

SECTION III

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The work will include the disposal of all drainage water flowing into the excavation. The drainage of the entire project shall be disposed of in a manner that will not interfere with or delay the work of others. This work shall be performed as directed by the Engineer.

The City will permit, subject to its approval, drainage water from the excavations for the project to enter existing operating sewers without reimbursement. No claims for damages, however, will be allowed the Contractor because of the inadequacy of the City sewers to accommodate the water from the excavations.

All sewers and drainage structures shall be kept thoroughly cleaned of silt, debris and foreign matter, and shall be free from such accumulation at the time of final inspection.

The work of pumping and draining excavations, and cleaning the structures used for disposal of same will be considered included in the construction of the project and no additional payment will be made.

Property and Survey Monuments: Before any monuments or stakes marking the boundaries of property along or near the work are removed or disturbed, the Contractor shall notify the Engineer in sufficient time so that they can be properly located and reset.

All precautions shall be taken to avoid disturbance of permanent survey monuments of any City, County or State authority, and when any of these are disturbed or destroyed, the Contractor shall restore them to the satisfaction of such authority and shall pay all costs incurred by such authority in connection therewith.

City of Detroit vertical survey monuments shall be adjusted and preserved in accordance with the Special Provision\Specification titled Vertical Survey Monuments.

Notification: The Contractor shall provide notification to residents and businesses along the length of the project of pending surface milling, curb replacement, pavement repair and resurfacing activities, and sidewalk and ADA ramp construction a minimum of 48 hours in advance of such work. The notice, at a minimum, shall advise residents of the date work activity will start, the anticipated length of time the area will be worked on, notification of temporary loss of curbside or driveway access to property, and request that street be cleared of parked vehicles.

Should construction activities cease, either due to weather or scheduling, for an anticipated time of five (5) days or more, any and all posted signage shall be removed. Once work will begin again, the Contractor shall re-notify as previously set forth.

For sidewalk repair work, the Contractor shall provide notification to residents and businesses along the length of the pending sidewalk work a minimum of 72 hours (3 day) in advance of such work. This notification shall be placed in accordance with the Specification for Sidewalk Repair Notification.

Cleanliness of the Work: The Contractor shall at all times keep the street pavement and right-of-way and any public or private premises temporarily occupied by him for purposes of work under this contract free from accumulations of waste material or rubbish caused by the Contractors employees or the work. This requirement shall apply to any streets in vicinity of the work which are affected by the Contractor's construction or hauling operations, as well as to streets in which the work is located. If the Contractor shall fail to keep any street cleaned of

PROGRESS CLAUSE

PROGRESS CLAUSE: After receiving notice of award of contract, start work on the date designated as the starting date herein or the date agreed upon with the Engineer. In no case, shall any work be commenced prior to receipt of formal notice of award by the department.

The starting date for this project shall be as of the date of the Start Work notice issued after the contract has been approved. The entire project shall be completed **within 60 calendar days inclusive of any rain days** (except any landscaping maintenance guarantee work) from the starting date. No HMA pavement work will be allowed during seasonal limitations as set forth in subsection 501.03.1.2 of the 2012 MDOT Standard Specifications for Construction. Resurfacing of Conner, construction of bus islands, and permanent pavement markings must be completed in 2020.

All work must be completed by September 30, 2021. The contractor is required to remove all equipment and traffic control devices no later than November 30, 2020 for any work performed in 2020. No additional compensation will be paid for remobilization of equipment and reinstallation of traffic control devices. All equipment and traffic control devices on a given street must be removed within seven (7) calendar days of completion of work on that street.

The low bidder(s) for the work covered by this proposal will be required to meet with department representatives to work out a detailed progress schedule. The schedule for this meeting will be set within one week after the low bidder is determined. The Department of Public Works - City Engineering Division will arrange the time and place for the meeting. A Start Work notice will not be granted without an agreed upon Progress Schedule.

The named subcontractor(s) for Specialty and/or Designated Items (if such items are designated in the proposal) which materially affect the work schedule, shall also be present at the scheduled meeting and they will be required to sign the Progress Schedule to indicate their approval of the scheduled dates of work set forth in the Progress Schedule.

The Progress Schedule shall include, as a minimum, the controlling work items for the completion of the project and the planned dates (or work day for a work day project) that these work items will be controlling operations. When specified in the bidding proposal, the date the project is to be opened to traffic, the final project completion date, and any other controlling dates shall also be included in the Progress Schedule. The intended sequencing of streets for milling and resurfacing shall be included in the Progress Schedule.

Failure on the part of the Contractor to carry out the provisions of the Progress Schedule, as established, may be considered sufficient cause to prevent bidding future projects until a satisfactory rate of progress is again established.

Liquidated damages will be applied based on Section 108 of the 2012 Michigan Department of Transportation Standard Specifications for Construction.

CITY OF DETROIT
SPECIAL PROVISIONS

DET: PAL

1 of 3

REVISED 01-26-18

Work Approvals: Acceptance by the City of Detroit of any or all utility work under this contract will be conditioned upon approval by the appropriate Department of the City of Detroit.

Utility Access: The Contractor shall contact the utility owners, including the Detroit Fire and Police Departments, regarding their facilities prior to starting the work. All utility outlets and control fixtures shall be maintained in an accessible condition at all times.

Adjacent Utilities: When proposed utilities cross or lay parallel to an existing or proposed utility, a vertical clearance of twelve (12) inches and a horizontal clearance of forty two (42) inches shall be provided between the outside limits of their construction and the outside limits of the Public Lighting Department (PLD) or Department of Water and Sewerage (DWSD) facility. PLD facilities include electrical conduits, communication conduits, and related structures. DWSD facilities include sewers, water mains, and related structures. If for any reason this clearance cannot be provided, the Contractor shall notify the project engineer and proceed under his direction in an approved manner.

Reclaiming Salvageable Material: All salvageable material within the limits of this project and belonging to either privately or municipally owned utilities, which are to be reclaimed by its owner, will be indicated on the plans or in the proposal. The removal of such material shall be done by the owner and at their own expense and at such time as will cause no delay to the Contractor. If after due notice the owner does not remove the material, the Engineer shall advise the Contractor to remove the material and this material shall become the property of the Contractor. The work of removing the material is included in the construction of the project and will not be paid for separately

Hydrants and Water: The Contractor shall pump out at the end of each day throughout the year, regardless of the season, any fire hydrant used to obtain water.

The Contractor shall secure the required permit from the Detroit Water and Sewerage Department, and shall bear all the expense for such permits and for the water used. If connections are made to hydrants, Fire Department's standard hydrant wrench shall be used for the operation of the hydrant.

The DWSD current fees include a permit fee of \$650.00 per day and an unmetered commercial usage fee of \$1,920.00. These fees are subject to change. For more information, contact DWSD at (313) 245-1057.

Removal of Miscellaneous Structures: The use of a crane and ball type pavement breaker for the removal of miscellaneous structures referred to in Section 204 of the 2012 MDOT Standard Specifications for Construction and the removal of other items called for in these Specifications and Plans will NOT be permitted at any time for work under this Contract, except when specifically authorized by the Engineer.

Pumping and Drainage: The Contractor will be required to furnish all equipment and supplies and perform all labor necessary to keep all excavated areas dewatered during the period of this Contract.

debris resulting from their operations, and therefore creating a public nuisance, they shall be notified in writing by the Engineer to clean the street and remove the nuisance immediately. If, within 24 hours after the receipt of such notice, the Contractor shall have failed to clean such street satisfactorily, the Engineer shall order the street cleaned by the Department of Public Works or such other agency as he shall designate and all costs of such cleaning shall be paid by the Contractor.

Materials and equipment not in current use shall not be stored on any city streets. Storage of materials on private property shall require a written agreement with the owner. The Contractor shall provide the Engineer a copy of the agreement.

CITY OF DETROIT
SPECIAL PROVISION
FOR
MAINTAINING TRAFFIC

DET: AHS

02-27-20

General Requirements: Traffic shall be maintained throughout the project in accordance with 2012 MDOT Standard Specifications for Construction, including any supplemental specifications, and as herein specified. All traffic control devices shall conform to the current edition of the 2011 Michigan Manual of Uniform Traffic Control Devices.

City of Detroit Street Maintenance Department and/or Contract Maintenance Agencies may perform maintenance work within or adjacent to the Construction Influence Area (CIA). The Maintenance Division of City of Detroit and or Contract Maintenance Agency will coordinate their operations with the Supervising Engineer to minimize the interference to the Contractor. No additional payment will be made to the Contractor for the joint use of the traffic control items.

The Contractor must submit a Work Zone Traffic Control Plan to the Engineer in accordance with Section 104 of the 2012 Standard Specifications for Construction. At a minimum, the plan shall include the proposed ingress/egress locations for construction equipment and vehicles, traffic control devices that will be utilized to warn the motoring public of ingress/egress locations, and measures that will be taken to ensure compliance with the plan. No work shall begin prior to the acceptance of the Work Zone Traffic Control Plan. Additional time required to obtain an accepted Work Zone Traffic Control Plan shall not be cause for delay or impact claims. All costs associated with obtaining an acceptable plan, providing and executing all parts of the accepted plan including required traffic control devices, or resolving an incomplete or unacceptable plan shall be borne by the Contractor.

Failure to comply with all stipulations of the following traffic specifications will be cause for complete shutdown of the project.

In the event of an emergency, the following specifications and restrictions are subject to change if traffic conditions indicate such a necessity.

Traffic specifications are to be with the work crews at all times.

Maintenance of Traffic:

- Walks, driveways, alleys and entrances to buildings shall not be blocked.
- The required number of lanes shall be maintained by plating of pavement.
- The paved surface shall be free of stored equipment, excavated material, etc. during specified hours.
- Protection and temporary crossings shall be provided for pedestrians at all crossings.
- Protection and temporary driveway access to residents and businesses shall be provided and maintained as directed by the Engineer.
- The Contractor shall notify local businesses a minimum of 48 hours prior to the implementation of any lane closures, weekend closures and major traffic shifts.
- The Contractor shall notify the Engineer, the Michigan Department of Transportation and the Detroit Police and Fire Departments patrolling the area three (3) business days prior to making any lane closures or traffic switches.

