

# Ocean City Parking Lot Paving Standards

## Definitions:

**MSHA: Maryland Department of Transportation, State Highway Administration. "Standard Specifications for Construction and Materials" October 1993 as amended.**

**AASHTO: American Association of State Highway and Transportation Officials Standards, latest edition.**

## **Article I. Single/two Family Residential [Code Reference 74-72 (a)(1)]**

### ***Section 1.01 Chip Seal Pavement***

- (a) Sub-grade: In-situ material or fill material (approved by the Building Inspection Division) as necessary. Fine graded and compacted to a density not less than 90% of maximum dry density per AASHTO T-180.**
- (b) Base Course: Not required, however a 4" graded aggregate base per MSHA Section 501 is recommended.**
- (c) Surface: Chip seal surface treatment per Maryland State Highway Administration Standard Specifications (MSHA) Section 503. Consisting of a single prime coat and two seal coats.**
- (d) Maintenance: The surface must be kept free of weeds and other vegetation. The surface grade shall be maintained as installed, ruts and potholes must be repaired immediately.**

### ***Section 1.02 Hot Mix Asphalt***

- (a) Sub-grade: In-situ material or fill material (approved by the Building Inspection Division) as necessary. Fine graded and compacted to a density not less than 90% of maximum dry density per AASHTO T-180**
- (b) Base Course: Not required, however a 4" graded aggregate base per MSHA Section 501 is recommended.**
- (c) Surface: Hot Mix Asphalt Pavement per MSHA Section 504. Consisting of a minimum of one and a half inches (1-1/2") of either type SF or SC surface mix.**
- (d) Maintenance: The surface must be kept free of weeds and other vegetation. The surface grade shall be maintained as installed, ruts and potholes must be repaired immediately.**

### ***Section 1.03 Portland Cement Concrete***

- (a) Sub-grade: In-situ material or fill material (approved by the Building Inspection Division) as necessary. Fine graded and compacted to a density not less than 90% of maximum dry density per AASHTO T-180**
- (b) Base Course: Not required, however a 4" graded aggregate base per MSHA Section 501 is recommended.**
- (c) Surface: Portland cement concrete pavement per MSHA Section 520. Mix Number 2,3 or equivalent. Minimum three inches (3") thick reinforced with #6/6 6x6 welded wire fabric. Placed over a 4 mil poly vapor barrier. Colored and/or imprinted concrete is acceptable.**
- (d) Maintenance: The surface must be kept free of weeds and other vegetation. The surface grade shall be maintained as installed, ruts and potholes must be repaired immediately.**

### ***Section 1.04 Concrete Unit Pavers - Standard***

- (a) Sub-grade: In-situ material or fill material (approved by the Building Inspection Division) as necessary. Fine graded and**

compacted to a density not less than 90% of maximum dry density per AASHTO T-180

- (b) Base Course: Not required, however a 4" graded aggregate base per MSHA Section 501 is recommended.
- (c) Surface: Interlocking Concrete Unit Pavers (ASTM C936), minimum thickness 2-3/8" over a 1" thick sand bed. Install per Interlocking Concrete Paver Institute (ICPI) standards. Edge entire perimeter with edge restraint system approved by ICPI.
- (d) Maintenance: The property owner is responsible for properly maintaining the pavement surface and edge restraints per the paver manufacturer's recommendations. The surface must be kept free of weeds and other vegetation. The surface grade shall be maintained as installed, ruts and potholes must be repaired immediately.

#### ***Section 1.05 Concrete Unit Pavers – Permeable***

- (a) Sub-grade: In-situ material or fill material (approved by the Building Inspection Division) Sub-grade soil must have a minimum infiltration rate of one half inch (1/2") per hour as determined by a standard perc test with a plasticity index of zero. Fine graded and moderately compacted such that the permeability of the soil is not negatively impacted but soil is able to support the expected vehicular load surcharge.
- (b) Base Course:
  - (i) Option 1 with piped under drain system: 4" thick graded aggregate base course per MSHA Section 501 and 901.
  - (ii) Option 2 Open graded base: 6" thick (8" preferred) #57 stone per MSHA section 501 and 901. Install a layer of filter fabric between the base course and the bedding material.
  - (iii) Where permeable pavers adjoin an asphalt surface, the pavers shall be bordered by a flush concrete curb. It is recommended that the base course beneath the asphalt surface within 4' of the curb be graded stabilized aggregate base MSHA 501.01 (h) to a depth of not less than 6" in order to avoid future settlement of the asphalt pavement adjacent to the border curb.

