

**SILVER LAKE STATE PARK
PAVING IMPROVEMENTS**

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DIVISION TWO – SITE WORK

SECTION 02000

MOBILIZATION

PART ONE – GENERAL

1.01 DESCRIPTION

- A. This item shall consist of preparatory work and operations, including, but not limited to, those necessary for the movement of personnel equipment, supplies, and incidentals to the project site; for the establishment of the contractor's offices, buildings, and other facilities necessary to undertake the work on the project; and for other work operations which must be performed, or for expenses incurred, prior to beginning work on the various contract items on the project site.

1.02 METHOD OF PAYMENT

- A. All work under this section is included in the contract lump sum price. No separate payments will be made for this work.

END OF SECTION

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DIVISION TWO – SITE WORK

SECTION 02050

DEMOLITION

PART ONE – GENERAL

1.01 SUMMARY

- A. This work shall include, but is not necessarily limited to, all labor, materials and equipment required for the complete and satisfactory demolition and removal of all items from the project site as indicated on the drawings and specified herein. This work shall also include the complete and satisfactory demolition of the following items:
1. Saw cutting and removing bituminous paving

1.02 QUALITY ASSURANCE

- A. The contractor shall provide suitable equipment for the demolition work. Equipment shall be in good working condition and shall be operated by individuals who are properly trained and skilled for such equipment.
- B. Contractor shall be responsible for obtaining all permits and complying with all pertinent regulations of governmental agencies having jurisdiction.
- C. In the event of conflict between or among specified requirements and pertinent regulations, the more stringent requirement will govern when so directed by the Engineer.

1.03 METHOD OF PAYMENT

- A. All work under this section is included in the contract lump sum price. No separate payments will be made for this work.

PART TWO – PRODUCTS

NOT USED

PART THREE – EXECUTION

3.01 EXAMINATION

- A. The Contractor shall thoroughly inspect the premises prior to commencing work. The Contractor shall also determine the extent of work required and the need for temporary shoring and/or permanent structural changes.
- B. The Contractor shall comply with Act 53, P.A. of 1974, by notifying the public utilities of the proposed demolition at least 48 hours prior to the commencement of such activities by contacting MISS DIG.

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- C. It shall be the responsibility of the contractor to determine the exact location of all existing utilities. For those utilities to remain in service, the Contractor shall make temporary and/or permanent relocation, as necessary, to comply with the drawings.

3.02 SALVAGED ITEMS

- A. Prior to demolition, the Contractor shall meet with the Park Manager to determine and list any items that are to be salvaged for the Owner's use. Items not listed as salvage shall be removed from the site as described later in this section.

3.03 PREPARATION

- A. Protect all existing structures and utilities that will remain. Any damage to these items shall be repaired at no additional expense to the owner.
- B. The Contractor is responsible to place illuminate, post warning signs, and place temporary fencing around any dangerous openings and/or areas as necessary to ensure the safety of the workers, park staff and park visitors.

3.04 DEMOLITION

A. General

- 1. Demolition work shall be executed in an orderly and careful manner and shall not involve undue hazards or risks to the workers.
- 2. Depressions or holes due to demolition in areas to be paved shall be immediately filled with 22A gravel, and compacted to 95% density.

B. Bituminous Pavement

- 1. Demolition and removal of all concrete surfaces, bituminous surfaces, and miscellaneous structures shall be in accordance with MDOT Standard Specifications Section 2.04, 2003.
- 2. Contractor shall provide smooth, flat, full depth saw cut edges where shown on the plans.
- 3. Contractor shall completely remove all bituminous paving. Millings may be reused for road base, provided they meet the requirements of section 02232 of this specification.

C. Fencing

- 1. Remove and Salvage for Owner fencing, gates, posts and appurtenances.

D. Signs

- 1. Remove and Salvage for Owner Signs and Posts.

3.05 GRADING

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- A. After demolition, all areas shall be brought to a uniform level with the adjoining grades.

3.06 REMOVAL OF SURPLUS MATERIAL

- A. Remove all materials, debris and rubbish resulting from the demolition work from the site as soon as practicable. Excess accumulation of materials on site will not be permitted.
- B. All material resulting from the demolition work shall become the property of the Contractor and removed from the site unless otherwise specified. It will be the contractor's responsibility to locate a suitable site for disposal of debris.