- The Contractor must coordinate his operations with contractors performing work on other projects within or adjacent to the construction influence area.
- The Contractor shall be required to coordinate the work with the curb-side garbage pick-up within the construction influence area.
- Steel plates, 3/4 inch thick, of sufficient size, shall be furnished and installed by the Contractor to cover paving cuts and to provide crossings over trenches. No separate compensation will be made to furnish, install, maintain and remove these steel plates when no longer needed. The cost for this material and work shall be incidental to the project.
- Plates shall be bedded in Cold Patch so as to avoid rocking and the noise resulting there from, and shall be firmly anchored by spiking into the existing pavement.
- Approved HMA material, shall be used at the ends of the plates to eliminate bumps in traffic lanes. The cost of the HMA and placement of same shall be considered incidental to the work.
- The spikes shall have a minimum length of three (3) inches and shall be driven not closer than twelve (12) inches from the edge of a trench up to three (3) feet deep or two (2) feet from the edge of a trench greater than three (3) feet deep.
- For trenches wider than four (4) feet, the Contractor shall submit a method of bridging to the Engineer for approval. All bridging shall be of a design that will satisfactorily carry an HS-20 truck loading across the opening smoothly, safely, and without undue noise.

Signing and Traffic Control: The Contractor shall furnish and install all signing necessary for the maintenance of traffic. Traffic control devices shall conform to the current edition of the 2011 Michigan Manual of Uniform Traffic Control Devices, Part VI, Construction and Maintenance; the Michigan Department of Transportation Maintaining Traffic Safety Typical Standards: M0020a, M0030a, M0040a, M0050a, M0110a, M0140a, M0240a, WZD-100-A and WZD-125-E; and/or the City of Detroit, Department of Public Works Standards on Maintenance and Utility Signing as applicable.

Pedestrian traffic shall be maintained using Michigan Manual of Uniform Traffic Control Devices details as shown in Figures 6H-28 and 6H-29.

Distances between sign locations will vary depending on the lengths of the City blocks in advance of the job site. Other traffic signing and barricading requirements for this project are contained in the proposal.

Temporary "No Parking" signs shall be placed in all parking areas when necessary to prohibit parking during construction activities. The "No Parking" signs shall be placed in all parking areas at least 24 hours and not more than 48 hours prior to construction activities.

The Contractor may relocate signs and other portable barricades only after coordinating with representatives of the Traffic Engineering Division of the Department of Public Works.

CONSTRUCTION INFLUENCE AREA (CIA)

Construction Influence Area (CIA): The CIA shall include the area within the right-of-way of the street or streets listed in the contract and/or the cross streets within the limits of the construction staging.

The Contractor shall coordinate his operations with Contractors performing work on other projects within or adjacent to the Construction Influence Area (CIA).

Time Restrictions: Maintaining traffic requirements and hourly restrictions are subject to change by the Engineer.

Maintain the full pavement width of all project streets between 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m. Monday through Friday, and a minimum of one lane of thru traffic in each direction for all other hours.

No work shall be performed or lane closures allowed during the Memorial Day, July 4th, or Labor Day holiday periods, as defined by the Engineer. The Contractor shall coordinate their work schedule around special events that take place in local communities in accordance with the Engineer. The Contractor shall be responsible to contact the Supervising Engineer to acquire specific dates and locations for these events.

Other special events that may affect lane closures, as defined by the Engineer, are as follows:

- Rocket Mortgage Classic PGA Tour
- Downtown Hoe Down
- Freedom Festival
- Annual Detroit Electronic Music Festival
- Chrysler Jeep Detroit APBA Cup
- African World Festival
- Ford Detroit International Jazz Festival
- Ford Field Special Events and Home Games
- Comerica Park Special Events and Home Games
- Little Caesar's Arena Special Events and Home Games
- North American International Auto Show

Work shall be suspended by the Engineer at any time traffic is being unduly hampered or delayed. In general, traffic is expected to be unduly hampered from 7:00 a.m. to 9:00 a.m. and from 4:00 p.m. to 6:00 p.m. weekdays. These hours may be adjusted by the Engineer.

Truck Haul Routes: Truck haul routes selected by the Contractor must be submitted to the City of Detroit Department of Public Works for approval prior to the start of construction and are subject to regulations of the Department.

Barricades: Plastic Drums, High Intensity, and Barricade, Type III, High Intensity, Double Sided, Lighted necessary for traffic control and public safety shall be furnished and erected by the Contractor. All traffic control devices and their usage shall be in accordance with Part 6 of the Michigan Manual on Uniform Traffic Control Devices (MMUTCD) and MDOT Maintaining Traffic Typical M0020a, M0040a, M0110a and M0140a and any other applicable.

Warning Lights: Battery operated warning flashers shall be used on all barricades in accordance with the current edition of the 2011 Michigan Manual of Uniform Traffic Control Devices and any recent changes to special provision regarding battery operated warning lights.

Temporary Signs: The Federal Highway Administration (FHWA) requires that all signs be NCHRP 350 crashworthy. The Contractor shall submit the FHWA approved details for the temporary sign supports used on the project and have approval by the Engineer before the start of work.

Stage Construction: The traffic control required by this Special Provision for work on various streets in the contract and adjacent roadways is based on the current edition of the 2011 Michigan Manual of Uniform Traffic Control Devices. At the discretion of the Engineer, the

Contractor may be requested to conduct construction activities in certain segments of the project at such times that coordinates with adjacent property owner uses and activities. The Contractor shall submit for review and approval by the Engineer a sequence of operation/staging plans to complete the work by the specified completion date. The adjustments or changes in the staging of construction to accommodate property owners shall not be paid for separately and shall be included in the overall project cost.

Cleaning Adjacent Streets and Sidewalks: Dirt, mud, construction materials or other debris deposited on public sidewalks or streets as the result of spilling, tracking by the wheels of trucks or construction equipment or by other actions of the Contractor, his employees or subcontractors shall be immediately removed by the Contractor. Failure to do so is a violation of City Ordinances punishable by fines and/or imprisonment.

Special Considerations at Railroad Crossing.

1. The Contractor will not obstruct the right-hand display of the railroad signal to traffic approaching the crossing.
2. No lane closure taper(s) may extend through the crossing. Traffic lane shifts cannot transition over the crossing.
3. No construction traffic control devices may be placed in the railroad crossing or closer than 25 ft. from the outside rail on either crossing approach.
4. Provide traffic regulator at railroad crossing if movement of traffic is restricted to alternating one-way traffic through construction area at crossing. The traffic regulator will serve to stop traffic for vehicles traveling in the direction opposed to normal flow and prevent them from entering the crossing upon a train approaching the crossing. When the railroad crossing is in the influence zone of active construction work, but not in a lane closure, the roadway traffic regulator will give immediate preference to clearing any traffic which backup over the crossing as a result of the traffic regulator control away from the crossing.
5. The Contractor will place a temporary stop line and sign R15-1 (crossbuck) to indicate the stopping point in advance of the crossing for vehicles traveling in a direction opposed to normal flow.
6. Payment for intermediate traffic regulator(s) stationed at the crossing is included in the pay item Traffic Regulator Control.

Enforcement Stipulations: Failure to comply with any of these regulations and requirements is a violation of City Ordinances punishable by fines and or imprisonment.

Failure to comply with all of these regulations and requirements of the above traffic specifications will be cause for complete shutdown of the project.

In the event of an emergency, these restrictions are subject to change if traffic conditions indicate such a necessity.

Traffic specification documents are to be held with the work crews at all times.

Measurement and Payment: Maintaining Traffic will be measured and paid for at the contract unit price for the contract pay items.

Payment for providing and maintaining driveway access and pedestrians crossing, temporary No Parking Signs, ¾ inch steel plates, plates bedding, spikes will not be paid separately, but shall be considered incidental and included in other pay items.

Any equipment required for nighttime operations shall be included in the cost of the work items being placed. All costs of additional signing or maintaining traffic devices required to expedite the construction will be borne by the Contractor.

CITY OF DETROIT
SPECIFICATIONS
FOR
LIMITATIONS OF OPERATIONS

DET: GJM

1 of 1

Revised: 1-04-16

The work days used to develop the progress schedule shall be Monday through Saturday and shall not include Sundays or City Holidays. The Contractor may normally prosecute the work during the daylight hours of any work day provided that they so conduct their operations as not to create a public nuisance nor disturb the peace. Overtime shall be limited to the work days submitted on the progress schedule for the project. Overtime work on Sundays and City Holidays shall be limited to emergency work necessary to safeguard the health and safety of the public.

When the Contractor elects to conduct work operations in excess of eight hours per day, or on Saturdays, Sundays or a City Holiday, they shall bear overtime costs incurred by the City of Detroit for City personnel assigned to the project for those situations.

The following are the current City Holidays: New Year's Day, Martin Luther King Jr. Birthday, Good Friday, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day, Day after Thanksgiving, Christmas Eve, Christmas Day, New Year's Eve. The Contractor shall be responsible for confirming with the City Engineering Division any amendments to this list of calendar dates designated as holidays for City of Detroit employees.

The Engineer may require the Contractor to cease construction operations during times as may be determined to be in the interest of the public at no additional compensation or cost to the City.

Contractor shall suspend or limit their operations if work interferes with the City Sponsored Public events within project CIA (Construction Influence Area) at no additional compensation or cost to the City.

