall complete in place.

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- 1.4.26 Filter Logs - Measurement and payment for filter logs shall be per linear foot installed for each type and size as indicated in the bid proposal.