3.07 RESTORATION

- A. Surface restoration of all items to remain that are damaged by the Contractor shall include, but are not limited to:
 - 1. Concrete Walks or Slabs: Shall be cut at contraction or expansion joints and replaced with air-entrained, 3500 psi concrete, meeting MDOT Grade 35S of the same thickness and finished as that which was removed.
 - 2. Gravel Surfaces: Shall be replaced with a 6-inch layer of MDOT 23-A compacted aggregate.
 - 3. Lawn Areas: Shall be replaced with three inches of topsoil and seeded with a roadside seed mixture. It shall then be fertilized and mulched as specified in Section 02900 or as directed by the Engineer.
 - 4. Other Areas (Fields, Woods, etc.): Shall be seeded as specified in the above paragraph.

END OF SECTION

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2. Permanent soil erosion control measures over disturbed land area shall be completed within 5 working days after final grading or final earth change has been completed.
- B. Dust Control
1. Inspector reserves the right to require that dust control be applied as necessary to protect adjacent property and the waters of the state. Dust shall be in accordance with the MDMB Soil Erosion and Sedimentation Control Guidebook 2002.
- C. Sweeping
1. Inspector reserves the right to require sweeping as necessary to protect adjacent property and the waters of the state. Sweeping shall be in accordance with the MDMB Soil Erosion and Sedimentation Control Guidebook 2002.
- D. Seeding and Mulching
1. Seeding and mulching shall be in accordance with Section 02900 – Restoration.
- E. Silt Fence
1. Install silt fence as shown in the approved SESC plan and in accordance with the MDMB Soil Erosion and Sedimentation Control Guidebook 2002, unless otherwise shown on the plans or approved by the Engineer.

3.02 COMPLETION

- A. The contract will not be considered complete until the Engineer has certified the following items.
1. All disturbed soil is permanently stabilized.
 2. All sewers, ditches, catch basins, and manholes and roadways are cleaned and cleared of sediment. Unless the contractor can document positively to what extent these items are silted prior to construction, no credit will be given for cleaning these items.
 3. All temporary SESC measures have been removed and the areas are restored and stabilized.

END OF SECTION

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SECTION 02230

SITE CLEARING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Protecting existing trees, shrubs, groundcovers, plants, and grass to remain.
2. Removing existing trees, shrubs, groundcovers, .plants and grass.
3. Clearing and grubbing.
4. Stripping and stockpiling topsoil.
5. Removing above- and below-grade site improvements.
6. Disconnecting and capping or sealing site utilities.

1.2 QUALITY ASSURANCE

- A. The contractor shall insure that only those trees that are obstructing the work area are removed. Trees beyond the work area shall be protected.
- B. Tree removal shall be done using only workmen skilled in this type of work.

1.3 MATERIAL OWNERSHIP

- A. Except for stripped topsoil or other materials indicated to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.4 PROJECT CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
 2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
- B. Salvable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated.
- C. The contractor shall protect all existing utilities indicated or made known. Call "MISS-DIG" or other service as needed to identify utility locations. Utility line markers placed by the Architect/Engineer and MISS DIG shall be protected by the contractor and replaced at his expense.
- D. Do not commence site clearing operations until temporary erosion and sedimentation control measures are in place. Requirements for erosion and sedimentation control measures are specified in Division 2, Section "Soil Erosion and Sedimentation Control."

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1.5 METHOD OF PAYMENT

- A. All work under this section is included in the contract lump sum price. No separate payments will be made for this work.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. Satisfactory Soil Materials: Requirements for satisfactory soil materials are specified in Division 2, Section "Earthwork".
 - 1. Obtain approved borrow soil materials off-site when satisfactory soil materials are not available on-site.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. The Contractor shall thoroughly inspect the premises prior to commencing work. The Contractor shall also determine the extent of work and the number and size of trees to be removed.

3.2 PREPARATION

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.
- B. Protect existing site improvements to remain from damage during construction.
 - 1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.3 TREE PROTECTION

- A. Extreme care should be taken to avoid damage to trees including seedlings and saplings. No damage is acceptable to existing trees with in the park (defined as breaking of the bark, broken tops or bending of trees from their natural position). All trees 3" diameter caliper or greater incurring bark damage during construction shall be addressed by the contractor by removing the damaged bark with a neat clean cut to a point on the tree trunk where the bark is undamaged. The repair shall be uniform in appearance and minimize the removal of any bark not damaged. All broken tree limbs shall be neatly trimmed at a branch joint or at the trunk of the tree. All damaged and exposed tree roots over ¼" in diameter shall be neatly trimmed prior to backfill placement.
- B. Erect and maintain temporary fencing around tree protection zones before starting site clearing. Remove fence when construction is complete.
- C. Do not excavate within tree protection zones, unless otherwise indicated.