CITY OF DETROIT
NOTICE TO BIDDER
FOR
UTILITY COORDINATION

DET: PAL

Revised: 06-29-2017

The Contractor shall cooperate and coordinate construction activities with the owners of utilities as stated in Section 104.08 of the 2012 Michigan Department of Transportation (MDOT) Standard Specifications for Construction. In addition, for the protection of underground utilities, the Contractor shall follow the requirements in Section 107.12 of the 2012 MDOT Standard Specifications for Construction. Contractor delay claims, resulting from a utility, will be determined based upon Section 108.08 of the 2012 MDOT Standard Specifications for Construction.

The existing utilities listed below and shown on the plans represent the best information available.

This information does not relieve the Contractor of the responsibility to satisfy themselves as to its accuracy, or of their responsibility in case utilities have been constructed or removed since the most recent surveys.

NAME AND ADDRESS OF OWNER

KIND OF UTILITY

Miss Dig
Call three (3) working days before you dig
1-800-482-7171

All Underground Utilities

City of Detroit
Public Lighting Authority
65 Cadillac Square Suite 3100
Detroit, MI 48226
(313) 324-8290, ext. 216
Mohamed Abbas
abbasm@detroitmi.gov

Street Lighting and Traffic Signals

City of Detroit
Detroit Water & Sewerage Department
Contract Services Facility
6425 Huber
Detroit, MI 48211
General: (313) 267-4863
Fax: (313) 842-6480

Water Mains & Sewers

NAME AND ADDRESS OF OWNER

KIND OF UTILITY

City of Detroit
Traffic Engineering, D.P.W.
2633 Michigan Avenue
Detroit, MI 48207
General: (313) 224-1610
Fax: (313) 224-1304
Prasad Nannapaneni (313) 628-5603
prasadn@detroitmi.gov
Sunny Jacobs (313) 628-5604
sunjac@detroitmi.gov
Jubi Chackunkal (313) 224-1315
JubCha@detroitmi.gov

Pavement Markings, Signs & Traffic Signals

Sign Shop
2425 Fenkell
Detroit, MI 48238
Willie Riley (313) 628-2923
Fax (313) 628-4966

Sign Removals & Installations

City of Detroit
Detroit Fire Department
1301 3rd Street
Detroit, MI 48226
General: (313) 596-2900
Fax: (313) 224-4128
communityrelations@detroitmi.gov

KNOX Boxes and Fire Hydrants

City of Detroit
Detroit Police Department
1301 3rd Street
Detroit, MI 48226
General: (313) 596-2200
Fax: (313) 596-1450
publicinfo@detroitmi.gov

Police Call Boxes

DTE
One Energy Plaza
Detroit, MI 48226
Gas Leak 1-800-947-5000
Electrical 1-800-477-4747

Electric and Gas

Contact DTE ten working days prior to the construction start date to coordinate adjustments for DTE electric and gas manhole frames and covers.

NAME AND ADDRESS OF OWNER

AT&T

17651 Michigan Ave,

Dearborn, MI 48126

Joe Raczak

Legal Mandate Engineer

(313) 240-5314

JR1983@att.com

or

Mark Braham

OSP Engineer - Metro South

(313) 240-5390

MB6352@att.com

AT&T will require five to seven business days
advance notice prior to adjusting frames and
covers.

KIND OF UTILITY

Telephone

For adjusting Frames and Covers

Detroit Thermal LLC

3575 E Palmer St

Detroit, MI 48201

Ed LaRosa

(313) 921-1922

Fax

(313) 921-1972

Steam Lines

CITY OF DETROIT
SPECIFICATIONS
FOR
WORKING AREA AND PROJECT CLEANUP

DET: GJM

1 of 1

Revised: 12-07-15

All the work under this Contract shall be in City streets, alleys, easements, or right-of-ways, and the space allowed for the Contractor's operations shall be in City streets and alleys adjacent to the work. Construction equipment, storage of materials, and the construction operations shall normally be restricted to such areas. Should additional working or storage space be desired, the Contractor may be permitted to utilize adjacent private property provided the Contractor makes all arrangements with the Owners of the property, bears all expense in connection with its use, and in no way involves or obligates the City, County or State by such use.

Materials delivered on the street shall be neatly and compactly stored in such a manner as to cause the least inconvenience to adjacent property owners and the general public.

Working and storage areas shall be promptly restored to their original conditions as soon as the required construction work has been completed at the particular location, and shall not be used as a storage area for unneeded material or construction equipment.

The work, and all property used in connection with the work, shall be kept in a neat and orderly condition at all times. Waste material and refuse from the Contractor's operations may be temporarily stored behind the curb in a manner not to interfere with pedestrians. Waste materials, rubbish, and debris shall not be allowed to accumulate and shall be removed daily, or as directed by the Engineer. Construction equipment and excess materials shall be promptly removed from the site as they become no longer needed for the progress of the work.

All cost relating to maintaining a neat working area and providing the required cleanup will not be paid for separately, but shall be included in the total project cost.

CITY OF DETROIT

SPECIFICATION FOR MOBILIZATION

DET-GJM

01-04-2016

Description: This specification covers the preparatory work and operations, and movement of equipment, materials and personnel to the construction sites in the City of Detroit. The work covered shall be as specified in the Michigan Department of Transportation 2012 Standard Specifications for Construction, Section 150.0

The word "Department" in the body of the MDOT Specification shall mean "The City of Detroit".

Measurement and Payment: In accordance with Section 150.04.

Pay Item

Pay Unit

Mobilization, Max ____

Lump Sum

CITY OF DETROIT
SPECIAL PROVISION
FOR
REMOVAL OF CURB AND CURB AND GUTTER

DET: PAL

2-17-2019

Description: The work shall be done in accordance with the applicable provisions of Section 204 of the 2012 MDOT Standard Specifications for Construction and as specified herein.

Construction: This work consists of removing curb and integral curb and gutter, where the adjoining pavement or sidewalk remains. When the curb is integral with the pavement, saw cutting of pavement shall be required.

Backfill base material removed with concrete curb or integral curb and gutter as specified in Section 204.03.C to the level necessary for new curb or curb and gutter. The cost of all backfill material or any other approved material is included in the unit price of the pay items for new curb or new curb and gutter, and will not be paid separately.

Backfill other area around curb with material excavated from site only if approved by the Engineer. Selected excavated material, suitable for backfill, will be free from rubbish or debris, organic matter, large stones, concrete fragments, or other road material, lumber, tree roots, or branches. In general, selected excavated material to be suitable for backfill will be restricted to sand or crumbly clay. Blue clay is not considered a suitable backfill material. If there is not sufficient selected excavated material on the project, the contractor shall provide the needed fill material and no additional payment will be made for providing this backfill.

Protect lawn sprinkler systems, if encountered. All costs associated with the lawn sprinkler protection, restoration and repair, if damaged, shall be borne by the Contractor and no separate payment shall be made.

Measurement and Payment: The completed work for the items below will be measured and paid for per lineal foot at the contract unit price

<u>Pay Item</u>	<u>Unit</u>
Curb, Rem, Modified	Foot
Curb and Gutter, Rem, Modified	Foot

CITY OF DETROIT
SPECIAL PROVISION
FOR
INTEGRAL CURB AND SIDEWALK, 2 FEET

DET: GJM

1 of 1

12-17-15

Description: The removal of integral curb and sidewalk shall be done in accordance with the requirements of Section 204 of the 2012 Michigan Department of Transportation Standard Specifications for Construction and as specified herein.

This construction of an Integral Curb and Sidewalk shall be in accordance with the City of Detroit Detail "Integral Curb and Sidewalk", or as directed by the Engineer, and shall conform to the requirements of Section 803 of the 2012 Michigan Department of Transportation Standard Specifications for Construction.

Removal: The work shall consist of removing existing curb that has integral sidewalk as part of the curb structure. Saw cut existing sidewalk at two (2) feet distance from the back of the curb if there is no joint within five (5) feet of the back of the curb to remove curb and integral sidewalk. Any additional sidewalk to be removed will be paid for as Sidewalk, Rem.

Backfill as necessary as specified in Section 204.03.C to the level necessary for new construction

Construction: The work shall include all labor, material, and equipment necessary to construct the Integral Curb and Sidewalk as specified to a distance two (2) feet from the face of the curb. Earth excavation, backfill with granular material, and expansion joint and other items which may be required to complete this work as specified shall be included in the cost of the work.

Any additional sidewalk to be constructed abutting this work shall be paid for as Sidewalk, Conc, ___ inch.

Removal of the existing curb and sidewalk and/or existing integral curb and sidewalk will be paid separately.

Where there is a step curb, the Integral Curb and Sidewalk shall be constructed to meet the face of the step curb. The exact height of the curb face and the width of the Integral Curb and Sidewalk will vary depending upon the field conditions and shall be constructed as directed by the Engineer. Where the difference between the step curb and gutter elevations is less than 7 inches, the Integral Curb and Sidewalk shall be constructed to eliminate the step.

Measurement and Payment: "Integral Curb and Sidewalk, 2 Feet, Rem, Modified" and "Integral Curb and Sidewalk, 2 Feet, Modified" will be measured and paid for at the contract unit rate per lineal foot and shall include all labor, equipment and material to remove the integral curb and sidewalk, including saw cutting and backfill, and to prepare for and construct the integral curb and sidewalk as specified.

<u>Pay Item</u>	<u>Pay Unit</u>
Integral Curb and Sidewalk, 2 Feet, Rem, Modified	Foot
Integral Curb and Sidewalk, 2 Feet, Modified	Foot

CITY OF DETROIT
SPECIAL PROVISION
FOR
EXCAVATION, EARTH, MODIFIED

DET: MCS

01-12-12

Description: This work consists of excavating materials not otherwise addressed in the contract as a separate work item. This work will be done in accordance with section 205 of the 2012 Michigan Department of Transportation (MDOT) Standard Specifications for Construction, except debris and non hazardous material when encountered, shall not be paid for separately. Experience has shown that most or all of earth excavation may be debris and may require hauling to special disposal sites which will accept this type of material.

