

AGGREGATE BASE COURSES

PART 1 – GENERAL

1.01 Description

This work shall consist of an aggregate base course constructed on an existing aggregate surface or on a prepared subbase or subgrade.

PART 2 – PRODUCTS

2.01 Materials

The material used for this work shall meet the requirements of the following 2020 Michigan Department of Transportation Standard Specifications for Construction:

DENSE-GRADED AGGREGATE 21AA, 21A, 22A.....902

PART 3 – EXECUTION

3.01 Construction Methods

- A. This work of constructing Aggregate Base Course shall conform to the 2020 Michigan Department of Transportation Standard Specifications for Construction Section 302.03 AGGREGATE BASE COURSES except as modified herein.
- B. Aggregate base courses shall not be placed when there are indications that the mixture may become frozen before the maximum unit weight is obtained, and in no case shall be placed on a frozen subgrade or subbase.
- C. The subbase shall be shaped to the crown and grade specified in the Plans and maintained in a smooth condition. If, in the opinion of the Engineer the subgrade, subbase or aggregate base becomes damaged due to the Contractor's equipment or by local traffic, the subgrade, subbase, and base course shall be restored by the Contractor as directed by the Engineer to the condition required by the Plans and Specifications at no extra cost to the Owner. Restoration may include removal of the aggregate or subbase courses for examination of the subgrade, including performing undercuts, all at the Contractor's expense.
- D. No aggregate base shall be placed until the subbase has been compacted to not less than 95 percent per 2020 Michigan Department of Transportation Standard Specifications for Construction Section 301.03 and a "Permit to Place" has been issued by the Engineer. The aggregate base course shall be compacted to not less than 98% of the unit weight, at the optimum moisture content, obtained by AASHTO T 180 test method 2020 Michigan Department of Transportation Standard Specifications for Construction Section 302.03.
- E. Aggregate base and surface courses shall be deposited from trucks or through a spreader in a manner that will minimize segregation of material and which is approved by the Engineer.

F. All Structures, including manholes, valve boxes, inlet structures and curbs shall be protected from damage. Manholes & inlet structures shall be maintained clean of construction debris and properly covered by the Contractor at all the times during the construction.

### 3.02 Testing

A. The Contractor before Aggregate Base construction commences shall provide the Engineer with the source and location of the material to be used so that a Sieve Analysis and Proctor may be developed by an independent testing firm 48 hours prior to placement of Aggregate Base material. This initial cost will be to the Client. Cost of in place compaction testing (Nuclear Density Method) will be to the Client. If the Contractor elects during the course of construction, to change the source and/or location of an approved material, the Contractor shall pay for all Sieve Analysis and Proctors to complete the construction of the Aggregate Base. Forty-eight (48) hours notification will be required to the Engineer to collect and deliver samples to an independent testing firm before placement. Any material placed by the Contractor without approval will be removed. If in the opinion of the Engineer, the material differs from the approved material, the Contractor shall test material at the Contractor's expense.

AGGREGATE BASE & SHOULDERS

PART 1 - GENERAL

1.01 Description

This work shall consist of an aggregate shoulders and approaches constructed on an existing aggregate surface or on a prepared subbase or subgrade.

PART 2 - PRODUCTS

2.01 Materials

The material used for this work shall meet the requirements of the following 2020 Michigan Department of Transportation Standard Specifications for Construction:

Aggregate 22A, 23A.....	902
Salvaged Aggregate.....	902
Class I Shoulders and Approaches – 22A	
Class II Shoulders and Approaches – 23A	
Class III Shoulders and Approaches – Salvaged Materials or 23A	
Class IV Shoulders – Existing Shoulder Material	

Use salvaged aggregate, or other material secured from an existing road or stockpile approved by the Engineer as salvaged materials. Remove particles exceeding 3 inches from borrow or salvaged materials and dispose of as specified in subsection 205.03.

PART 3 – EXECUTION

3.01 Construction Methods:

- A. This work of constructing Aggregate Shoulders and Approaches shall conform to the 2020 Michigan Department of Transportation Standard Specifications for Construction Section 307 Aggregate Shoulders and Approaches except as modified herein.
- B. Aggregate courses shall not be placed when there are indications that the mixture may become frozen before the maximum unit weight is obtained, and in no case shall be placed on a frozen subgrade or subbase.
- C. The subbase shall be shaped to the crown and grade specified in the Plans and maintained in a smooth condition. If, in the opinion of the Engineer the subgrade, subbase or aggregate shoulders and approaches become damaged due to the Contractor's equipment or by local traffic, the subgrade, subbase, and base course shall be restored by the Contractor as directed by the Engineer to the condition required by the Plans and Specifications at no extra cost to the Owner. Restoration may include removal of the aggregate or subbase courses for examination of the subgrade, including performing undercuts, all at the Contractor's expense.

D No aggregate shoulders and approaches shall be placed until the subbase has been compacted to not less than 95 percent per 2020 Michigan Department of Transportation Standard Specifications for Construction Section 2.11 and a "Permit to Place" has been issued by the Engineer. The aggregate shoulders and approaches shall be compacted to not less than 95% or 98%, depending on class, of the unit weight, at the optimum moisture content, obtained by AASHTO T 180 test method 2020 Michigan Department of Transportation Standard Specifications for Construction Section 307.

E. Aggregate materials shall be deposited from trucks or through a spreader in a manner that will minimize segregation of material and which is approved by the Engineer.

F. All Structures, including manholes, valve boxes; inlet structures and curbs shall be protected from damage. Manholes & inlet structures shall be maintained clean of construction debris and properly covered by the Contractor at all the times during the construction.