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- D. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, in a manner approved by Engineer.

3.4 UTILITIES

- A. Locate, identify, disconnect, and seal or cap off utilities indicated to be removed.
 - 1. Arrange with utility companies to shut off indicated utilities.
 - 2. Notify Engineer not less than two days in advance of proposed utility interruptions.
 - 3. Utility lines which have been identified on the plans or on-site and then are damaged or disturbed by the contractor shall be repaired or replaced at no expense to the state.

3.5 CLEARING AND GRUBBING

- A. The contractor shall take care when removing trees to avoid damaging existing structures, roads, utilities, other trees, and state property. Tree removal shall be done only when all campsites within 300 feet of the work area have been vacated. The contractor shall insure that non-construction employees are kept clear of the removal area at all times.
- B. Where trees indicated to be removed cannot be felled without danger to other trees, structures or property, they shall be cut down in sections.
- C. Tree roots 1" in diameter and larger shall be removed to the trench depth required for the utility installation. In areas where pavement is to be constructed tree roots shall be removed to at least 12" below the existing ground surface or sub-grade of new graded surface, whichever is lower.
- D. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.
 - 1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches, and compact each layer to a density equal to adjacent original ground.

3.6 TOPSOIL STRIPPING

- A. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.
- B. Stockpile topsoil materials away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.

C. DISPOSAL

- 1. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.
- 2. All brush, tree branches, roots, and tree stumps shall be removed from the state park and disposed of off site. Non-vegetative material shall be removed from state park lands and disposed of in an approved landfill. Debris will not be allowed to accumulate on the job site.

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3. Burning of combustible materials will not be permitted on state park lands.
4. All saw logs and parts of trees larger than four inch diameter shall remain the property of the State and cut into a maximum eight-foot long sections. The cut logs shall be stockpiled at a location directed by the Architect/Engineer. They shall be piled at a location as directed by the State Park Manager.

END OF SECTION 02230

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SECTION 02300

EARTHWORK

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Preparing subgrades for slabs-on-grade, walks, pavements, lawns and grasses.

1.2 DEFINITIONS

- A. Backfill: Soil material used to fill an excavation.
 - 1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
 - 2. Final Backfill: Backfill placed over initial backfill to fill a trench.
- B. Bedding Course: Course placed over the excavated subgrade in a trench before laying pipe.
- C. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.
- D. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
 - 1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Engineer. Authorized additional excavation and replacement material will be paid for according to Contract provisions changes in the Work.
 - 2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Engineer. Unauthorized excavation, as well as remedial work directed by Engineer, shall be without additional compensation.
- E. Fill: Soil materials used to raise existing grades.
- F. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- G. Subbase Course: Course placed between the subgrade and a cement concrete pavement.
- H. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- I. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

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1.3 PROJECT CONDITIONS

1.4 Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Engineer and then only after arranging to provide temporary utility services according to requirements indicated.

1.5 METHOD OF PAYMENT

- A. All work under this section is included in the contract lump sum price. No separate payments will be made for this work.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: ASTM D 2487 Soil Classification Groups GW, GP, GM, SW, SP, and SM, or a combination of these groups; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487, or a combination of these groups.
 - 1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
- D. Subbase Material: Granular Material shall meet MDOT Standard Specification (2003 Edition) Section 902.08 for Class II Material.
- E. Bedding Course: Granular Material shall meet MDOT Standard Specification (2003 Edition) Section 902.08 for Class II Material.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Preparation of subgrade for earthwork operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface is specified in Division 02 Section "Site Clearing."
- C. Protect and maintain erosion and sedimentation controls, which are specified in Division 02 Section "Soil Erosion and Sediment Control" during earthwork operations.

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3.2 EXCAVATION

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
 - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

3.3 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
 - 1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.

3.4 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.5 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.
- B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit, unless otherwise indicated.
 - 1. Clearance: 12 inches each side of pipe or conduit.
- C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.
 - 1. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material, 4 inches deeper elsewhere, to allow for bedding course.

3.6 SUBGRADE INSPECTION

- A. Proof-roll subgrade below the building slabs and pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades. (Notify engineer 48 hours in advance for inspection)
- B. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Engineer, without additional compensation.

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3.7 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2500 psi, may be used when approved by Engineer.
 - 1. Fill unauthorized excavations under other construction or utility pipe as directed by Engineer.