Measurement and Payment: "Excavation, Earth, Modified" will be measured per cubic yards. The contract unit price will be payment in full for furnishing all labor, equipment, and materials necessary to excavate and dispose of the material. Where masonry and concrete structures and heavy foundations are encountered, their removal will be paid for as specified for these items.

Pay Item

Pay Unit

Excavation, Earth, Modified

Cubic Yard

CITY OF DETROIT
SPECIFICATIONS
FOR
DRAINAGE STRUCTURE CLEANING AND SEWER LEAD CLEANING

DET: GJM

1 of 1

10-02-15

Description: The work of drainage structure cleaning consists of cleaning existing catch basins and manholes in the area of the project where directed by the Engineer. The work of sewer cleanout consists of cleaning sewer lines between catch basins and between catch basins and manholes.

Construction: When necessary and as directed by the Engineer, the work shall be performed in accordance with Section 403.3.G of the 2012 MDOT Standard Specifications for Construction and as modified herein.

Cleaning shall be by high velocity hydro-cleaning (jetting). Mechanical cleaning shall only be used when authorized by the Engineer. Contractor shall take precautions to protect the sewer lines from damage.

No debris shall be accumulated on site except in totally enclosed containers approved by the Engineer. All material deposits shall be removed from site and disposed of at an approved location.

Some of the catch basins, manholes and sewers may be completely filled. The Engineer shall determine actual condition and necessity for cleaning prior to cleanout. Cleaning shall restore 90% of the pipe's carrying capacity.

Measurement and Payment: "Dr Structure Cleaning, Modified" will consist of cleaning catch basins and manholes, and shall be paid for at the contract unit price each, and will include all equipment and labor necessary to clean each catch basin or manhole, including installation of bulkheads as necessary and hauling away and disposing of any waste and debris generated.

"Dr Structure Lead, Cleaning, Modified" consists of cleaning sewers between catch basins or between catch basins and manholes, and shall be paid for at the contract unit price per foot which will include payment for furnishing all equipment and labor to clean sewers lines regardless of size, temporary bulkheads, and hauling away and disposing of any waste and debris generated.

Pay Item

Pay Unit

Dr Structure Cleaning, Modified
Dr Structure Lead, Cleaning, Modified

Each
Foot

CITY OF DETROIT
SPECIFICATIONS
FOR
STRUCTURE COVERS

DET: AHS

02-07-2020

Description: The work shall consist of furnishing and placing metal frames and covers for new structures or removal and replacement of damaged frames and covers as determined by the Engineer.

Materials:

Gray Iron Castings shall be as specified in Section 908.05. Gray Iron Castings of the 2012 MDOT Standard Specifications for Construction, City of Detroit DPW/CED DWSD Manhole and Catch Basin Drawings No's. 101 thru 113, PLD Manhole and Handhole Drawings, and as specified herein.

The manhole and catch basin frame and its cover or grate shall constitute one unit. Each unit shall conform to the detailed requirement of the respective DPW/CED DWSD/PLD drawing. Each unit shall have a weight, with a tolerance of plus or minus 3 percent, of that specified in the respective DPW/CED DWSD/PLD drawing.

Construction:

The metal frames, covers, and grates on existing manholes and catch basins that are to be reused shall be carefully removed to prevent damage. Any reusable casting damaged by the Contractor shall be replaced with a new casting without additional cost to the City. All salvaged castings that are not to be used on the work shall become the property of the Contractor and shall be promptly removed from the job site.

Measurement and Payment: "Drainage Structure Cover, Type ____" unit prices shall include removing and disposing of existing damaged cover and frame, and furnishing and installing structure cover and frame of the appropriate type.

Pavement removal and replacement, when required will be paid for separately.

<u>Pay Item</u>	<u>Pay Unit</u>
Dr Structure Cover, Type ____, Modified	Each

CITY OF DETROIT
SPECIFICATIONS
FOR
STRUCTURE COVER ADJUSTMENT,
RECONSTRUCTING STRUCTURE, AND
WATER SHUTOFF ADJUSTMENT

DET: AHS

01-19-18

Description: The work consists of adjusting utility structure covers in accordance with the applicable provisions of Section 403 and Section 823 of the 2012 Michigan Department of Transportation (MDOT) Standard Specifications for Construction, except as modified herein.

Utility structure cover adjustments will include all Public Lighting Department (PLD) manholes, and all Detroit Water and Sewerage Department (DWSD) gate wells, sewer manholes and catch basins whose covers are required to be raised or lowered to meet the required new pavement elevations. Water shutoff adjustments will include DWSD water shutoff boxes or stop boxes, and PLD hand holes which are required to be raised or lowered to meet the required new pavement elevations.

Before starting this work, the Contractor and the Engineer, or his representative, shall jointly inspect each structure to evaluate its interior conditions. Access to the structure will be provided by the Contractor. The Engineer, or his representative, shall determine whether the structure is to be adjusted or reconstructed. The Engineer shall also determine if any structure cleaning is necessary to remove existing debris. The Contractor shall remove all debris from the structure resulting from the Contractor's operations.

Materials: Materials used in the adjustment and reconstruction of drainage structures shall be as specified in Section 403. Drainage Structures, of the 2012 MDOT Standard Specifications for Construction.

Construction: Where called for on the plans or authorized by the Engineer, existing structure covers shall be adjusted to the proper elevation in accordance with Section 403 of the 2012 MDOT Standard Specifications for Construction, except as modified herein.

For Case 1 structures, saw cut full depth and remove the adjacent concrete and/or HMA pavement, curb, curb and gutter, or sidewalk as necessary to adjust the structure and cover. Remove an area of pavement and curb at least five (5) feet by five (5) feet around the structure. The existing frame and cover shall be carefully removed and the upper portion of the existing utility structure repaired as necessary and raised or lowered as required. The frame and cover shall then be reset on the adjusted structure so constructed as to hold them firmly in place and reset on a full mortar bed so as to fit the required new pavement grade and cross section. Replace adjacent concrete and/or HMA pavement, curb, curb and gutter, or sidewalk to match existing grades or to the required new pavement grade and cross section.

Case 2 structures shall be those that are located outside of existing pavement, curb, and curb and gutter.

When the existing frames and covers are unacceptable for reuse as determined by the Engineer, new frames and covers shall be furnished and installed. Drainage structure frames and covers shall be as specified in the City of Detroit "Specifications for Manholes and Catch Basins", and as specified in the Plans for DWSD Watergate and PLD Manhole covers. Any reusable frame and cover damaged by the Contractor shall be replaced by the Contractor at no cost to the City. The frames and covers that are not to be used on the work shall become property of the Contractor and shall be promptly removed from the jobsite and properly disposed of.

Where the structure is in need of repair, as determined by the Engineer, in excess of the adjustment limits set forth herein, the existing structure shall be broken down and rebuilt with new materials as specified in the City of Detroit Specifications for Manholes and Catch Basins, to the required new pavement elevations.

A finished concrete collar shall be placed around any structure adjusted that is within five (5) feet of the Detroit Thermal (formerly Detroit Edison) steam lines, as directed by the Engineer. The cost of this shall be paid for separately as Pvmt Repr, Nonreinf Conc, 10 inch, Modified, and measured by the surface area of the concrete collar.

Non-ferrous handholes and covers used by PLD and other City Utilities are made of fiberglass, copolymer propylene or similar material. These structure and covers shall be adjusted by a qualified electrical contractor. The removal of concrete around the perimeter of a non-ferrous handholes shall be performed with light chipping hammers to insure that no damage is done to the handhole, cover or any conduit or other utility that may feed the structure. Any damage to structures, conduits, cable and wiring shall be repaired by the Contractor at no cost to the City or utility.

For HMA pavement sections, immediately before placing the HMA top course or overlay, make final adjustments to drainage structure covers. Equipment will not be permitted to operate over adjusted structures for a period of twenty four (24) hours after their completion, unless otherwise approved by the Engineer.

Measurement and Payment: The completed work as described for adjusting or reconstructing structure will be measured as units and will be paid for at the Contract Unit Price, which price will be payment in full for furnishing all materials, equipment and labor; removal and replacement of concrete or HMA pavement, curb, curb and gutter, sidewalk; excavation, backfilling, disposal of surplus material, removal of all debris and foreign material from the structure (including the sump); adjusting the structure and cover to the required new pavement grade and cross section, with the existing or new cover; and providing access to all structures for inspection, as directed by the Engineer.

Structure damage due to the Contractors operations shall be repaired at the Contractors expense.

"Dr Structure Cover, Adj. Case ___, Modified" shall include the above described work necessary to raise or lower the existing catch basin, manhole or gate well rim elevation involving adjustment, repair or replacement of less than or equal to three (3) layers of bricks, including mortar, regardless of whether or not it is necessary to remove a cone section to accommodate the rim elevation adjustment.

"Reconstructing Dr Structure, Case __, Modified" shall include the above described work necessary to raise or lower the existing catch basin, manhole or gate well structure and cover involving adjustment, repair or replacement of more than three (3) layers of bricks, including mortar, and may include the removal of a cone section to accommodate the rim elevation adjustment.

"Water Shutoff, Adj, Case __, Modified" shall include the above described work necessary to raise or lower the existing structure and cover of water DWSD water shutoff boxes or stop boxes, and PLD hand holes.

<u>Pay Item</u>	<u>Pay Unit</u>
Dr Structure Cover, Adj, Case 1, Modified	Each
Dr Structure Cover, Adj, Case 2, Modified	Each
Reconstructing Dr Structure, Case 1, Modified	Each
Reconstructing Dr Structure, Case 2, Modified	Each
Water Shutoff, Adj, Case 1, Modified	Each
Water Shutoff, Adj, Case 2, Modified	Each

CITY OF DETROIT
SPECIAL PROVISION
FOR
HMA AND CONCRETE PAVEMENT
SEQUENCE OF OPERATIONS AND REQUIREMENTS

DET: AHS

1 of 1

2-07-20

Once work on a street is begun, the Contractor shall maintain a continuous operation.