G. Upon completion of bituminous paving, aggregate shoulder material shall be furnished, placed and compacted to the width and section shown on the plans. The Class I Shoulder shall be compacted to not less than 98%, Class II & III shoulder not less than 95%, of the unit weight, at the optimum moisture content obtained by AASHTO T 180 test method 2020 Michigan Department of Transportation Standard Specifications for Construction Section 307.

### 3.02 Testing

A. The Contractor, before Aggregate Shoulder and Approach construction commences, shall provide the Engineer with the source and location of the material to be used so that a Sieve Analysis and Proctor may be developed by an independent testing firm 48 hours prior to placement of Aggregate materials. This initial cost will be to the Client. Cost of in place compaction testing (Nuclear Density Method) will be to the Client. If the Contractor elects during the course of construction, to change the source and/or location of an approved material, the Contractor shall pay for all Sieve Analysis and Proctors to complete the construction of the Aggregate shoulder and approach. Forty-eight (48) hours notification will be required to the Engineer to collect and deliver samples to an independent testing firm before placement. Any material placed by the Contractor without approval will be removed. If in the opinion of the Engineer, the material differs from the approved material, the Contractor shall test material at the Contractor's expense.

**CONCRETE CURB, GUTTER AND DIVIDERS**

**PART 1 – GENERAL**

**1.01 Description**

This work shall consist of constructing portland cement concrete curb, gutter, combination curb and gutter, shoulder gutter, down spout headers, spill ways and dividers of the details specified, on the prepared base. Curbing shall be either non-reinforced or reinforced as specified.

Unless otherwise specified the Contractor may construct curbing mechanically or forms and either by casting separately or as an integral part of the pavement provided that the required line, grade, cross section, and finish are obtained.

**PART 2 – PRODUCTS**

**2.01 Materials**

The materials used shall conform to the following 2020 Michigan Department of Transportation Standard Specifications for Construction:

Concrete Grade P1 .....	601
Concrete Grade S2 .....	701
Mortar, Type R-2.....	702
Curing Compound.....	903
Steel Reinforcement.....	905
Geotextile Liner.....	910
Line Ties.....	914
Joint Fillers.....	914

**PART 3 – EXECUTION**

**3.01 Construction Methods**

Preparation of base, placing forms, placing steel reinforcement, and placing of concrete shall be done according to 2020 Michigan Department of Transportation Standard Specifications for Construction 802.03, Concrete Curb and Gutter.

CONCRETE SIDEWALK, SIDEWALK RAMPS AND STEPS

PART 1 - GENERAL

1.01 Description

This work shall consist of constructing portland cement concrete sidewalks, sidewalk ramps and steps on a prepared base as shown on the plans or as authorized. Backfilling will be considered part of the work, unless otherwise provided.

PART 2 – PRODUCTS

2.01 Materials

The materials shall conform to the following 2020 Michigan Department of Transportation Standard Specifications for Construction, Section 803.02.

Sound Earth.....	205
Concrete, Grade P2, P1.....	601
Concrete, Grade S3, S2.....	701
Granular Material Class II.....	902
Curing Compound.....	903
Steel Reinforcement.....	905
Joint Fillers.....	914

PART 3 – EXECUTION

3.01 Construction Methods

This work of constructing Concrete Sidewalks, Sidewalk Ramps and Steps of the size and kind specified shall include excavation and backfilling and shall conform to the 2020 Michigan Department of Transportation Specification Section 803 Concrete Sidewalks, Sidewalk Ramps and Steps.

Concrete sidewalks with integral curb shall be constructed in accordance with Michigan Department of Transportation 2020 Standard Specifications for Construction Section 803 and as specified herein.

## CULVERTS

### PART 1 – GENERAL

#### 1.01 Description

This work shall consist of constructing culverts of the class or kind specified, of the required size, and shall include excavation, bedding and backfilling.

### PART 2 – PRODUCTS

#### 2.01 Materials

All materials used in this section shall conform to the following 2020 Michigan Department of State Highways Standard Specifications for Construction:

Concrete Grade S2.....	701
Mortar Type R-2.....	702
Granular Material Class II, III, IIIA.....	902
Coarse Aggregate 6A.....	902
Open-Graded Aggregate 34R.....	902
Asphaltic Materials.....	904
Culvert Pipe.....	909
Precast Concrete Box Culverts.....	909
Sealers for Culvert Joints.....	909
Steel Pipe (For Jacking in Place).....	909
Drainage Marker Post.....	909
Geosynthetics.....	910

All material used must be from approved stock with certification from a reliable testing laboratory that the materials meet these specifications.

### PART 3 – EXECUTION

#### 3.01 Construction Methods

The work of constructing culverts of the size and kind specified shall include excavation and backfilling and shall conform to the 2020 Michigan Department of Transportation Standard Specifications for Construction 401 Culverts.

## HMA PAVING

### PART 1 – GENERAL

- 1.01 Description  
Prepare the existing base and construct hot mix asphalt (HMA) pavements, shoulders, and approaches. Provide a pavement meeting plan requirements, which is uniform in texture, density and smoothness with no measurable segregation.
- 1.02 Reference 2020 Michigan Department of Transportation Standard Specifications for Construction.
- 1.03 Submittals:  
A. Design Data: Marshall Mix designs.  
B. Product Data: Pavement Marking.
- 1.04 The Owner will provide a qualified testing company to perform all required testing.
- 1.05 Quality Assurance  
A. Perform work in accordance with MDOT standard specifications, 2020 edition.  
B. Mixing Plant. Conform with MDOT standard specifications, 2020 edition.  
C. Obtain materials from same source throughout.  
D. Grade Control: Established and maintain required lines and elevations.
- 1.06 Environmental Requirements  
A. Do not place asphalt when ambient air or base surface temperature is less than 40 degrees F, or surface is wet or frozen.