- (c) **Surface: Interlocking Concrete Unit Paver system (ASTM C936) with void area per square foot of between twelve and twenty percent (12%-20%). Minimum paver thickness of 2-3/8" over a minimum 1" #8 aggregate bedding layer. Fill void material with poorly graded aggregate as recommended by the paver manufacturer. Install per Interlocking Concrete Paver Institute (ICPI) standards. Edge entire perimeter with edge restraint system approved by ICPI.**
- (d) **Maintenance: The property owner is responsible for properly maintaining the pavement surface and edge restraints per the paver manufacturer's recommendations. All stone must be contained within the parking/driveway area. The surface must be kept free of weeds and other vegetation. The surface grade shall be maintained as installed, ruts and potholes must be repaired immediately.**

#### **Section 1.06 Concrete Grid Pavers**

- (a) **Subgrade: In-situ material or fill material (approved by the Building Inspection Division) Sub-grade soil must have a minimum infiltration rate of one half inch (1/2") per hour as determined by a standard perc test with a plasticity index of zero. Fine graded and moderately compacted such that the permeability of the soil is not negatively impacted but soil is able to support the expected vehicular load surcharge.**
- (b) **Base Course:**
  - (i) **Option 1 with piped under drain system: 4" thick graded aggregate base course per MSHA Section 501 and 901.**
  - (ii) **Option 2 Open graded base: 6" thick (8" preferred) #57 stone per MSHA section 501 and 901. Install a layer of filter fabric between the base course and the bedding material.**
  - (iii) **Where permeable pavers adjoin an asphalt surface, the pavers shall be bordered by a flush concrete curb. It is recommended that the base course beneath the asphalt surface within 4' of the curb be graded stabilized aggregate base MSHA 501.01 (h) to a depth of not less than 6" in order to avoid future settlement of the asphalt pavement adjacent to the border curb.**

- (c) Surface Course: Concrete Grid Paver per National Concrete Masonry Association (NCMA) A-15-82. Void area per square foot between twenty and fifty percent (20%-50%). One inch (1") thick #8 aggregate bed (voids filled with stone) or a 1" sand bed (voids filled with topsoil and vegetation). Install per grid manufacturer's recommendations.**
- (d) Maintenance: The property owner is responsible for properly maintaining the pavement surface and edge restraints per the paver manufacturer's recommendations. All stone must be contained within the parking/driveway area and immediately removed from the sidewalk or public street areas. The surface grade shall be maintained as installed, ruts and potholes must be repaired immediately. All vegetation must be properly maintained and cut to a height not exceeding nine inches (per City Code Sec. 30-201).**

### ***Section 1.07 Geotextile Grid System***

- (a) Subgrade: In-situ material or fill material (approved by the Building Inspection Division) Sub-grade soil must have a minimum infiltration rate of one half inch (1/2") per hour as determined by a standard perc test with a plasticity index of zero. Fine graded and moderately compacted such that the permeability of the soil is not negatively impacted but is able to support the expected vehicular load surcharge.**
- (b) Base Course: Not required, however a 4" thick graded aggregate base course per MSHA Section 501.**
- (c) Surface Course: Geotextile or plastic grid type system with voids filled with either stone or vegetation. Minimum load rating of 8,000 pounds gross vehicle weight. Submit system specifications, manufacturers literature and sample to City Engineer for approval. Install per manufacturers recommendations.**
- (d) Maintenance: The property owner is responsible for properly maintaining the pavement surface per the geotextile manufacturer's recommendations. All stone must be contained within the parking/driveway area and immediately removed from the sidewalk or public street areas. The surface grade shall be maintained as installed, ruts and potholes must be**

repaired immediately. All vegetation must be properly maintained and cut to a height not exceeding nine inches (per City Code Sec. 30-201).