The Contractor shall schedule the cold-milling operation so that entire lane width of the roadway is cold milled between road terminus limit before switching over to other lane/side. This is required to avoid having vehicles travel over milled surface on one side and normal pavement surface on the other side.

The Contractor shall place a wedge at the base of driveway approaches, a minimum of six (6) inches wide for the full width of the driveway approach, where milling is greater than 2 inches in depth, to provide a smooth transition between the milled surface and driveway approach. The cost of the wedge shall be included in the cost of the "Cold Milling HMA Surface" pay item.

At the end of the day, the Contractor shall place a wedge, a minimum of 6 feet wide, the full length of all transverse and longitudinal joints at intersections where milling is greater than 2 inches in depth, to provide a smooth transition onto and off of the milled surface. The cost of the wedge shall be included in the cost of the "Cold Milling HMA Surface" pay item.

All milled surfaces shall be completely resurfaced with leveling course as soon as possible, but not to exceed 48 hours from the milling unless specifically approved otherwise by the Engineer. Immediately after placement of the leveling course, Type NR temporary pavement markings must be applied in accordance with Section 922 of the 2012 MDOT Standard Specifications for Construction, in order to maintain safe traffic operations, as directed by the Engineer. Type NR temporary pavement markings are considered incidental to the leveling course.

Top Course HMA shall be placed only after all base repairs, concrete curb repairs, and structure adjustments and repairs are completed.

Immediately after placement of the top course, Type R temporary pavement markings must be applied in accordance with Section 922 of the 2012 MDOT Standard Specifications for Construction, in order to maintain safe traffic operations, as directed by the Engineer. Removal of Type R temporary pavement markings is considered incidental to the placement of permanent pavement markings.

All milled surfaces must be completely resurfaced with leveling, top course, and permanent pavement markings before the winter seasonal shutdown; otherwise liquidated damages will be assessed per Section 108.10.C of the 2012 MDOT Standard Specifications for Construction.

It is the Contractor's responsibility to establish the finish (final) grade on all streets and to ensure proper (positive) drainage at all locations.

CITY OF DETROIT
SPECIAL PROVISIONS
FOR
COLD MILLING HMA SURFACE, MODIFIED

1 of 1

DET: UP

Revised: 05-08-12

Description This work shall consist of removing HMA pavement or surface by use of cold-milling equipment to prepare the foundation for HMA overlays per section 501.03 of the 2012 Michigan Department of Transportation (MDOT) Standard Specifications for Construction and as specified herein.

The cost of exploration for the existing street car rails when encountered during cold milling shall be included in the work of cold milling HMA surface. Extra payment for cost of actual removal and disposal of any street car rail will be made per section 103.02

The Contractor shall schedule the cold-milling operation so that entire lane width of the roadway is cold milled between road terminus limit before switching over to other lane/side. This is required to avoid having a vehicle travel over milled surface on one side and normal pavement surface other side.

At the end of the day, the Contractor shall place a wedge, a minimum of 6 feet wide, the full length of all transverse and longitudinal joints at intersections where milling is greater than 2 inches in depth, to provide a smooth transition onto and off of the milled surface.

It is the Contractor's responsibility to establish the finish (final) grade on all streets and to ensure proper (positive) drainage at all locations. This work shall included in the work of cold milling and be done at no additional cost to project.

Measurement and Payment The completed work as measured for "Cold Milling HMA Surface, Modified" will be paid for at the contract unit price for the following contract pay item.

Cold milling of existing concrete patches, and establishing finish (final) grade to ensure proper drainage, the cost of exploration for an existing street car rail when encountered during cold milling and wedging for longitudinal and transverse transition when required is included in the work of "Cold Milling HMA Surface, Modified".

The price shall be payment in full for removing the HMA material to the depth specified on the typical cross section sheet, and for transportation and disposal of the material.

Pay Item

Pay Unit

Cold Milling HMA Surface, Modified

Square Yard

CITY OF DETROIT
SPECIFICATION
FOR
CONDITIONING EXISTING PAVEMENT

DET: GJM

11-30-15

Description. This work shall be in accordance with Subsection 501.03.C of the 2012 Michigan Department of Transportation Standard Specifications for Construction including Removing HMA Patches, Joint and Crack Clean Out, Hand Patching, and Repairing Pavement Joints and Cracks, Detail 7, and, shall include the application of bond coat as required.

Measurement and Payment. "Conditioning Existing Pavement, Modified" will be measured and paid for by the ton of HMA material placed. The contract price per ton will be payment in full for furnishing all labor, material and equipment required to remove deteriorated or unstable HMA material, to clean the pavement surface and apply any bonding material needed, to clean and prep joints and cracks, and to furnish, place and compact the HMA Mixture 4E3 to prepare the existing pavement for the HMA leveling surface.

HMA Patch, Remove; Joint and Crack, Cleanout, Hand Patching, and Pavement Joint and Crack, Repr, Det 7 will not be paid for separately but are included in this item of work.

Full depth Pavement Joint and Crack Repair, Detail 8 is not included in the item of work.

<u>Pay Item</u>	<u>Pay Unit</u>
Conditioning Existing Pavement, Modified	Ton

CITY OF DETROIT
SPECIFICATION
FOR
HMA APPLICATION ESTIMATE

DET: AHS

1 of 1

02-25-19

Description: This Specification covers the furnishing and placing of Hot Mixed Asphalt in accordance with Section 501 of the 2012 MDOT Standard Specifications for Construction.

Material: HMA materials shall be as specified in Section 501.02.

The HMA Leveling Surfacing Mixture 4E3 shall have a yield of 220 pounds per square yard with an estimated thickness of 2 inches.

The HMA Top Surfacing Mixture 5E3 shall have a yield of 165 pounds per square yard with an estimated thickness of 1.5 inches.

Performance Grade; PG 64-22

The material for HMA Approach, Modified shall be 2 inches of HMA Mixture 4E3 for leveling, and 1.5 inches of HMA Mixture 5E3 for top surface, having a total yield of 385 pounds per square yard.

HMA Approach, Driveway, Modified shall be HMA Mixture 5E3, having a yield of 165 pounds per square yard.

HMA Prime Coat and HMA Bond Coat shall be included in the HMA pay item and shall meet the requirements specified in Section 904 of the 2012 MDOT Standard Specifications for construction.

The aggregate wear index shall be 260.

Construction: The HMA shall be produced and placed in accordance with Section 501.03 of the 2012 MDOT Standard Specifications for Construction.

Measurement and Payment: The unit price bid shall be full compensation for all labor, equipment, and materials required to place the HMA as specified.

CITY OF DETROIT
SPECIAL PROVISIONS
FOR
HMA APPROACH, MODIFIED

1 of 1

DET: AHS

Revised: 02-25-19

Description: "HMA Approach, Modified" shall conform to the requirements for "Placing HMA Approaches" of Section 501.03 of the 2012 Michigan Department of Transportation Standard Specifications for Construction except work shall include the construction of Butt Joints when meeting existing pavements and will not be paid for separately. The depth of the Butt Joints shall be as directed by the Engineer. Work at driveway approaches is covered in the Special Provision for "HMA Approach, Driveway, Modified" in this proposal and will be paid as HMA Approach, Driveway, Modified.

Materials: The HMA mixture for the HMA Approach shall be that specified in the Special Provision for "HMA Application Estimate". The HMA mixture to be used for the Butt Joint shall be that used for the leveling HMA mixture as specified in the Special Provision for "HMA Application Estimate".

Measurement and Payment: "HMA Approach, Modified" will be measured per ton. The contract unit price shall include all labor, material and equipment necessary to furnish, place and compact the HMA Approach, Modified as shown on the plans or as directed by the Engineer.

Pay Item

Pay Unit

HMA Approach, Modified

Ton

CITY OF DETROIT
SPECIAL PROVISION
FOR
HMA APPROACH, DRIVEWAY, MODIFIED

1 of 1

DET: AHS

02-25-2019

Description: This work shall include the removal of the existing HMA surface on residential and commercial driveway approaches and the placement and compaction of HMA to provide a smooth transition and positive drainage from the existing approach surface to the new street surface. The work shall conform to the requirements for "Placing HMA Approaches" of Section 501.03 of the 2012 Michigan Department of Transportation Standard Specifications for Construction, except as modified herein.

Material: The material used for residential and commercial driveways shall be as specified in the City of Detroit Special Provision for HMA Application Estimate.

Construction: The driveway approach shall be scraped clean of existing HMA overlay, if any, thoroughly swept clean and be free of moisture and debris before work is started. Bond coat material shall be SS-1h, meeting the requirements of Table 904-4 Anionic Emulsified Asphalts of the Michigan Department of Transportation 2012 Standard Specifications for Construction and shall be applied uniformly at a rate of 0.10 gallons per square yard to the driveway approach and terminate in a neat, straight line at the point indicated by the Engineer. The HMA shall be placed and compacted from the newly constructed pavement surface to a point in the drive which will provide positive drainage from the driveway out to the street flow line.

This work shall be performed after the mainline paving work has cured.

Measurement and Payment: The removal and placement of HMA on residential and commercial driveway approaches will be measured by the weight of material placed in tons, and shall be paid for at the contract unit price per ton which shall be payment in full for furnishing all materials, labor and equipment, including bond coat, required to complete the work as specified.

Pay Item

Pay Unit

HMA Approach, Driveway, Modified

Ton

CITY OF DETROIT
SPECIFICATIONS
FOR
CONCRETE PAVEMENT REPAIR

DET: GJM

1 of 2

11-25-2015

Description. This work shall be in accordance with Section 603. Concrete Pavement Restoration, of the MDOT 2012 Standard Specifications for Construction, and MDOT Standard Plan R-44-F for Concrete Pavement Repair. The work shall consist of saw cutting as necessary for removal of existing concrete base with HMA overlay, preparation of sub base, placing horizontal dowels, placing concrete, joints, finishing, and curing.