### PART 2 – PRODUCTS

- 2.01 Materials  
A. General: All materials shall conform to current MDOT Specifications.  
B. Aggregate  
1. Base for HMA: As indicated per plan per cross section and depth  
C. Asphalt-Aggregate Mixture  
1. For HMA provide plant-mixed, hot-laid bituminous concrete mixture complying with MDOT specifications as called out on plans.  
D. Bituminous pavement shall be per Plan.  
E. Tack coat: Shall be SS-1h.

HMPA-1



2.02 Environmental Requirements: Do not place asphalt when ambient and/or base surface temperature is less than 40 degrees F. or surface is wet or frozen.

PART 3 – EXECUTION

3.01 Examination

- A. Verify gradients and elevations of base.
- B. Verify compacted subbase is dry and ready to support base and paving and imposed loads.

3.02 Installation

A. Surface Preparation

1. Proof roll prepared base surface to check for unstable areas and areas requiring additional compaction.
2. Notify Engineer of unsatisfactory conditions.
3. Soft or yielding areas which cannot be mechanically stabilized shall be removed and replaced with approved compacted granular material.
4. Do not begin paving work until deficient base areas have been corrected and are ready to receive paving.

B. Transportation of Mix:

1. Transportation of paving materials through site to be tandem axel trucks to prevent damage to existing pavement. Larger trucks may be allowed at owner's discretion.

C. Placing Mix:

1. Machine place each course to required grade, cross section, and thickness when compacted. Temperature shall be between 350°F to 250°F.
2. Compact to a density of 97% of the maximum Marshall Unit Weight (50 blows).
3. Apply tack coat over base and leveling course at a uniform rate of 0.10 gallons per square yard when either 24 hours have elapsed between placement of courses or the surface of the pavement has been contaminated with dirt, dust, or other foreign material. Surface must be cleaned before application.
4. Place wearing course within 24 hours of placing and compacting leveling course or after tack coat has been properly cured.

D. Rolling

HMPA-2

1. Compact each layer of HMA to the required density, free of all roller marks.
2. Use tandem steel-wheeled rollers for the final rolling operation on each layer of HMA. Operate vibratory rollers in the static mode when used for finish rolling or pinching the joint.
3. Keep the surface of the steel roller wheels completely moist with water when rolling.
4. Start rolling longitudinally at the extreme sides of the lanes and go toward the center of the pavement, overlapping on successive trips by at least half the width of the drive wheel of the roller. Vary the lengths of alternate passes of the roller.
5. When compacting an adjoining lane, and not restricted by traffic, roll the vertical longitudinal bumped joint first with the roller supported on the cold lane with only 2 to 6 inches of the roller extending onto the freshly placed HMA mixture.

#### 3.03 Patching

- A. Remove and replace defective paving areas.
- B. Cut out such areas and fill with fresh, hot asphalt concrete.
- C. Patch test holes.
- D. Compact by rolling to maximum surface density and smoothness.

#### 3.04 Field Quality Control

- A. Representatives of the testing laboratory will supervise the placing of the asphalt materials.
- B. The Owner reserves the right to require the Contractor, at his own expense, to patch holes in the bituminous surface to determine the compaction, thickness and design mix by an independent laboratory. The laboratory fee will be paid for by the Owner.

#### 3.05 Construction Tolerances

- A. Flatness: Maximum variation of  $\frac{1}{4}$  inch measured with 10 foot straight edge.
- B. Scheduled Compacted Thickness: Within  $\frac{1}{4}$  inch of design thickness.
- C. Variation from Indicated Elevation: Within 1 inch.

#### 3.06 Protection of Finished Work

- A. Immediately after placement, protect pavement from mechanical injury for 24 hours or until surface temperature is less than 140 degrees F.

LANDSCAPING

PART 1 – GENERAL

1.01 Description  
This work shall consist of excavating planting areas for trees, shrubs, evergreens and ground cover plants; disposing of the excavated material; furnishing and planting trees, shrubs, and other plants of the type and size indicated on the plans or in the proposal; backfilling the planting holes with prepared soil; watering and cultivating; and includes all materials and operations required to complete the work in accordance with these specifications.

The Engineer reserves the right to inspect, select, and reject plants at any time through the first year establishment period.

Trees, shrubs, and other plants will be classified as nursery stock.

PART 2 – PRODUCTS

2.01 Materials

All materials used in this section shall conform to 2020 Michigan Department of Transportation Standard Specifications for Construction:

Water .....	911
Topsoil .....	917
Peat Moss .....	917
Compost .....	917
Fertilizer .....	917
Nursery Stock .....	917
Mulching Materials .....	917
Tree Wrapping Materials .....	917
Balling Material .....	917
Wire .....	917
Hose .....	917
Stakes .....	917

All topsoil, peat moss, fertilizer, prepared soil, water and antitranspirants materials shall meet the requirements specified in 2020 Michigan Department of Transportation Standard Specifications for Construction Section 815, Landscaping.

PART 3 – EXECUTION

3.01 Construction Methods

The work of Landscaping shall conform to 2020 Michigan Department of Transportation Standard Specifications for Construction Section 815 Landscaping except as modified herein. Watering and cultivating will be required a minimum of five (5) times during only the first growing season of the establishment period.

## MACHINE GRADING

### PART 1 – GRADING

- 1.01 Description
- This work of Machine Grading shall consist of light grading of such character that, in general, the excavation from ditches and roadbed will be utilized in shaping shoulders and adjacent shallow fills and the work can be performed by a blade grader or similar equipment.

### PART 2 PRODUCTS

- 2.01 Not Applicable

### PART 3 – EXECUTION

- 3.01 Construction Methods
- This work shall be done according to the 2020 the Michigan Department of Transportation Standard Specifications for Construction Section 205.03.J.