### ***Section 1.08 Aggregate Surface***

- (a) Subgrade:** In-situ material or fill material (approved by the Building Inspection Division) Sub-grade soil must have a minimum infiltration rate of one half inch (1/2") per hour as determined by a standard perc test with a plasticity index of zero. Fine graded and moderately compacted such that the permeability of the soil is not negatively impacted but is able to support the expected vehicular load surcharge.
- (b) Base Course:** Not required, however a 4" graded aggregate base per MSHA Section 501 is recommended.
- (c) Surface:** Minimum 3" thickness aggregate material, with 0% fines (no material passing a # 200 seive). All material to be contained with perimeter edging consisting of either concrete curbing, treated landscape timbers, or masonry. Submit aggregate sample and sieve analysis to City Engineer for approval. Install material per MSHA Section 501.03.07 through 501.03.09.
- (d) Maintenance:** The property owner is responsible for properly maintaining the stone surface. All stone must be contained within the parking/driveway area and immediately removed from the sidewalk or public street areas. The surface must be kept free of weeds and other vegetation. The surface grade shall be maintained as installed, ruts and potholes must be repaired immediately. Add stone as necessary to maintain grading and drainage.

### ***Section 1.09 Track System***

- (a) Description:** In place of structurally reinforcing the entire driveway width, this method consists of installing a pair of minimum two foot (2') wide "tracks" for the vehicle to ride on with a permeable center area.
- (b) "Track" Area:** Either Asphalt, Concrete, Concrete Unit Paver, or Concrete Unit Paver – Permeable. Construct track portion in

accordance with the applicable section above. Sub-grade preparation and base course must extend a minimum of six inches (6") beyond the edge of each track.

- (c) "Center" Area: Either topsoil and vegetation, or aggregate material complying with 1.08(c).
- (d) Maintenance: The property owner is responsible for properly maintaining the pavement surface. All stone must be contained within the parking/driveway area and immediately removed from the sidewalk or public street areas. The paved track surface must be kept free of weeds and other vegetation. The surface grade shall be maintained as installed, ruts and potholes must be repaired immediately. All vegetation within the center area must be properly maintained and cut to a height not exceeding nine inches (per City Code Sec. 30-201).

## **Article II. Commercial, office, business, industrial, multi-family and others. [Code Reference 74-72 (a)(2)(a)]**

### ***Section 2.01 General***

- (a) These standards differentiate the construction requirements between materials/systems allowed in parking space areas [Code reference 110-935(a)] and interior drives and loading areas [Code reference 110-935 (e) and 110-961]. While all the following methods are permitted within the defined parking space area, some are restricted from use in the interior drive and loading areas. This is due to the higher load frequencies and vehicle turns within the interior drive areas.
- (b) The American Disabilities Act (ADA) must be considered when utilizing these standards. Certain surface materials (particularly aggregate, concrete grid, and geotextile ) can not be used in designated handicapped parking spaces or along accessible routes as defined by the ADA, the building official, or Fire Marshal.

### ***Section 2.02 Hot Mix Asphalt.***

- (a) Sub-grade: In-situ material or fill material (approved by the Building Inspection Division) as necessary. Fine graded and

**compacted to a density not less than 90% of maximum dry density per AASHTO T-180**

- (b) Base Course: Minimum 4" (6" recommended) graded aggregate base per MSHA Section 501. This requirement may be waived by the Building Official for low volume parking lots.**
- (c) Surface: Hot Mix Asphalt Pavement per MSHA Section 504. Consisting of a minimum of two inches (2") of either type SF or SC surface mix.**
- (d) Maintenance: The surface must be kept free of weeds and other vegetation. The surface grade shall be maintained as installed, ruts and potholes must be repaired immediately.**

### ***Section 2.03 Portland Cement Concrete***

- (a) Sub-grade: In-situ material or fill material (approved by the Building Inspection Division) as necessary. Fine graded and compacted to a density not less than 90% of maximum dry density per AASHTO T-180**
- (b) Base Course: Minimum 4" (6" recommended) graded aggregate base per MSHA Section 501.**
- (c) Surface: Portland cement concrete pavement per MSHA Section 520. Mix Number 2,3 or equivalent. Minimum four inches (4") thick reinforced with #6/6 6x6 welded wire fabric. Placed over a 4 mil poly vapor barrier. Colored and/or imprinted concrete is acceptable.**
- (d) Maintenance: The surface must be kept free of weeds and other vegetation. The surface grade shall be maintained as installed, ruts and potholes must be repaired immediately.**