Construction. HMA Leveling Course placed over the concrete base repair area shall be removed and paid for in accordance with MDOT Sections 204 and 501 as HMA Surface, Rem.

When removing existing concrete pavement, the pavement shall be removed to an existing joint, or saw cut to a true line with a vertical face along the lines as marked or directed by the Engineer. The pavement shall be saw cut full depth into existing concrete, or as directed by the Engineer. Intermediate saw cuts shall be made as required by Section 603, referenced above. The removal shall be such that there will be no disturbance and/or damage to sections of pavement which are to remain in place. All damaged or undermined pavement caused by the Contractor's operations shall be removed and replaced at the Contractor's expense. The use of a crane and ball type breaking equipment will not be allowed. Pavement removal shall be accomplished with a rubber-tired hydraulic ram or as specified in Section 603 of the MDOT Standard Specifications.

Where subgrade corrections are required due to undesirable or unstable soil conditions as determined by the Engineer, the removal of material and placement of fill shall be performed in accordance with MDOT Section 205, and paid for as Subgrade Undercutting, Type II.

All replacement concrete pavement shall be doweled or anchored to the existing concrete pavement as set forth on Standard Plan R-44-F. All expansion and longitudinal joints shall be restored. Transverse joints within partial width cuts shall be restored to match the joint in other lanes. Transverse joints that fall within full width cuts need not be restored.

The top of the concrete pavement repair shall be placed level with the HMA Leveling Course.

Measurement and Payment. All material, labor and equipment required for constructing concrete pavement repair as specified herein and as shown on the Standard Plans shall be paid for under the unit rates bid for as follows:

Pavt Repr, Nonreinf Conc, ___ inch, Modified, shall include all labor, material and equipment to place the concrete pavement repair including all dowels, anchors, joints, concrete material, finishing and curing.

Pay Item

Pay Unit

Pavt Repr, Nonreinf Conc, ___ inch, Modified
Pavt Repr, Rem, Modified

Square Yard
Square Yard

CITY OF DETROIT
SPECIAL PROVISION
FOR
CURB, CONC, DETAIL CD, MODIFIED

DET: AHS

REVISED: 02-07-2020

Description: "Curb, Conc, Detail CD, Modified" shall be constructed in accordance with details included in these specifications and the 2012 Michigan Department of Transportation Standard Specifications for construction. No reinforcing bars are required. Joints shall be as shown in Michigan Department of Transportation Standard Plan R-30-Series and as directed by the Engineer.

Lawn sprinkler systems, if encountered, shall be protected and repaired, if damaged, by the Contractor at no extra cost.

Restore berm areas disturbed beyond curb limits to its original conditions. No separate payment will be made for such restoration, but is considered part of the work item.

Method of Measurement and Basis of Payment: "Curb, Conc, Detail CD, Modified" will be measured by the linear foot. The contract unit price shall be payment in full for furnishing all materials, labor and equipment necessary to construct this item.

Pay Item

Pay Unit

Curb, Conc, Detail CD, Modified

Foot

CITY OF DETROIT
SPECIFICATIONS
FOR
SIDEWALK RAMP, ADA, AND
DETECTABLE WARNING SURFACE

DET-AHS

Page 1 of 2

02-27-2020

Description: This special provision covers construction of sidewalk ramp with detectable warning surface.

The work consists of excavating, backfilling, compacting, and grading of the disturbed area, and constructing sidewalk ramp and/or retrofitting ramp with detectable warning surface in accordance with the applicable provisions of Section 803 of the 2012 MDOT Standard Specifications for Construction and the current Department of Public Works, City Engineering Division Sidewalk Ramp and Detectable Warning Details R-28 with City of Detroit Thickness Amendment.

Complete this work in conformance with the American with Disability Act (ADA) provisions as applicable.

Material: The Detectable Warning Surface color shall be will be brick red, Federal Color Number 22144, unless otherwise approved by the Engineer. The color shall be homogeneous throughout the tile.

Construction: Construct sidewalk ramp(s), landings flares and detectable warning surface according to MDOT Standard Plan R-28-Series. The concrete sidewalk and ramp thickness shall be as determined by the City of Detroit and as shown on the Department of Public Works, City Engineering Division Sidewalk Ramp and Detectable Warning Details R-28 with City of Detroit Thickness Amendment, included in these Specifications. The Detectable Warning Surface installation shall also comply with the manufacturer's instructions.

The curb and gutter section at the bottom of the ramp (ramp opening) shall be a full depth curb with a minimum depth of 12 inches, and shall be 18 inches from the back of curb to abutting pavement.

It is also the Contractor's responsibility to incorporate any changes made to the ADA accessibility requirements that may take effect prior to the start date of actual construction. If the Contractor determines that any changes significantly alter the original bid cost, the Contractor may submit a written request to the Engineer or his representative for approval and compensation. Include a cost comparison between the original bid cost and the cost of the ADA required changes in the request.

The contractor shall stamp all concrete with a legible stamp bearing the name of the company and the year of construction. No sidewalk or ramp construction shall commence without a Contractor's stamp on site.

Restore berm areas disturbed beyond sidewalk ramp repair limits to its original conditions. No separate payment will be made for such restoration, but is considered part of the work item.

Protect lawn sprinkler systems, if encountered, during removal and construction of sidewalk ramps. All costs associated with the lawn sprinkler protection, restoration, and repair, if damaged, shall be borne by the Contractor and no separate payment shall be made.

Any constructed ramps that do not meet the current MDOT Standard Plan R-28-Series and latest ADA accessibility requirements will be removed and replaced by the Contractor, as directed by the Engineer or his representative, at the Contractor's expense.

Measurement and Payment: The completed work as described herein for Sidewalk Ramp, ADA and Detectable Warning Surface, will be measured as square feet and feet respectively. The contract unit price will be payment in full for furnishing all materials, labor and equipment necessary to construct the ADA ramp and curb and warning surface.

Pay Item

Pay Unit

Sidewalk Ramp, ADA, Modified
Detectable Warning Surface Tile, Modified

Square Foot
Foot

Sidewalk Ramp, ADA, Modified includes the cost of landings, monolithic rolled curbs or side flares along the longitudinal edges of the ramp or landing and curb and gutter opening. The Department will pay for rolled curb adjacent to the non-traffic edge of parallel or combination ramps separately, only if the required height exceeds 18 inches along a continuous run.

CITY OF DETROIT

SPECIFICATION
FOR
SIDEWALKS

DET: AHS

1 of 1

02-27-20

Description: This special provision covers the construction of sidewalk and driveways.

Construction: This item of work includes excavating, backfilling, compacting, and grading of the disturbed area, and construction of concrete sidewalk and driveway.

The concrete sidewalk and driveway shall be removed in accordance with the MDOT Standard Specifications for Construction, Section 204, Removing Miscellaneous Structures and Materials.

Concrete sidewalk and driveway, of the thickness specified, shall be constructed in accordance with Section 803 of the 2012 Michigan Department of Transportation Standard Specifications for Construction. Sidewalk cross slopes shall be between 1% and 2%, sloping towards the street.

Restore berm areas disturbed beyond sidewalk limits to its original conditions. No separate payment will be made for such restoration, but is considered part of the work item.

Protect lawn sprinkler systems, if encountered, during removal and construction of sidewalks and driveways. All costs associated with the lawn sprinkler protection, restoration, and repair, if damaged, shall be borne by the Contractor and no separate payment shall be made.

Measurement and Payment: Concrete sidewalks and driveways of the thickness specified shall be measured in square feet. Payment shall be for the entire flag or flags of sidewalk, or driveway, as marked by the Engineer. The contract unit price shall be payment in full for furnishing all labor, equipment and material necessary to complete the installation of new concrete sidewalk and driveway.

Pay Item

Pay Unit

Sidewalk, Conc, __ inch, Modified

Square Feet

CITY OF DETROIT
SPECIFICATION
FOR
SIDEWALK WITH TREE ROOTS

DET: AHS

1 of 2

02-27-20

Description: This special provision covers the replacement of sidewalks and driveways which have been raised and/or damaged by tree roots and includes the trimming of the tree roots in conjunction with the sidewalk and driveway replacement.

Construction: This item of work includes cutting and removing tree roots, removing wood chips and all debris material and properly disposing of same off site; excavating, backfilling, compacting, and grading of the disturbed area; and construction of concrete sidewalk and driveway.

The concrete sidewalk and driveway shall be removed in accordance with the MDOT Standard Specifications for Construction, Section 204, Removing Miscellaneous Structures and Materials.

All roots or stumps under the sidewalk and driveway area and within four (4) inches of the edges of the sidewalk or driveway, shall be ground to a depth that severs the roots from the main root mass or to a minimum depth of eight (8) inches from the proposed finished grade of the top of the sidewalk. All voids resulting from the removal of roots or stumps shall be backfilled within one (1) day of removal. The Contractor shall fill the voids with clean, compacted backfill as specified in MDOT Standard Specifications for Construction, Section 204.03.C. All debris resulting from the grinding process shall be removed from the site and cannot be used as fill. All roots and grindings shall be removed and disposed of within three (3) days of removal/grinding.

Concrete sidewalk and driveway of the thickness specified shall be constructed in accordance with Section 803 of the 2012 Michigan Department of Transportation Standard Specifications for Construction. Sidewalk cross slopes shall be between 1% and 2%, sloping towards the street.

Restore berm areas disturbed beyond sidewalk limits to its original conditions. No separate payment will be made for such restoration, but is considered part of the work item.

Protect lawn sprinkler systems, if encountered, during removal and construction of sidewalks and driveways. All costs associated with the lawn sprinkler protection, restoration, and repair, if damaged, shall be borne by the Contractor and no separate payment shall be made.

Measurement and Payment: "Sidewalk, Conc, ___ inch, With Tree Roots, Modified" of the thickness specified shall be measured in square feet. Payment shall be for the entire flag or flags of sidewalk, or driveway affected by tree roots as marked by the Engineer. The contract unit price shall be payment in full for furnishing all labor, equipment and material necessary to complete the installation of new concrete sidewalk and driveway.

