

PRESQUE ISLE HARBOR BOATING ACCESS SITE- BITUMINOUS PAVING

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
 - 2. Demolishing and removing concrete sidewalks

1.02 RELATED SECTIONS:

- A. Division Two – Earthwork

1.03 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.

1.04 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

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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.
- 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 building demolition and site 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.

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3.05 GRADING

- 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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SECTION 02200

SOIL EROSION AND SEDIMENTATION CONTROL

PART ONE - GENERAL

1.01 DESCRIPTION

- A. The contractor shall be responsible to provide soil erosion and sedimentation control measures as required in the approved Soil Erosion and Sedimentation Control (SESC) Plan and in conformance with state law.

1.02 SOIL EROSION AND SEDIMENTATION CONTROL

- A. The contractor shall take all precautions necessary to prevent soil erosion in areas that are disturbed by construction. The Contractor is required to ensure that all sedimentation is contained within the construction site and shall prevent any sediment from entering sewers or water courses.
- B. The Contractor shall comply with the soil erosion and sedimentation control requirements of Act No. 451 of the Public Acts of 1994, Natural Resource and Environmental Protection Act, Part 91 of the Michigan Compiled Laws.

1.03 STORMWATER DISCHARGE

A. General

- 1. The contractor shall not begin any work until notified by the Owner that the stormwater discharge permit has been obtained for the project. A stormwater discharge permit is required for all projects that disturb more than 5 acres of soil or are within 500 feet of a lake or stream.

1.04 MONITORING AND ENFORCEMENT

- 1. Regular inspections and monitoring will be conducted by the Owner. The Contractor shall correct any deficiencies noted by the Owner, Local Enforcement Agency or the MDEQ within 24 hours of receiving written notice that corrections are necessary. If the Contractor failed to make the corrections within the allotted time, the Owner shall have the right to do the work and deduct all costs from the amounts due to the Contractor under this Contract.

1.05 SUBMITTALS

- A. Prior to construction the Contractor shall submit a Final SESC Plan to the SESC program coordinator within the MDNR Office of Property Management for approval and Authorization to Proceed with Earth Change.

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- B. The Final SESC Plan shall include the following items:
 - 1. The SESC plan included in the contract documents or modifications to the SESC plan as required by specific construction means and methods. All modifications shall adhere to the provisions of this section. There will be no additional compensation for modifications to the plan.
 - 2. Schedule of installation, maintenance and removal of SESC measures.
 - a. Contractor shall submit a detailed schedule of installation, maintenance and removal dates for all required SESC measures. A schedule form is included at the end of this section.
 - 3. Maintenance procedures for Temporary SESC Measures.
 - 4. Maintenance Procedures for Permanent SESC measures.
 - a. Contractor will be responsible to maintain these measures until they are permanently established and the soil is stabilized.

1.06 RELATED SPECIFICATIONS

- A. Section 02900 RESTORATION

1.07 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 - MATERIALS

2.01 GENERAL

- A. All materials required for the SESC measures shall be as specified by the MDMB Soil Erosion and Sedimentation Control Guidebook 2002, and by Section 916, and Section 917 of the MDOT Standard Specifications for Construction, 1996 Edition.
- B. Seed Mulch shall be as specified in Section 02900

PART THREE - EXECUTION

3.01 INSTALLATION AND MAINTENANCE OF CONTROLS

- A. General
 - 1. All SESC measures shown on the plans shall be installed and maintained in accordance with the MDMB Soil Erosion and Sedimentation Control Guidebook 2002, unless otherwise specified or approved by the Engineer.
 - 2. All required SESC measures shall be in place as required by the approved SESC plan prior to construction.

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3. Daily inspections shall be made by the contractor to determine effectiveness of erosion and sedimentation measures, and any necessary repairs shall be performed without delay.
 4. 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 – Landscaping.
- 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.

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**SOIL EROSION AND SEDIMENTATION CONTROL MEASURES
INSTALLATION, MAINTENANCE AND REMOVAL SCHEDULE**

SESC MEASURE	INSTALLATION DATE	REMOVAL DATE	MAINTENANCE FREQUENCY

END OF SECTION

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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.
2. Excavating and backfilling for buildings and structures.
3. Subbase course for concrete walks.
4. Excavating and backfilling for utility trenches.

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.

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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.

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.

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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.

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.

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- 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.
- B. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Engineer, without additional compensation.

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.

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- 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.

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:

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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:
 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.
- 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.

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- 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:

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

1.03 METHOD OF 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 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.