## MAINTAINING TRAFFIC

### PART 1 – GENERAL

#### 1.01 Description

Traffic shall be maintained in accordance with Sections 103.05, 810, 812, 919, 921, and 922 of the Michigan Department of Transportation 2020 Standard Specifications for Construction and in accordance with the 2005 Michigan Manual of Uniform Traffic Control Devices (MMUTCD) as amended, except as herein provided.

The Contractor shall furnish, erect, maintain and, upon completion of the work, remove all traffic control devices and barricade lights within the project and around the perimeter of the project for the safety and protection of through and local traffic. This includes, but is not limited to, advance, regulatory, and warning signs; barricades and channeling devices at intersecting streets on which traffic is to be maintained; barricades at the ends of the project and at right-of-way lines of intersecting streets, and moving traffic control devices for construction operations.

### PART 2 – PRODUCTS

#### 2.01 Materials

The materials and equipment shall meet the requirements specified in the sections designated of the MDOT 2020 Standard Specifications for construction, the 2005 MMUTC and all Special Provisions elsewhere in these Contract Documents.

### PART 3 – EXECUTION

#### 3.01 Permits

Any work in the Washtenaw County Road Commission right-of-way requires a permit from the Washtenaw County Road Commission and shall be obtained by the Contractor.

#### 3.02 Maintenance of Traffic

Unless otherwise indicated on the drawings, walks, driveways, and entrances to building shall not be blocked. Vehicular and pedestrian access shall be maintained to all properties.

The Contractor shall perform the work of this contract while maintaining traffic in accordance with the Contract Documents as specified herein. No traffic shall be allowed on newly placed asphalt surfaces until rolling has been satisfactorily completed and the surface has cooled sufficiently to prevent damage from traffic. This is to be accomplished by flag persons and by relocating traffic control devices to prevent traffic from entering the work area until such time that it can be safely maintained without damaging the new construction. The Contractor shall provide traffic regulators in sufficient number to maintain traffic as described herein, and to keep traffic off sections being surfaced, and provide for safe travel at all times as directed by the Engineer.

Each pressure distributor, paver, and roller shall be equipped with at least one approved flasher light which shall be mounted on the equipment so as to give a warning signal ahead and behind.

## MOBILIZATION

### PART 1 – GENERAL

#### 1.01 Description

Mobilization consists of preparatory work and operations, including, but not limited to the following:

- A. The movement of personnel, equipment, supplies, and incidentals to the project site.
- B. The establishment of the Contractor's offices, buildings, and other facilities to work on the project.
- C. Other work and operations that must be performed.
- D. Expenses incurred, prior to beginning work on the various contract items on the project site.
- E. Pre-construction costs, exclusive of bidding costs, which are necessary direct costs to the project rather than directly attributable to other pay items under the contract.
- F. Contractor to provide and maintain a sufficient number of portable temporary toilets in locations approved by the owner. They must comply with all Federal, State and local code requirements. The Contractor must maintain the temporary toilets in a sanitary condition at all times and must remove them when the work under this contract is complete. The Contractor's employees are not allowed to use any existing toilet facility.

### PART 2 – PRODUCTS

2.01 Not applicable

### PART 3 – EXECUTION

3.01 Not applicable

PERMANENT PAVEMENT MARKINGS

PART 1 - GENERAL

1.01 Description

This work shall consist of furnishing and applying retro-reflective permanent pavement markings according to the current Michigan Manual of Uniform Traffic Control Devices. All markings, shapes, spacing, and dimensions must conform to the MDOT Pavement Marking Typical Plans or as directed by the Engineer.

PART 2 – PRODUCTS

2.01 Materials

All materials shall conform to current 2020 Michigan Department of Transportation for Construction Standard Specifications for Construction, Section 811.02.

Glass Beads.....	920
Waterborne Marking Material.....	920
Regular Dry Marking Material.....	920
Epoxy Pavement Marking Materials.....	920
Cold Plastic Pavement Marking Material.....	920
Thermoplastic Pavement Marking Material...	920
Raised Pavement Markers.....	920

PART 3 - EXECUTION

3.01 Construction Method

All construction, application, temperature and seasonal restrictions shall conform to the 2020 Michigan Department of Transportation for Construction Standard Specifications for Construction, Section 811.03.

## PAVEMENT REMOVAL

### PART 1 – GENERAL

#### 1.01 Description

This work shall consist of removing and properly disposing of bituminous surface and base of any thickness from any aggregate base without the removal of the aggregate base.

### PART 2 – PRODUCTS

2.01 Not applicable

### PART 3 - EXECUTION

#### 3.01 Construction Methods

- A. The work of removing bituminous pavement shall conform to 2020 Michigan Department of Transportation Standard Specifications for Construction, section 204.
- B. Cutting of bituminous surface for removal shall be by saw or other methods approved by the Engineer.
- C. Butt joints shall be trimmed just prior to bituminous paving, and will not be paid for separately.



## PROJECT CLEANUP

### PART 1 – GENERAL

- 1.01 Description
- This work shall consist of cleaning up the project, removal and disposal of all debris, including fences, fallen timber, logs, guardrail sections and posts, rocks, boulders, and all other rubbish from within the project limits according to Section 201 and 205 of the 2020 Michigan Department of Transportation Standard Specifications for Construction prior to final acceptance. This work shall also consist of the cleanout of all culverts, sewers, and drainage structures installed on the project.

### PART 2 – PRODUCTS

- 2.01 Not Applicable

### PART 3 – EXECUTION

- 3.01 Construction Methods
- A. The work of Project Cleanup shall meet the requirements of the 2020 Michigan Department of Transportation Standard Specifications for Construction, Section 209 Project Cleanup except as modified herein.
- B. Project Cleanup shall apply to the area disturbed by the construction operation. All debris shall be removed and disposed of off site. All holes resulting from the construction operations shall be filled with earth.