## **Section 2.04 Concrete Unit Pavers - Standard**

- (a) Sub-grade: In-situ material or fill material (approved by the Building Inspection Division) as necessary. Fine graded and compacted to a density not less than 90% of maximum dry density per AASHTO T-180**
- (b) Base Course: Minimum four inch (4") (six inch (6") recommended) graded aggregate base per MSHA Section 501.**
- (c) Surface: Interlocking Concrete Unit Pavers (ASTM C936), minimum thickness 2-3/8" over a 1" thick sand bed. Install per Interlocking Concrete Paver Institute (ICPI) standards. Edge entire perimeter with edge restraint system approved by ICPI.**
- (d) Maintenance: The property owner is responsible for properly maintaining the pavement surface and edge restraints per the paver manufacturer's recommendations. The surface must be kept free of weeds and other vegetation. The surface grade shall be maintained as installed, ruts and potholes must be repaired immediately.**

## **Section 2.05 Concrete Unit Pavers – Permeable**

- (a) Sub-grade: In-situ material or fill material (approved by the Building Inspection Division) Sub-grade soil must have a minimum infiltration rate of one half inch (1/2") per hour as determined by a standard perc test with a plasticity index of zero. Fine graded and moderately compacted such that the permeability of the soil is not negatively impacted but soil is able to support the expected vehicular load surcharge.**
- (b) Base Course:**
  - (i) Option 1 with piped under drain system: 4" thick graded aggregate base course per MSHA Section 501 and 901.**
  - (ii) Option 2 Open graded base: 6" thick (8" preferred) #57 stone per MSHA section 501 and 901. Install a layer of filter fabric between the base course and the bedding material.**

- (iii) Where permeable pavers adjoin an asphalt surface, the pavers shall be bordered by a flush concrete curb. It is recommended that the base course beneath the asphalt surface within 4' of the curb be graded stabilized aggregate base MSHA 501.01 (h) to a depth of not less than 6" in order to avoid future settlement of the asphalt pavement adjacent to the border curb.
- (c) **Surface: Interlocking Concrete Unit Paver system (ASTM C936) with void area per square foot of between twelve and twenty percent (12%-20%). Minimum paver thickness of 2-3/8" over a minimum 1" #8 aggregate bedding layer. Fill void material with poorly graded aggregate as recommended by the paver manufacturer. Install per Interlocking Concrete Paver Institute (ICPI) standards. Edge entire perimeter with edge restraint system approved by ICPI.**
- (d) **Maintenance: The property owner is responsible for properly maintaining the pavement surface and edge restraints per the paver manufacturer's recommendations. The surface must be kept free of weeds and other vegetation. The surface grade shall be maintained as installed, ruts and potholes must be repaired immediately. All stone must be contained within the parking/driveway area.**

**Section 2.06 Concrete Grid Pavers – Parking Area Only**

- (a) Subgrade: In-situ material or fill material (approved by the Building Inspection Division) Sub-grade soil must have a minimum infiltration rate of one half inch (1/2") per hour as determined by a standard perc test with a plasticity index of zero. Fine graded and moderately compacted such that the permeability of the soil is not negatively impacted but soil is able to support the expected vehicular load surcharge.
- (b) Base Course:
- (i) Option 1 with piped under drain system: 4" thick graded aggregate base course per MSHA Section 501 and 901.
- (ii) Option 2 Open graded base: 6" thick (8" preferred) #57 stone per MSHA section 501 and 901. Install a layer of filter fabric between the base course and the bedding material.
- (iii) Where permeable pavers adjoin an asphalt surface, the pavers shall be bordered by a flush concrete curb. It is recommended that the base course beneath the asphalt surface within 4' of the curb be graded stabilized aggregate base MSHA 501.01 (h) to a depth of not less than 6" in order to avoid future settlement of the asphalt pavement adjacent to the border curb.