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 02630

STORM DRAINAGE

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes gravity-flow, nonpressure storm drainage with the following components:
 - 1. Culverts.
 - 2. Storm Sewers
 - 3. Drainage Structures

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For manholes and catch basins. Include plans, elevations, sections, details, and manhole frames and covers and catch basin frames and grates.
- C. Field quality-control test reports. Product Data: For each type of product indicated.

1.3 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 CULVERTS

- A. Comply with MDOT Standard Specifications for Construction, 2003 ed., Section 401.

2.2 STORM SEWERS

- A. Comply with MDOT Standard Specifications for Construction, 2003 ed., Section 402.

2.3 DRAINAGE STRUCTURES AND COVERS

- A. Comply with MDOT Standard Specifications for Construction, 2003 ed., Section 403
- B. Cover type – E

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1. Comply with MDOT Standard Plan R-10-C.

PART 3 - EXECUTION

3.1 Culverts

- A. Comply with MDOT Standard Specifications for Construction, 2003 ed., Section 401.

3.2 Storm Sewers

- A. Comply with MDOT Standard Specifications for Construction, 2003 ed., Section 402.

3.3 Drainage Structures

- A. Comply with MDOT Standard Specifications for Construction, 2003 ed., Section 403

3.4 FIELD QUALITY CONTROL

- A. Inspect interior of piping to determine whether line displacement or other damage has occurred.
 1. Defects requiring correction include the following:
 - a. Alignment: Less than full diameter of inside of pipe is visible between structures.
 - b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
 - c. Crushed, broken, cracked, or otherwise damaged piping.
 - d. Infiltration: Water leakage into piping.
 - e. Exfiltration: Water leakage from or around piping.
 2. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.
 3. Reinspect and repeat procedure until results are satisfactory.

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 METHOD OF PAYMENT

- A. All work under this section shall be 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).

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- B. Application rates shall be as follows:
 - 1. 3" HMA
 - a. 115#/S.Y. on leveling coarse on aggregate base
 - b. 115#/S.Y. on 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.
- D. Paving shall be done to a string line, if requested by the Engineer, with the Contractor required to provide the necessary string grade.

END OF SECTION

PRESQUE ISLE HARBOR BOATING ACCESS SITE- BITUMINOUS PAVING

SECTION 02751

CEMENT CONCRETE PAVING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes exterior cement concrete pavement for the following:
 - 1. Driveways and roadways.
 - 2. Parking lots.
 - 3. Curbs and gutters.
 - 4. Walkways.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Design Mixtures: For each concrete pavement mixture.

1.3 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products who complies with ASTM C 94/C 94M requirements for production facilities and equipment.
- B. ACI Publications: Comply with ACI 301, "Specification for Structural Concrete," unless modified by requirements in the Contract Documents.

1.4 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 STEEL REINFORCEMENT

- A. Plain-Steel Welded Wire Reinforcement: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.
- B. Deformed-Steel Welded Wire Reinforcement: ASTM A 497, flat sheet.
- C. Reinforcing Bars: ASTM A 615/A 615M, Grade 60; deformed.

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- D. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice."

2.2 CONCRETE MATERIALS

- A. Cementitious Material: Use one of the following cementitious materials, of the same type, brand, and source throughout the Project:
 - 1. Portland Cement: ASTM C 150, Type I, II, or I/II. Supplement with the following:
 - a. Fly Ash: ASTM C 618, Class C or F.
 - b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.
- B. Aggregates:
 - 1. General: All aggregate shall meet the requirements of ASTM C 33 and MDOT Standard Specifications for Construction (2330 Edition), Section 902.
 - 2. Coarse Aggregate: Shall meet MDOT specifications for class 6A or 6AA.
 - 3. Fine Aggregate: Fine Aggregate shall meet MDOT specifications for Class 2NS sand
- C. Water: Shall meet the requirements of MDOT Standard Specifications for Construction (2003 Edition), Section 911.
- D. Air-Entraining Admixture: ASTM C 260.
- E. Chemical Admixtures: ASTM C 494/C 494M, of type suitable for application, certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.

2.3 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.
- D. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.
- E. Clear Waterborne Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.
- F. White Waterborne Membrane-Forming Curing Compound: ASTM C 309, Type 2, Class B.

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2.4 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.
- B. Slip-Resistive Aggregate Finish: Factory-graded, packaged, rustproof, nonglazing, abrasive aggregate of fused aluminum-oxide granules or crushed emery with emery aggregate containing not less than 50 percent aluminum oxide and not less than 20 percent ferric oxide; unaffected by freezing, moisture, and cleaning materials.

2.5 CONCRETE MIXTURES

- A. Prepare design mixtures, proportioned according to ACI 301, with the following properties:
 - 1. Compressive Strength (28 Days): 3500 psi.
 - 2. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.45.
 - 3. Slump Limit: 4 inches, plus or minus 1 inch.
 - 4. Air Content: 4 to 6% by volume.