## PULVERIZING PAVEMENT

### PART 1 – GENERAL

1.01 Description

Construct a new aggregate base from an existing flexible pavement.

### PART 2 – PRODUCTS

Not applicable.

### PART 3 – EXECUTION

3.01 Construction

The plans will specify crushing depth, crushing and shaping width, construction staging and shoulder treatment. Secure approval of the hot mix asphalt (HMA) mix design for the initial surfacing course before crushing begins.

- A. Equipment Requirements. Provide a self propelled rotary reduction crushing machine that can crush the pavement to the required size and mix the crushed material with the underlying aggregate base to the required depth.
- Use an approved water sprinkling system to suppress dust generated from the pavement crushing operation.
- Provide final grading equipment.
- B. Crushing and Grading. Unless otherwise specified, referenced the longitudinal crushed grade from the existing pavement surface.
- Blading the existing shoulder bituminous or seal coat material onto the mainline pavement prior to crushing is acceptable. Uniformly crush existing bituminous pavement, including a depth of aggregate base as indicated per plan of the aggregate base, to the required width and depth. Ninety-five percent of the crushed material must have a maximum particle size of 1 1/2 inch, with no particle size exceeding 4 inches.
- Stockpile pulverized material or uniformly spread and compact the crushed material to the dimension shown on the plans. When additional material is needed to attain the plan grade or cross section, use excess salvaged crushed material when available or 21AA. Spread added aggregate uniformly before crushing or place aggregate on the crushed surface and remix to the full crushed depth to obtain a uniform mixture.
- C. Compacting and Shaping. Compact the crushed material, at a moisture content not greater than optimum. Test compaction by proof rolling with a motor grader deflection of the surface should be less than 1/4".
- D. Excess Crushed Material. Excess crushed material may be used, if suitable, as base aggregate, undercut backfill or shoulder aggregate or disposed of offsite.

E. Weather Limitations. Do not crush HMA pavement when anticipated precipitation may make the prepared base unstable. Seasonal limitations specified in Michigan Department of Transportation Standard Specifications for Construction section 502 for placing HMA also apply for crushing.

F. Acceptance Criteria. The Engineer will use the following criteria to accept the crush and shape work.

1. Crushed material meets particle size requirements.
2. After final shaping, the variance between the surface and a 10-foot straightedge (any two contacts with the surface), does not exceed  $\frac{1}{2}$  inch.
3. Just before paving, all undulations or variations from the criteria specified in 2020 Michigan Department of Transportation Standard Specifications for Construction subsections 305.03.B and C have been corrected.
4. Required density has been maintained until HMA surface material is applied.

REMOVE HMA PAVEMENT

PART 1 – GENERAL

1.01 Description

This work shall consist of removing and properly disposing of bituminous surface and base of any thickness from any aggregate base without the removal of the aggregate base.

PART 2 – PRODUCTS

2.01 Not Applicable

PART 3 - EXECUTION

3.01 Construction Methods

The work of removing bituminous pavement shall conform to 2020 Michigan Department of Transportation Standard Specifications for Construction Section 204.04B1 Removing Miscellaneous Structures And Materials except as modified herein.

Cutting of bituminous surface for removal shall be by saw or other methods approved by the Engineer.

Butt joints shall be trimmed just prior to bituminous paving, and will not be paid for separately.

SUBGRADE MODIFICATION

PART 1 - GENERAL

1.01 Description

This work shall consist of excavation of materials susceptible to frost heave or unstable soil conditions.

PART 2 – PRODUCTS

2.01 Materials

The material used for this work shall meet the requirements of 2020 Michigan Department of Transportation Standard Specifications for Construction:

GRANULAR MATERIAL CLASS II..... 802

PART 3 - EXECUTION

3.01 Construction Methods

- A. This work of constructing Subgrade Undercutting shall conform to the 2020 Michigan Department of Transportation Standard Specifications for Construction Section 208.07.
- B. Subgrade Undercutting Type I shall be backfilled with selected clay or other similar approved material.
- C. Subgrade Undercutting Type II shall be backfilled with Granular Material Class II.

**SUBGRADE UNDERCUTTING**

**PART 1 – GENERAL**

**1.01 Description**

This work shall consist of excavation of materials susceptible to frost heave or unstable soil conditions.

**PART 2 - PRODUCTS**

**2.01 Materials**

The material used for this work shall meet the requirements of 2020 Michigan Department of Transportation Standard Specifications for Construction:

GRANULAR MATERIAL CLASS II..... 802

**PART 3 – EXECUTION**

**3.01 Construction Methods**

- A. This work of constructing Subgrade Undercutting shall conform to the 2020 Michigan Department of Transportation Standard Specifications for Construction Section 208.07.
- B. Subgrade Undercutting Type I shall be backfilled with selected clay or other similar approved material.
- C. Subgrade Undercutting Type II shall be backfilled with Granular Material Class II.