3.8 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.9 UTILITY TRENCH BACKFILL

- A. Place backfill on subgrades free of mud, frost, snow, or ice.
- B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- C. Backfill trenches excavated under footings and within 18 inches of bottom of footings with satisfactory soil; fill with concrete to elevation of bottom of footings. Concrete is specified in Division 03 Section "Cast-in-Place Concrete."
- D. Place and compact initial backfill material, free of particles larger than 1 inch in any dimension, to a height of 12 inches over the utility pipe or conduit.
 - 1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.
- E. Place and compact final backfill of satisfactory soil to final subgrade elevation.

3.10 SOIL FILL

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- B. Place and compact fill material in layers to required elevations as follows:
 - 1. Under grass and planted areas, use satisfactory soil material.
 - 2. Under walks and pavements, use satisfactory soil material.

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3.11 SOIL MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.
 - 1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
 - 2. Remove and replace, or scarify and air dry otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.12 COMPACTION OF SOIL BACKFILLS AND FILLS

- A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.
- C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 1557:
 - 1. Under structures, building slabs, steps, and pavements, compact top 12 inches of existing subgrade and each layer of backfill or fill soil material at 95 percent.
 - 2. Under walkways, compact top 6 inches below subgrade and each layer of backfill or fill soil material at 92 percent.
 - 3. Under lawn or unpaved areas, compact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 85 percent.
 - 4. For utility trenches, compact each layer of initial and final backfill soil material at 85 percent.

3.13 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
- B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
 - 1. Lawn or Unpaved Areas: Plus or minus 1 inch.
 - 2. Walks: Plus or minus 1 inch.
 - 3. Pavements: Plus or minus 1/2 inch.
- C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.

3.14 SUBBASE AND COURSES

- A. Place subbase course on subgrades free of mud, frost, snow, or ice.
- B. On prepared subgrade, place subbase course under pavements and walks as follows:

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1. Shape subbase course to required crown elevations and cross-slope grades.
2. Compact subbase course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight.

3.15 FIELD QUALITY CONTROL

- A. Testing Agency: Contractor will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing. *(Cost is to be included in the base bid.)*
- B. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Engineer.
- C. Testing agency will test compaction of soils in place according to the Nuclear Density Method ASTM D 2922, or other approved method.
- D. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

3.16 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.17 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION

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SECTION 02332

AGGREGATE BASE COURSE

PART ONE - GENERAL

1.01 DESCRIPTION

- A. Work included: The work under this Section includes, but is not necessarily limited to, all labor, materials, and equipment necessary to construct an aggregate base coarse of the required depth as indicated on the drawings and specified herein.

1.02 QUALITY ASSURANCE

A. Subgrade:

- 1. The subgrade shall be inspected and approved by the engineer prior to placing conditioning aggregate.

B. Materials:

- 1. All materials used for aggregate base shall be approved by the Architect/Engineer, prior to placement.

C. Compaction:

- D. Field determination of in place density shall be by the Nuclear Density Method, ASTM D-2922, or other approved method.

1.03 MEASUREMENT AND PAYMENT

- 1. All work under this section is included in the contract lump sum price. No separate payments will be made for this work.

PART TWO - PRODUCTS

2.01 MATERIALS

A. Aggregate Base Material:

- 1. Shall be 21A, 21AA, or 22A aggregate as specified in MDOT (2003 Ed.) Standard Specifications, Section 902.

PART THREE - EXECUTION

3.01 CONSTRUCTION METHODS

A. Aggregate Base Coarse

- 1. Aggregate base course shall be constructed as specified in MDOT (2003 Ed.) Standard Specifications, Section 302.

3.02 FIELD QUALITY CONTROL

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- 1) Testing Agency: Contractor will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing. (Cost is to be included in the base bid.)
- 2) Testing agency will test compaction of soils in place according to the Nuclear Density Method ASTM D 2922, or other approved method.
- 3) When testing agency reports that sub-grades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; re-compact and retest until specified compaction is obtained.

END OF SECTION

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SECTION 02335

AGGREGATE SHOULDERS

PART ONE - GENERAL

1.01 DESCRIPTION

- A. Work included: The work under this Section includes, but is not necessarily limited to, all labor, materials, and equipment necessary to construct two foot wide aggregate shoulders of the required depth as indicated on the drawings and specified herein.

1.02 METHOD OF PAYMENT

- A. All work under this section is included in the contract lump sum price. No separate payments will be made for this work.