2.6 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Furnish batch certificates for each batch discharged and used in the Work.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Proof-roll prepared subbase surface below concrete pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding.

3.2 EDGE FORMS AND SCREED CONSTRUCTION

- A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.
- B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

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3.3 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

3.4 JOINTS

- A. General: Form construction, isolation, and contraction joints and tool edgings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated.
- B. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour unless pavement terminates at isolation joints.
- C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.
- D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness.
- E. Edging: Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.

3.5 CONCRETE PLACEMENT

- A. Moisten subbase to provide a uniform dampened condition at time concrete is placed.
- B. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.
- C. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
- D. Screed pavement surfaces with a straightedge and strike off.
- E. Commence initial floating using bull floats or darbies to impart an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

3.6 FLOAT FINISHING

- A. General: Do not add water to concrete surfaces during finishing operations.

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- B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.
 - 1. Medium-to-Fine-Textured Broom Finish: Draw a soft bristle broom across float-finished concrete surface perpendicular to line of traffic to provide a uniform, fine-line texture.

3.7 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
- B. Unless equipment is utilized to protect concrete from freezing, no concrete shall be placed unless the temperature is above 40 degrees F, and rising.
- C. Comply with ACI 306.1 for cold-weather protection.
- D. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- E. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
- F. Curing Methods: Cure concrete by moisture-retaining-cover curing compound or a combination of these methods.

3.8 PAVEMENT TOLERANCES

- A. Comply with tolerances of ACI 117 and as follows:
 - 1. Elevation: 1/4 inch.
 - 2. Thickness: Plus 3/8 inch, minus 1/4 inch.
 - 3. Surface: Gap below 10-foot- long, unlevelled straightedge not to exceed 1/4 inch.
 - 4. Joint Spacing: 3 inches.
 - 5. Contraction Joint Depth: Plus 1/4 inch, no minus.
 - 6. Joint Width: Plus 1/8 inch, no minus.

3.9 REPAIRS AND PROTECTION

- A. Remove and replace concrete pavement that is broken, damaged, or defective or that does not comply with requirements in this Section.
- B. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement.

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- C. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION

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SECTION 2781

PRE-CAST CONCRETE PARKING RAILS

PART ONE - DESCRIPTION

1.01 SCOPE

- A. This work shall consist of installing 8' pre-cast concrete parking rails, both salvaged and new after completion of bituminous surfacing as shown on the plans and specified herein.

1.02 SUBMITTALS

- A. Submit manufacturers shop drawing to show dimensions of parking rails and reinforcement

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 - MATERIALS

2.01 PARKING RAILS.

- A. 8' pre-cast concrete parking rails stockpiled on sight.
- B. New precast concrete parking rails.

2.02 ANCHOR RODS

- A. New anchor pins shall be 18" long, steel re-rod, 5/8" diameter, furnished by Contractor.

PART THREE - EXECUTION

3.01 CONSTRUCTION METHODS

- A. Pre-cast concrete curbing shall be jointly inspected by the Contractor and the Architect/Engineer, prior to removal, to determine the condition of each piece.
- B. Parking rails damaged during the installation will be replaced by the Contractor, in kind, at no additional cost to the Owner.
- C. After surfacing, the curbing shall be placed in its final location, aligned and approved by the Architect/Engineer before anchoring. Anchor each curb with three new 18-inch steel rods furnished by the Contractor. Top of pin to be set 1/2" min. below top of concrete curb.

END OF SECTION

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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 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 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

PRESQUE ISLE HARBOR BOATING ACCESS SITE- BITUMINOUS PAVING

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 as indicated on the Drawings, herein specified, and as necessary for the proper and complete performance of this work.

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. Signs:

- 1. Barrier Free Parking/ Van Accessible Sign as manufactured by Michigan State Industries Model No. HP-9-1212, or approved equal; and 12"x6", No. HP-14-1206, respectively.

B. Post:

- 1. Shall be green backed enameled steel U-channel post with 3/8" holes spaced on 1" centers. Barrier Free parking sign post shall be 12'-4" long. Length of Trail Warning sign posts will vary.

C. Fasteners:

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

2.02 INSTALLATION:

- A. Bottom of Barrier Free parking sign shall be mounted 6'-8" above finished grade.
- B. Mounting heights of all signage is to be in accordance with the Uniform Code of Traffic Control Devices, and as approved and directed by the Site Engineer.

END OF SECTION

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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 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 - 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 proportions, (10-0-10), of Nitrogen, Phosphoric Acid, and Potash.

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.

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- 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". 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