TEMPORARY TRAFFIC CONTROL FOR  
CONSTRUCTION ZONE OPERATIONS

PART 1 – GENERAL

- 1.01 Description
- A. This work shall be in accordance with the applicable requirements of Section 812 of the 2020 Michigan Department of Transportation Standard Specifications for Construction and as herein specified. The Contractor is advised that the current Michigan Manual of Uniform Traffic Control Devices is hereby established as governing all work in connection with traffic control devices, barricade lighting, etc., required on this project.
  - B. The Contractor shall furnish, erect, maintain and, upon completion of the work, remove all traffic control devices and barricade lights within the project and around the perimeter of the project for the safety and protection of through and local traffic. This includes advance warning signs, barricades and channeling devices at intersecting streets on which traffic is to be maintained, barricades at the ends of the project and at right-of-way lines for intersecting streets which are to be closed to traffic, along with barricades, signs and lights at the intersections of the streets to be closed with the first usable street on each side of the project. Traffic regulators, where required by the Engineer, are included.
  - C. The Contractor shall perform this work while the section of the road involved is in use by traffic. No traffic shall be allowed on the surface being placed until rolling has been completed and the surface has cooled sufficiently to prevent damage from traffic. The Contractor shall provide traffic regulators in sufficient numbers to maintain traffic and to keep traffic off of sections being surfaced and to provide for safe travel at all times directed by the Engineer.
  - D. Areas which are disturbed through the Contractor's construction or maintenance of traffic operations shall be maintained and restored to their original condition at the Contractor's expense.
  - E. Maintenance of Temporary Traffic Control and Zone Operations Devices shall be included in the total cost of the project and will not be paid for separately.

PART 2 – PRODUCTS

2.01 Materials

All materials shall meet the 2020 Michigan Department of Transportation Standard Specifications for Construction, Section 812.02:

Temporary Traffic Signs.....	922
Channelizing Devices.....	922
Temporary Pavement Markings.....	922
Lighting Devices.....	922
Temporary Traffic Signals.....	922
Traffic Regulator Equipment.....	922
Portable Changeable Message Sign.....	922

PART 3 – EXECUTION

3.01 Construction Methods

All construction shall meet the 2020 Michigan Department of Transportation Standard Specifications for Construction, Section 812.03 and current Michigan Manual of Uniform Traffic Control Devices.



UNDERDRAINS

PART 1 – GENERAL

1.01 Description

This work shall consist of constructing underdrains, including excavation, furnishing, and installing a geotextile wrapped perforated or slotted underdrain; and backfilling, according to the plans or as directed by the Engineer.

PART 2 – PRODUCTS

2.01 Material

The materials used for this work shall meet the requirements of the 2020 Michigan Department of Transportation Standard Specifications for Construction Section 404.02:

Mortar Type R-2.....	702
Granular Material Class II.....	902
Open-Graded Aggregate 34R.....	902
End Section.....	909
Pipe for Underdrains.....	909
Rodent Screens.....	909
Underdrain Outlets.....	909
Drainage Marker Posts.....	909
Geosynthetics, PDS.....	910
Sod.....	917
Topsoil.....	917

PART 3 – EXECUTION

3.01 Construction Methods:

This work of construction Underdrains shall conform to the 2020 Michigan Department of Transportation Standard Specifications for Construction Section 404.03.

WASHTENAW COUNTY ROAD COMMISSION PERMIT

PART 1 - GENERAL

1.01 Description

The Contractor shall secure Permit(s) for Commercial Drive Approach for each occurrence of working within the right-of-way. Contractor shall supply all bonding and insurance as required for issuance of the Permit(s). Contractor shall notify Washtenaw County Road Commission when work is performed within the right-of-way. Contractor shall provide all traffic control as required for work within the right-of-way.

PART 2 - PRODUCTS

2.01 Not applicable

PART 3 - EXECUTION

3.01 Not applicable

## DRAINAGE STRUCTURES

### PART 1 – GENERAL

#### 1.01 Description

This work shall consist of constructing drainage structures of portland cement concrete, portland cement concrete block or brick masonry and pre-cast concrete drainage structure sections, furnishing and placing metal covers and shall include excavation and backfilling.

The term drainage structure, as used herein, refers to manholes, catch basins, leaching basins, inlets and drop inlets.

### PART 2 – PRODUCTS

#### 2.01 Materials

The materials used for this work shall meet the requirements of the following 2020 Michigan Department of Transportation Standard Specifications for Construction:

Concrete, Grade S3.....	701
Mortar Type R-2.....	702
Granular Material Class II, III.....	902
Steel Reinforcement.....	905
Miscellaneous Metal Products.....	908
Castings.....	908
Culvert, Sewer Pipe & Box Sections.....	909
Geosynthetics.....	910
Masonry Units.....	913

### PART 3 – EXECUTION

#### 3.01 Construction Methods

The work of constructing Drainage Structures shall conform to the 2020 Michigan Department of Transportation Standard Specifications for Construction Section 403 Drainage Structures except as modified herein.

SOIL EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1.01 Description

This work shall consist of the construction and maintenance of erosion controls required to minimize the erosion of soil and the sedimentation of water courses as shown on the project plans or at the direction of the Engineer.

PART 2 – PRODUCTS

2.01 Materials

All materials used shall meet the 2020 Michigan Department of Transportation Standard Specifications for Construction:

Coarse Aggregate, 6A.....	902
Granular Material Class II .....	902
Dense-Graded Aggregate 21AA, 22A.....	902
Open-Graded Aggregate, 34R.....	902
Fencing Materials.....	907
Culvert Pipe.....	909
Geosynthetics.....	910
Rip Rap.....	916
Heavy Rip Rap.....	916
Coarse Aggregate, 3X1.....	916
Cobblestone.....	916
Temporary Plastic Sheet.....	916
Sand and Stone Bags.....	916

PART 3 - EXECUTION

3.01 Construction Methods

This work shall be done according to 2020 Michigan Department of Transportation Standard Specifications for Construction Section 208. Soil Erosion and Sedimentation Controls except as modified herein.