Pay Item

Pay Unit

Sidewalk, Conc with Tree Roots, ___ inch, Modified

Square Feet

CITY OF DETROIT
SPECIAL PROVISION FOR
POLYMER CEMENT PAVEMENT MARKINGS

FTCH: DPE 1 of 1 02-24-2020

a. Description. This work consists of installing polymer cement surface system (PCSS) pavement markings in accordance with section 811 of the Standard Specifications for Construction, FHWA-MUTCD Interim Approval for Optional Use of Green-Colored Pavement for Bike Lanes (IA-14), FHWA-MUTCD Interim Approval for Optional Use of Red-Colored Pavement for Transit Lines (IA-22), PAVE-900 Series pavement marking standard plans, and as shown in the details on the plans.

b. Materials. Provide the following PCSS materials in accordance with subsection 811.02 of the Standard Specifications for Construction, FHWA-MUTCD-IA-14 and FHWA-MUTCD-IA-22:

- Material: Endurablend
- Produced by: Pavement Surface Coatings, LLC (866-215-6120)

Handle and mix materials according to manufacturer recommendations. Use admixtures and pigments specifically approved for the material and at the rates recommended by the manufacturer or supplier.

c. Construction. Construct pavement marking legends in accordance with subsection 811.03 of the Standard Specifications for Construction, and in accordance with manufacturer requirements or recommendations.

d. Measurement and Payment. The completed work, as described, will be measured and paid as specified in Section 811 of the Standard Specifications for Construction at the contract unit price using the following pay item:

Pay Item Pay Unit

_Pavt Mrkg, Polymer Cement, Base Field, Green.....	Square Feet
_Pavt Mrkg, Polymer Cement, Base Field, Red.....	Square Feet
_Pavt Mrkg, Polymer Cement, Bike Sym, Small, White.....	Each
_Pavt Mrkg, Polymer Cement, Bike Arrow, Small, White.....	Each
_Pavt Mrkg, Polymer Cement, Bike Sharrow Sym, Small, White.....	Each

CITY OF DETROIT
SPECIFICATION
FOR
BERM RESTORATION

DET: AHS

03-05-2020

Description: This specification shall apply when areas of concrete sidewalk or driveway pavement are to be removed but not replaced, and along areas of curb, sidewalk, and ADA ramp replacement. The work shall consist of furnishing and installing topsoil, permanent seeding, sodding or hydroseeding, mulch and fertilizer per the requirements of Section 816 Turf Establishment and Section 917 Turf and Landscape Materials of the 2012 MDOT Standard Specifications for Construction and as modified herein. Lawn sprinkler systems, if encountered, shall be protected and repaired, if damaged, by the Contractor at no extra cost.

Material: For seeding and hydroseeding, the seed mixture shall be THM (Turf Loamy to Heavy) as specified in Section 917, Table 917-1. The chemical fertilizer nutrient shall meet the requirements specified in Subsection 917.10.B.1, Class A Water Soluble Fertilizer. Mulching shall be straw mulch blankets per 917.15.B.2.b, with anchoring material in accordance with Section 917.15.C.5. Sod shall be as specified in Section 917.13.

Construction: Providing and placing topsoil shall be in accordance with Section 816.03.A. The depth of topsoil placed shall vary as necessary to provide a uniform slope after modifying the top of curb elevation. Seed shall be sown in accordance with Section 816.03.C.1 by broadcasting or using the hydroseeding method in accordance with Table 816.1. Fertilizer shall be applied as set forth in Section 816.03.B. Mulch blankets shall be installed and anchored in accordance with Section 816.03.H. Sod shall be placed in accordance with Section 816.03.D. Watering shall be performed in accordance with Section 816.03.I.

Measurement and Payment: The completed work of seeding, either by broadcasting or hydroseeding, will be measured in place by area of square yards applied. The contract unit price will be payment in full for furnishing all labor, equipment, and materials, including mulch, seed and chemical fertilizer nutrient, necessary to apply the seed, fertilizer and mulch.

Sodding and watering shall be paid for in accordance with Section 816.04 of the MDOT Standard Specifications.

Topsoil shall be measured and paid for per cubic yard (loose measure). The contract unit price shall be payment in full for furnishing all labor, equipment, and materials, including topsoil, necessary to apply the topsoil.

Restoration up to 3 feet in width paralleling each edge of curb, sidewalk, ADA ramp, or driveway replacement, shall be considered routine restoration and shall be incidental to those pay items.

Restoration exceeding 3 feet in width along curb, sidewalk, ADA ramp, or driveway replacement resulting from excessive excavation and grading, as approved by the Engineer, shall be paid separately from those pay items.

Pay Item

Pay Unit

Topsoil Surface, Furn, LM, Modified
Seeding, Mixture THM, Modified

Cubic Yard
Square Yard

CITY OF DETROIT
SPECIFICATION
FOR
SIDEWALK REPAIR NOTIFICATIONS

1 of 1

DET: PAL

02-28-2020

Description: The Contractor shall provide notification in the form of door hangers to residents and businesses impacted by the pending sidewalk and ADA ramp construction activities.

Material: Specifications for the door hangers are as follows:

Door Hanger Size:	11 inches by 17 inches, folded in half vertically
Page orientation:	Portrait
Paper quality:	80 lb bright orange card stock with aqueous coating
2-sided printing:	Yes
Color printing:	Black and White

Each door hanger will be printed with the notification in four (4) languages; English, Arabic, Spanish and Bengali, as indicated in the example provided with this specification. A template for the door hanger will be provided by the Engineer.

Construction: One door hanger is to be hung on the accessible front door or gate of each residence or business where sidewalks and/or driveway are to be replaced and at the nearest occupied side parcels a minimum of three (3) calendar days and no more than seven (7) calendar days in advance of sidewalk removal. Impacted residents and businesses include the location where sidewalk flags are to be replaced and any neighboring residents or businesses whose access to their property may be limited by the construction activities.

Measurement and Payment: The completed work of hanging the sidewalk notifications will be paid based on the percent of completed construction work. The contract unit price will be payment in full for furnishing all labor, equipment, and materials to print and hang the door hangers.

Pay Item

Pay Unit

Door Hanger Notifications, Modified

Lump Sum

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
DEBRIS OR MATERIALS IN TRAFFIC LANES

CFS:BRZ

1 of 1

APPR:EMB:DAJ:01-10-08
FHWA:APPR:06-01-11

Delete Subsection 104.07.B.2 on page 36 of the Standard Specifications for Construction, in its entirety and replace it with the following:

2. **Construction Safety Program.** Before beginning work on the project, the Contractor must submit a written "Construction Safety Program" that outlines the plan and procedures for preventing and mitigating accidents and fires on the project and meeting all health and safety requirements of the contract. Also in the program include provisions for meeting the requirements of subsection 812.03 and details for the materials and equipment that will be used to prevent construction related debris or materials from entering the open lanes of traffic and what actions, including traffic control measures, will be taken to immediately and safely remove the debris or material from the roadway. The Contractor must meet with the Engineer to discuss the "Construction Safety Program" and to develop mutual understandings to govern the administration and enforcement of the program.

Replace the second sentence in the first paragraph of Subsection 104.07.C.3 on page 37 of the Standard Specifications for Construction with the following:

The Contractor is responsible, at the Contractor's expense, to provide the necessary materials and equipment to prevent construction related debris or materials from entering the open lanes of traffic. This includes protection of traffic controls, removal of spilled materials or debris from the roadbed or drainage courses, and repair of damaged facilities necessary for public travel and safety.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
HIGH VISIBILITY CLOTHING

SSA:JDG

1 of 1

APPR:MWB:CRB:06-18-14

FHWA:APPR:06-27-14

Add the following, to the end, of subsection 104.07.B, Safety and Health Requirements, on page 36 of the Standard Specification for Construction:

4. **Worker Visibility.** Effective November 24, 2008, all workers within the right-of-way who are exposed to traffic or to construction equipment within the work area, must wear high visibility clothing.

High visibility clothing or high visibility safety apparel is personal protective safety clothing that is intended to provide conspicuity during both daytime and nighttime usage. High Visibility safety apparel must meet the Performance Class 2 or 3 requirements of the American National Standards Institute/International Safety Equipment Association (ANSI/ISEA) 107-2004 for High-Visibility Safety Apparel and subsequent revisions thereof.

Costs incurred to comply with this requirement will be the responsibility of the Contractor.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
SWEEPING

CFS:DBP

1 of 1

APPR:JKG:GCT:03-10-06
FHWA:APPR:06-01-11

a. Description. This work consists of sweeping pavements in the construction area, including service roads and cross streets, as directed by the Engineer.

b. Equipment. The sweeper must be a self-propelled or towed street sweeper equipped with pickup attachments and curb brushes.

c. Sweeping. Paved surfaces must be swept as often as necessary as directed by the Engineer.

Paved roadbeds must be given a final cleaning within 5 working days prior to opening the pavement surface to traffic or notification by the Contractor that the work is completed, whichever occurs first.

d. Measurement and Payment. The work of sweeping will not be paid for separately, but payment will be considered as having been included in other contract items.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
CONSTRUCTION STAGING AREAS

DES:LFS

1 of 1

APPR:JJG:KAS:10-06-11

FHWA:APPR:10-11-11

Add the following subsection to section 107, on page 70 of the 2012 Standard Specifications for Construction:

107.22 Construction Staging Areas. The contractor must not use any public recreation area as a staging area, marshalling yard, storage facility, or for any other construction support unless it is defined in the contract.

Public recreation areas include: parks, trails, game areas, wildlife and waterfowl refuges, playgrounds, golf courses, athletic fields or similar areas which are publically owned by public school districts, local, state, or federal governments.

Any agreements negotiated between the Contractor and the owner of the public recreation area, before or after the award of the contract will not be considered valid by the Department.