- (c) Surface Course: Concrete Grid Paver per National Concrete Masonry Association (NCMA) A-15-82. Void area per square foot between twenty and fifty percent (20%-50%). One inch (1") thick #8 aggregate bed (voids filled with stone) or a 1" sand bed (voids filled with topsoil and vegetation). Install per grid manufacturer's recommendations.**
- (d) Maintenance: The property owner is responsible for properly maintaining the pavement surface and edge restraints per the paver manufacturer's recommendations. The surface grade shall be maintained as installed, ruts and potholes must be repaired immediately. All stone must be contained within the parking/driveway area and immediately removed from the sidewalk or public street areas. All vegetation must be properly maintained and cut to a height not exceeding nine inches (per City Code Sec. 30-201).**

#### ***Section 2.07 Geotextile Grid System – Parking Areas Only***

- (a) Subgrade: In-situ material or fill material (approved by the Building Inspection Division) Sub-grade soil must have a minimum infiltration rate of one half inch (1/2") per hour as determined by a standard perc test with a plasticity index of zero. Fine graded and moderately compacted such that the permeability of the soil is not negatively impacted but soil is able to support the expected vehicular load surcharge.**
- (b) Base Course: 4" thick graded aggregate base course per MSHA Section 501.**
- (c) Surface Course: Geotextile or plastic grid type system with voids filled with either stone or vegetation. Minimum load rating of 40,000 pounds gross vehicle weight. Submit system specifications, manufacturers literature and sample to City Engineer for approval. Install per manufacturers recommendations.**
- (d) Maintenance: The property owner is responsible for properly maintaining the pavement surface per the geotextile manufacturer's recommendations. All stone must be contained within the parking/driveway area and immediately removed from the sidewalk or public street areas. The surface grade**

**shall be maintained as installed, ruts and potholes must be repaired immediately. All vegetation must be properly maintained and cut to a height not exceeding nine inches (per City Code Sec. 30-201).**

**Section 2.08 Aggregate Surface – Parking areas only, requires approval by Mayor and City Council.**

- (a) Subgrade: In-situ material or fill material (approved by the Building Inspection Division) Sub-grade soil must have a minimum infiltration rate of one half inch (1/2”) per hour as determined by a standard perc test with a plasticity index of zero. Fine graded and moderately compacted such that the permeability of the soil is not negatively impacted but soil is able to support the expected vehicular load surcharge.**
- (b) Base Course: 4” graded aggregate base per MSHA Section 501.**
- (c) Surface: Minimum 4” thickness aggregate material, with 0% fines (no material passing a # 200 seive). All material to be contained with perimeter edging consisting of either concrete curbing, treated landscape timbers, or masonry. Submit aggregate sample and sieve analysis to City Engineer for approval. Install material per MSHA Section 501.03.07 through 501.03.09.**
- (d) Maintenance: The property owner is responsible for properly maintaining the stone surface and edge restraint. All stone must be contained within the parking area and immediately removed from the sidewalk, public street, or travel/back-up areas. The surface must be kept free of weeds and other vegetation. The surface grade shall be maintained as installed, ruts and potholes must be repaired immediately. Add stone as necessary to maintain grading and drainage. The surface shall be kept moist as necessary to prevent dust and debris from becoming airborne.**

**Section 2.09 Pavement Overlays**

- (a) Existing impermeable pavements may be overlaid from time to time for maintenance purposes. Pavement overlays shall not increase the authorized impervious area of any parking lot.**
- (i) Existing pavements constructed per above standard section 2.02, 2.03 or 2.04: Minimum of 1” thickness of MSHA Mix SF or SR or a minimum of 1-1/2” thickness of MSHA Mix SC. Construct overlays in accordance with MSHA 504**

- (ii) Existing impermeable pavements constructed with a minimum of 2” hot-mix asphalt or 4” concrete: Minimum of 1” thickness of MSHA Mix SF or SR or a minimum of 1-1/2” thickness of MSHA Mix SC. Construct overlays in accordance with MSHA 504**
  - (iii) Existing pavements not constructed per these standards nor with a minimum 2” hot-mix asphalt or 4” concrete pavement thickness and not required to be permeable for stormwater management purposes: Minimum of 1-1/2” thickness of MSHA Mix SF, SR, or SC. Construct overlays in accordance with MSHA 504.**
- (b) Permeable pavement areas shall not be overlaid. Repairs and maintenance to pervious pavement materials shall be per the pavement manufacturer’s recommendations and shall not decrease the design porosity or functionality of the pavement system.**