## EXCAVATION AND FILL

### PART I – GENERAL

#### 1.01 Description

- A. Work includes excavation, backfilling, compaction, grading.
- B. Construct grades by excavating soil or rock and by placing embankments or fills. Salvage and stockpile selected materials; furnish, place and compact embankment materials; trim the earth grade; dispose of surplus or unsuitable material; and maintain the work in a finished condition until accepted. Undercut existing subgrade as directed by the Engineer or testing company, place geotextile fabric, backfill undercut with approved material.
- C. Submittal – geotextile fabric.
- D. Verify existing conditions, utility locations and Owners amenities prior to beginning earthwork.
- E. Promptly repair damage to adjacent facilities at the Contractor's expense.
- F. Promptly notify the Engineer of unexpected subsurface conditions. The Contractor is not to proceed until given direction.

#### 1.02 Testing

- A. Granular Material Class II. The Owner will employ a qualified testing company to furnish all required testing and inspections.
- B. Aggregate. This testing company will make all tests of materials to determine their suitability for compaction and optimum water content and will supervise the placing and acceptance testing of all fill and/or backfill.
- C. The testing company shall have the power of rejection of materials, equipment or operating procedures of the filling or backfilling operation. The Contractor shall replace, rework, or correct work which does not meet the project specifications at no cost to the Owner.

#### 1.03 Reference

- A. ANSI/ASTM DI557 – Moisture density relations of soils and soil aggregate mixture.

### PART 2 – PRODUCTS

#### 2.01 Materials

Stabilization Geotextile  
Geotextile Fabric  
Granular Material Class II

- A. 21AA Aggregate. Use granular MDOT CL II or 21AA as directed for undercut backfill.

## PART 3 – EXECUTION

### 3.01 Construction

- A. Identify required grade lines, employ a Surveyor for layout.
- B. Identify known utilities and protect.
- C. Maintain and protect existing utilities that pass through the work.
- D. Preparing Roadway Foundation. Remove material from the roadway foundation and salvage or dispose. Compact the roadway foundation to the depth and density specified.
- E. Subgrade Undercutting. Proof roll subgrade to be witnessed by the testing company and/or Engineer. When directed undercut the subgrade and backfill to replace material that is unsuitable.  
Subgrade undercutting includes excavation, backfill and compaction with approved material. Excavated unsuitable material is the property of the Contractor and is to be disposed of offsite.
  - 1. Limits of subgrade undercutting
    - a. After the subgrade is excavated to the approximate grade, the Engineer will promptly inspect the grade to decide if subgrade undercutting will be required and to determine the limits of undercutting.
    - b. Where shallow fills are to be placed, the Engineer will inspect the fill area and determine the limits of the subgrade undercutting before embankment is placed.
    - c. Excavation and disposal of unsuitable material is included in this item of work. Contractor to be paid for field measured quantities in place.
  - 2. Backfill of Subgrade Undercut
    - a. Backfill subgrade undercutting Aggregate 21AA and CL II.
    - b. Compact subgrade undercutting backfill to not less than 95 percent of the modified proctor maximum unit weight.
- F. Earthwork. All excavated materials are the property of the Contractor.
  - 1. Areas of subgrade that do not achieve specified density or exhibit unsuitable soils shall be removed at the direction of the testing company and/or Engineer to a depth directed.
  - 2. Per the direction of the testing company and/or Engineer, place stabilization geotextile fabric on the subgrade to a smooth uniform condition free from ruts, or protruding object such as stones or sticks. The fabric shall be laid smooth without excessive wrinkles. Overlaps shall be 24". If the fabric is torn or punctured, the damaged area shall be replaced. Follow manufacturer's recommendations for the method to hold fabric in place until specified cover material is placed.
    - a. Manufacturers:  
Thrace-Linq, Inc.

Propex Concrete Systems  
Construction Fabrics & Materials Corp.  
North American Green  
b. See section 31 32 19.

Compact the subgrade to not less than 95 percent of the modified proctor density ASTM D1557. If the subgrade cannot be compacted to 95 percent modify using conventional construction methods, the Engineer may authorize use of other methods to attain compaction.

Maintain optimum moisture content 2% +/- to achieve 95%.

Maintain the roadbed and keep well drained at all times. Installing and removing temporary drainage facilities will be at the Contractor's expense.

G. Backfilling

1. Backfill with approved material to the proposed pavement section grade or grades shown on the plan.
2. Backfill material to be free of frozen material, any debris or waste, vegetation or other deleterious materials. It shall be approved by the testing company.
3. Backfill systematically in continuous layers not exceeding 8" loose depth. Do not place any additional materials until approved by the testing company.
4. Do not backfill over porous, wet or spongy subgrade surfaces.
5. Correct unauthorized excavation at not cost to Owner.
6. When directed by testing company, moisten or aerate each layer to achieve the optimum moisture content.
7. Protect newly graded areas from damage. Repair and reestablish grades that have settled, eroded or rotted.

H. Trimming and finishing Earth Grade. Construct the earth grade to the required grade remove all exposed stones and rocks more than 3 inches in diameter.

3.02 Quality Control

A. Representative of the testing company will supervise the placement of the fill material.

## SEED AND MULCH

### PART I – GENERAL

#### 1.01 Description

This work shall consist of preparing the rough graded ground, removing rocks, debris and other deleterious material, furnishing approved topsoil, spreading approved topsoil, seeding, mulching, and fertilizing the disturbed areas as directed by the Engineer. The Contractor shall remove all Excelsior Mulch Blankets when no longer needed, or as directed by the Engineer.

### PART 2 – PRODUCTS

#### 2.01 Materials

Table 32-92-19-A Seed Mixture

Species	Purity, min percent	Germination, percent	Seed Mixture	
			Mixture Proportions, percent by weight	Rate, (a) lbs/acre
			TUF	ES
Kentucky Blue Grass	98	85	10	
Perennial Ryegrass	96	85	20	11
Hard Fescue	97	85	20	
Creeping Red Fescue	97	85	40	
Fults Salt Grass	98	85	10	
Cereal Rye	85	85		
Spring Oats	85	85		
Timothy				24
Little Blue Stem				3
Switchgrass				4
Indiangrass				3
Big Blue Stem				9

Excelsior Mulch Blankets shall consist of straw, coconut or man-made fibers or a combination of same weight

*a. ES seed mixture application rate is shown in pounds of pure live seed per acre.*

ing at least 0.50 lbs/sy, with biodegradable netting on both sides.