PART TWO - PRODUCTS

2.01 MATERIALS

- A. Shoulder Material:

- 1. Shall be 22A aggregate as specified in MDOT (2003 Ed.) Standard Specifications, Section 902.

PART THREE - EXECUTION

3.01 CONSTRUCTION METHODS

- A. Aggregate shoulders shall be constructed as specified in MDOT (2003 Ed.) Standard Specifications, Section 307.

END OF SECTION

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SECTION 02741

HMA SURFACE

PART ONE - GENERAL

1.01 DESCRIPTION

- A. This work shall include all labor materials and equipment necessary to construct a surface of hot plant-mixed bituminous material upon an aggregate base to the lines and grades shown on the drawings and specified herein.

1.02 SUBMITTALS

- A. Comply with pertinent provisions of Division One.
- B. Contractor shall submit to the Architect/Engineer a mix design for the specified bituminous mixture for approval.

1.03 QUALITY ASSURANCE

- A. General
 - 1. The contractor shall provide suitable equipment for the paving work. Equipment shall be in good working condition and shall be operated by individuals who are properly trained and skilled for such equipment.

1.04 MEASUREMENT AND PAYMENT

- A. All work under this section is included in the contract lump sum price. No separate payments will be made for this work.

PART TWO - PRODUCTS

2.01 HMA MIXTURE

- A. HMA Mixture No. 13A shall meet the requirements of the MDOT Standard Specification 501 (2003 edition).
- B. Bituminous Mixture shall have a penetration grade of 120-150 unless otherwise shown on the plans.

PART THREE - EXECUTION

3.01 CONSTRUCTION METHODS

- A. Construction methods and equipment requirements shall be in accordance with MDOT Standard Specification 502(2003 edition).
- B. Application rates shall be as follows:
 - 1. 3 inch HMA
 - a. 115#/S.Y. leveling coarse on aggregate base
 - b. 115#/S.Y. surface coarse on HMA leveling coarse.
- C. Rolling Procedures...No more than 25% of roller drum shall be allowed to extend beyond the edge of bituminous surface in order to prevent feathering and cracking of bituminous edges.

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- D. Paving shall be done to a string line, if requested by the Engineer, with the Contractor required to provide the necessary string grade. FIELD QUALITY CONTROL

3.02 FIELD QUALITY CONTROL

- A. Testing Agency: Contractor will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing. (Cost is to be included in the base bid.)
- B. Testing agency will test HMA in place according to the Nuclear Density Method Section H (pages H-1 through H-22) of the MDOT, Density Control Handbook, or other approved method.

END OF SECTION

**SILVER LAKE STATE PARK
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SECTION 02782

PAVEMENT MARKING

PART ONE - GENERAL

1.01 DESCRIPTION

- A. This work shall consist of painting four inch wide parking stall stripes, handicapped parking symbols, text and traffic arrows at the locations shown on the plans and as specified herein.

1.02 MEASUREMENT AND PAYMENT

- A. All work under this section is included in the contract lump sum price. No separate payments will be made for this work.

PART TWO - PRODUCTS

2.01 PAINT

- A. Acrylic emulsion, White, non-reflectORIZED.
- B. Approved manufacturers.
 - 1. No. 476 Zone Marking Paint by Repco Lite Paints, Inc., Holland, Michigan.
 - 2. 442XX Interior/Exterior Alkyd Traffic Marking Paint by Devoe.
 - 3. Pro-Mar Traffic Marking Paint (Alkyd) by Sherwin-Williams.
 - 4. Hydrotherm Striping by Liquid Ceramics International Ltd., Albuquerque, NM.

PART THREE - EXECUTION

3.01 METHODS

- A. Layouts for stripe alignment shall be approved by the Architect/Engineer before painting. Contractor shall notify engineer 72 hours prior to paint striping so that an inspection of the paint layout can be conducted before painting commences.
- B. Painting shall be accomplished with mechanical sprayers in accordance with paint manufacturer's printed instructions, using all means necessary to protect the painted stripes until dry.
- C. Deviation in the edges of the stripes in excess of ½ inch in 50 feet and ragged edges are not acceptable.
- D. Paint stripes which do not meet these requirements shall be **corrected** by whatever means directed by the Architect/Engineer at **no expense to the Owner**.

END OF SECTION

**SILVER LAKE STATE PARK
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SECTION 02846

SIGNAGE

PART ONE - GENERAL

1.01 DESCRIPTION

- A. Work Included: The work under this Section includes, but is not necessarily limited to, the furnishing and installation of handicap parking signs and trail warning signs as indicated on the Drawings, herein specified, and as necessary for the proper and complete performance of this work.

1.02 MEASUREMENT AND PAYMENT

- A. All work under this section is included in the contract lump sum price. No separate payments will be made for this work.

PART TWO - PRODUCTS

2.01 MATERIALS

A. Signs:

- 1. Stop Sign, 30" x 30" Octagon, R1-1, as specified in the 2005 Michigan Manual on Traffic Control Devices, Part 2.

B. Post:

- 1. Shall be green backed enameled steel U-channel post with 3/8" holes spaced on 1" centers.

C. Fasteners:

- 1. Shall be 3/8" diameter oval head, zinc chromate steel carriage bolt with nut.

2.02 INSTALLATION:

- A. Install as required by 2005 Michigan Manual on Traffic Control Devices, Part 2, and as directed by the Engineer.

END OF SECTION

**SILVER LAKE STATE PARK
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SECTION 02900

RESTORATION

PART ONE - GENERAL

1.01 SUMMARY

- A. This Section includes the following:
 - 1. Surface restoration and final cleanup of all items removed or damaged by the Contractor shall include, but not be limited to:
 - a. Concrete Walks or Slabs
 - b. Bituminous Surfaces
 - c. Graveled Surfaces
 - d. Lawn Areas

1.02 MEASUREMENT AND PAYMENT

- A. All work under this section is included in the contract lump sum price. No separate payments will be made for this work.

PART TWO - MATERIALS

2.01 MATERIALS

- A. Seed mixture consisting of Kentucky Blue Grass - 10%, Perennial Ryegrass – 20%, Hard Fescue – 30%, Creeping Red Fescue – 40%, shall be applied at a uniform rate of 220 pounds per acre.
- B. Topsoil shall be a dark, organic, natural surface soil free of clay lumps, peat or muck, subsoil, noxious weeds or other foreign matter such as roots, sticks, rocks over 1/2 inch in diameter and not frozen or muddy. Material shall meet with the approval of the Architect/Engineer and be furnished from off state lands.
- C. Mulching Materials shall meet MDOT Standard Specification (2003) section 917.
- D. Fertilizer shall be evenly applied at a rate which will provide 240 pounds per acre of chemical fertilizer nutrients, in equal proportions, (10-0-10), of Nitrogen, Phosphoric Acid, and Potash. (Phosphorous free)

PART THREE - EXECUTION

3.01 CONSTRUCTION METHODS

- A. All areas disturbed by the contractor including but not limited to construction areas, stockpile areas, access roads, material and equipment storage areas shall be topsoiled and seeded.
- B. The earthen areas to receive topsoil shall be at the required grade and properly trimmed. Topsoil shall be spread on the prepared areas to a depth of not less than 3”.

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After spreading, any large clods and lumps of topsoil shall be broken up and pulverized. Stones and rocks over 1" in diameter, roots, litter, and all other foreign matter shall be raked up and disposed of by the contractor. Place topsoil only when it can be followed within a reasonable time by seeding operations.

- C. For areas to be seeded, chemical fertilizer shall be evenly applied on the prepared topsoil surface at a rate which will provide 240 pounds per acre of chemical fertilizer nutrients, in equal proportions of Nitrogen, and Potash, or as directed by the Architect/Engineer.
- D. Fertilizer spread by drill or broadcast methods will be placed or worked into the soil to a depth of one to two inches.
- E. The seed shall be sown by broadcast method following the application of the fertilizer and while the seed bed is in a friable condition. The seeding shall be floated and lightly compacted to incorporate the seed into the uppermost one-half inch of the soil.
- F. Mulch shall consist of straw and shall be spread over the surface to a uniform thickness to allow sunlight to penetrate and air to slowly circulate, but thick enough to shade the ground, reduce rate of water evaporation, and prevent or reduce water or wind erosion. Straw mulch shall be anchored by crimping in place. Erosion control blankets shall be installed on all slopes which are 3 horizontal to 1 vertical or steeper.
- G. Concrete Walks or Slabs - Shall be cut at contraction or expansion joints and replaced with air-entrained, 3500 psi concrete, meeting MDOT Grade 35S of the same thickness and finish as that which was removed.
- H. Bituminous Surfaces - Shall be cut back to straight-line joints. Replace with a 6" layer of compacted MDOT 22-A aggregate and a 2" layer of MDOT No. 1100-T Bituminous Mixture

END OF SECTION