Mulch shall be straw, hay or marsh hay. Straw and excelsior mulch blankets shall be an approved material and must be anchored in place with a mulch adhesive, or staples, as approved by the Engineer.

Water used shall be obtained from fresh water sources and shall be free from injurious chemicals and other toxic substances.

### PART 3 – EXECUTION

#### 3.01 Construction

The related work of preparing the foundation, furnishing and placing 4" topsoil, sowing the seed, and placing straw mulch or mulch blankets.



## SITE GRADING

### PART 1 – GENERAL

#### 1.01 Description

This work shall include the furnishing of labor, materials and equipment necessary to perform stripping, stockpiling, mass grading, clearing and grubbing.

#### 1.02 Soils Information

The soils information as presented shows general conditions only. No guarantee is made as ground conditions are subject to change. It is advised that those Contractors submitting proposals thoroughly acquaint themselves with the local conditions.

### PART 2 – PRODUCTS

#### 2.01 Not Applicable

### PART 3 – EXECUTION

#### 3.01 Topsoil

Prior to grading and earth balancing operations, all vegetation of a height of one (1) foot shall be reduced to a height of approximately six (6) inches. Existing Topsoil shall then be removed to a minimum depth of eight (8) inches and stockpiled on the site in a location approved by the Owner.

#### 3.02 Clearing and Grubbing

This work shall consist of the clearing and grubbing, which in general shall comply with the 2020 Michigan Department of Transportation Specification 201. Clearing and grubbing shall be incidental to grading. All such vegetation, brush, rocks and other foreign or objectionable material shall be removed and disposed of off the Owner's property by the Contractor. Stump removal shall include removal and disposal offsite of debris, stump and root ball.

#### 3.03 Grading

This work shall consist of work required to construct the earth grade and land balancing in accordance with the specifications and in conformity with the lines, grade and typical cross sections shown on the plans or established by the Owner's Representative. The topsoil shall be completely removed to the required depth from any designated area prior to the beginning of regular excavation or embankment in that area. This work shall include hauling and placing of spoil material from utility installation as directed by the Owner's representative. All earth embankments and fills greater than twelve (12) inches in depth shall be compacted to 95% maximum unit weight.

Suitable stakes will be set by the Engineer from which the Contractor may establish grades. The rough grades shall be approximately three inches below the proposed site area except under paved areas where it shall be cut to subgrade. Except as noted below the moisture content of all subgrade materials at the time of compaction shall not be greater than 2% over the optimum. Moisture content at the time of compaction and also at the time of placing pavement or subbase for any approved

subgrade material which displays pronounced elasticity or deformed deformations under construction equipment shall not exceed optimum. Drying wet soils shall be expedited by the use of plows, scarifiers, discs, harrows, power driven rotary type mixing machines or by other approved methods when so ordered by the Owner's Representative.

#### 3.04 Re-Spread Topsoil

After all land balancing and road grade construction is complete, stockpiled topsoil shall be spread over all disturbed areas to a minimum depth of three (3) inches and finished to a uniform smooth slope or grade ready for seeding.

# TRAFFIC SIGNS AND SUPPORTS

## PART 1 – GENERAL

### 1.01 Description

This work shall consist of furnishing, fabricating, and erecting traffic control devices as shown on the plans, in accordance with the standards set forth in the Michigan Manual of Uniform Traffic Control Devices, and the 2020 Michigan Department of Transportation Standard Specifications for Construction, Section 810.

## PART 2 – PRODUCTS

### 2.01 Materials

Materials shall conform to the 2020 Michigan Department of Transportation Standard Specifications for Construction, Section 810.02.

Concrete, Grade P2, P1.....	601
Concrete, Grade S2.....	701
Curing Compounds.....	903
Steel Reinforcement.....	905
Structural Steel.....	906
Anchor Bolts and Nuts.....	908
Electrical Conduit.....	918
Permanent Traffic Signs.....	919
Sign Supports and Mounting Hardware.....	919

## PART 3 – EXECUTION

### 3.01 Construction Methods

This work shall consist of furnishing, fabricating, and erecting traffic control devices as shown on the plans, in accordance with the standards set for in the Current Michigan Manual of Uniform Traffic Control Devices and the 2020 Michigan Department of Transportation Standard Specifications for Construction, Section 810.03.

# REMOVING TREES, STUMPS AND CORDUROY

## PART 1 – GENERAL

### 1.01 Description

This work shall consist of removing trees or removing stumps where called for on the plans or directed by the Engineer, or of removing stumps which are shown on the plans as trees and shall include cutting such trees, removing their stumps and roots from the ground or chipping the stumps and properly disposing of the material.

## PART 2 – PRODUCTS

### 2.01 Materials

Granular Material Class III..... 902

## PART 3 – EXECUTION

### 3.01 Construction Methods

This work shall consist of Removing Trees and Stumps, which in general shall comply with the 2020 Michigan Department of Transportation Standard Specifications for Construction Section 202 Removing Trees, Stumps and Corduroy except as modified herein. The trees, stumps, roots, and debris shall be removed as indicated on the Plans and disposed of as specified under Section 201 Clearing.

Where removal of a stump may result in damage to existing utilities, the stump shall be removed by chipping to a depth of at least one foot below the finished ground surface. Other stumps may be removed by chipping when approved by the Engineer.