If the Engineer determines the Contractor is in non-compliance with this subsection, penalties up to and including termination of the contract, in accordance with subsection 108.12, may be enacted as well as the immediate restoration of the public recreation area at the Contractor's cost.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
SAMPLING ASPHALT BINDER ON LOCAL AGENCY PROJECTS

CFS:MF

1 of 1

APPR:JAR:JTL:12-19-01
FHWA:CON. APPR:06-06-11

For informational purposes, original samples of asphalt binder will be taken by the Contractor and delivered to the Engineer prior to incorporation into the mixture. The frequency of sampling will be determined by the Engineer. The cost of obtaining and delivering the samples to the Engineer will be included in the hot mix asphalt (HMA) pay items.

The Contractor must certify in writing that the materials used in the HMA mixture are from the same source as the materials used in developing the HMA mixture design and the bond coat is from an approved supplier as stated in the *Material Quality Assurance Procedures Manual*.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
RECYCLED HOT MIX ASPHALT MIXTURE ON LOCAL AGENCY PROJECTS

CFS:KPK

1 of 2

APPR:JWB:CJB:03-13-14

FHWA:APPR:03-13-14

Add the following subsection to subsection 501.02.A.2, on page 234 of the Standard Specifications for Construction.

- c. **Reclaimed Asphalt Pavement (RAP) and Binder Grade Selection.** The method for determining the binder grade in HMA mixtures incorporating RAP is divided into three categories designated Tier 1, Tier 2 and Tier 3. Each tier has a range of percentages that represent the contribution of the RAP binder toward the total binder, by weight. The tiers identified below apply to HMA mixtures with the following exception: Superpave mixture types E3, E3 High Stress, E10, E10 High Stress, E30, E30 High Stress, E50, and E50 High Stress used as leveling or top course must be limited to a maximum of 27 percent RAP binder by weight of the total binder in the mixture.

Recycled materials may be used as a substitute for a portion of the new materials required to produce HMA mixtures in accordance with contract.

- **Tier 1 (0% to 17% RAP binder by weight of the total binder in the mixture).** No binder grade adjustment is made to compensate for the stiffness of the asphalt binder in RAP.
- **Tier 2 (18% to 27% RAP binder by weight of the total binder in the mixture).** For all mixtures no binder grade change will occur in Tier 2 for all shoulder and temporary road mixtures.

The required asphalt binder grade must be at least one grade lower for the low temperature than the design binder grade required for the specified project mixture type. Lowering the high temperature of the binder one grade is optional. For example, if the design binder grade for the mixture type is PG 58-22, the required grade for the binder in the HMA mixture containing RAP would be a PG 52-28 or a PG 58-28.

For Marshall Mixes, no binder grade change will be required when Average Daily Traffic (ADT) is above 7000 or Commercial Average Daily Traffic (CADT) is above 700. No binder grade change will occur for LVSP, E03 and E1 mixtures used as leveling or top course.

The asphalt binder grade can also be selected using a blending chart for high and low temperatures. Supply the blending chart and the RAP test data used in determining the binder selection according to *AASHTO M 323*.

- **Tier 3 ($\geq$ 28% RAP binder by weight of the total binder in the mixture).** The binder

grade for the asphalt binder is selected using a blending chart for high and low temperatures per *AASHTO M 323*. Supply the blending chart and the RAP test data used in determining the binder selection.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
PRICE ADJUSTMENTS ON PERFORMANCE GRADE ASPHALT BINDERS

CFS:TRC

1 of 6

APPR:KPK:JWB:06-06-16

FHWA:APPR:06-07-16

a. Description. This special provision provides the pay adjustment process for hot mix asphalt (HMA) pay items regarding the performance grade (PG) asphalt binder. The project specific PG asphalt binder(s) are listed in the HMA Application Estimate Table found on the plans. Provide the PG binder according to the requirements of the standard specifications, except where modified herein.

b. Terminology.

Asphalt Binder Sample. The Asphalt Binder Sample is obtained by the Contractor once per day for every asphalt binder grade that is being incorporated into any HMA mixture. Submit the Asphalt Binder Sample to the Engineer. The specification testing will be performed by the Construction Field Services (CFS) HMA Laboratory or a third party *AASHTO* accredited asphalt binder laboratory, other than the laboratory potentially designated as the dispute laboratory.

Base Price. Price established by the Department to be used in calculating incentives or adjustments to pay items and shown in the contract.

c. Materials. Ensure the PG asphalt binder(s) meets the requirements of the standard specifications.

Asphalt binder prepared with reclaimed engine oil based products is prohibited.

Direct in-line blending of polymer at the hot mix plant is allowed if the Contractor is one of the approved manufacturers listed in the MDOT Materials Source Guide.

Ensure the modified asphalt binder complies with the requirements shown in Table 6 or Table 7.

If polymers and modifiers other than styrene-butadiene-styrene (SBS) or styrene-butadiene rubber (SBR) are used for asphalt binder modifications, approval from MDOT is required before they are used.

The Contractor may substitute a better asphalt binder grade at no cost to the Department. Notify the Department of this substitution at the pre-production meeting. The Contractor may substitute an asphalt binder grade that is higher on the high temperature end and/or lower on the low temperature end. For example, if the project requires PG 58-22 in the base course, the Contractor could use PG 64-22, PG 58-28, or PG 64-28. Specification testing will pertain to the actual asphalt binder grade used in the HMA mixture.

d. Asphalt Binder Samples. Obtain the Asphalt Binder Sample, correctly label the sample

container, and complete a Sample Identification (Bituminous Material) (Form 1923B). Ensure the form is filled out correctly and completely, and signed before the sample is given to the Engineer. Ensure the Asphalt Binder Sample is taken from a sampling spigot located on the pipeline supplying asphalt binder to the plant, in a position between the asphalt binder pump and the point where the asphalt binder enters the mixture. Personnel safety is critical in selecting the position of the sampling spigot.

Collect the Asphalt Binder Sample in three one-pint (16 ounce), slip top, seamless ointment tins. Ensure the tins are at least three quarters full. The Contractor will keep possession of one tin and the Engineer will take possession of two tins. If the Asphalt Binder Sample has the "P" designation (e.g., PG 70-28P), obtain six one-pint containers. The Contractor will keep possession of two tins, and the Engineer will take possession of four tins. Label all tins in a legible format with the following information:

- MDOT control section and job number
- Binder grade
- Binder supplier certifier number
- Date sampled
- Mix type

The Engineer may request to witness the sampling of the asphalt binder upon any visit to the HMA plant. The Engineer will complete the 1923B form for the witness sample. The witness sample will become the Asphalt Binder Sample of record for that specific asphalt binder grade. Any other asphalt binder sample of that grade taken that same day will be discarded.

The Contractor is responsible for keeping the MDOT Binder Certification Documents on file for a period of 3 years after the project completion date. The Engineer may request a copy of the MDOT Binder Certification Documents at any time. If requested, ensure these copies are presented to the Engineer. The Engineer will review these documents and communicate any problems that may arise.

e. Price Adjustments.

1. Ensure Asphalt Binder Samples are taken daily prior to incorporation into the HMA mixture. The Engineer will witness and obtain a minimum of one Asphalt Binder Sample for every PG asphalt binder grade being supplied to the project except for HMA mixtures that are used for temporary pavement or accepted by visual inspection criteria. When the witnessed Asphalt Binder Sample of a specific PG binder grade falls within the ranges shown in Tables 1 through 5, the contract base price for the HMA mixture containing the out of specification binder will be reduced by the percentage shown in the table for that days production represented by the sample. If multiple tests on an Asphalt Binder Sample are out of specification, the greatest price reduction from Tables 1 through 5 will apply. If the price reduction is 50 percent, the day of production will be evaluated by the Engineer. If the Engineer determines that removal is warranted, the Contractor must remove and replace the pavement at no additional cost to the Department. The CFS HMA Laboratory will continue testing to determine the extent of the non-specification asphalt binder.

2. The Engineer may test any Asphalt Binder Sample to ensure it meets the requirements of the standard specifications. When the Asphalt Binder Sample of a specific PG binder grade falls within the ranges shown in Tables 1 through 5, the contract base price for the HMA mixture containing the out of specification binder will be reduced by the percentage shown in

the table for that days production represented by the sample. If multiple tests on an Asphalt Binder Sample are out of specification, the greatest price reduction from Tables 1 through 5 will apply. If the price reduction is 50 percent, the day of production will be evaluated by the Engineer. If the Engineer determines that removal is warranted, the Contractor must remove and replace the pavement at no additional cost to the Department.

3. When the HMA Application Estimate Table specifies a polymer modified PG asphalt binder, they will be identified by the suffix "P" at the end of the grade (e.g., PG 70-28P). In addition to subsections e.1. and e.2. of this special provision, the polymer modified PG asphalt binder must also meet the criteria shown in Tables 6 or 7. If the polymer modified PG asphalt binder fails to meet the criteria shown in Tables 6 or 7, the contract base price for the bituminous mixture containing the out of specification asphalt binder will be decreased by 25 percent for the day of production represented by the sample. This 25 percent will be in addition to any price reductions incurred from Tables 1 through 5.

4. If any of the following four situations occur, the Engineer will evaluate those days of production. The Engineer will require the Contractor to remove and replace the pavement at no additional cost to the Department, or if the pavement is not removed, a 50 percent reduction in the contract base price will be imposed on the HMA mixture.

- Asphalt binder supplier is not on the approved certifier's list or has not been approved through acceptance testing for this project.
- The Certification Document states less than the minimum grade of binder, as specified by the contract, is used in the HMA mixture.
- An Asphalt Binder Sample is not taken.
- Any of the specified one pint sample tins are less than three quarters full.

f. Dispute Resolution Process for Asphalt Binder Samples. If the asphalt binder test results performed by CFS HMA laboratory fall within the ranges shown in Tables 1 through 5, and/or fail to meet the criteria shown in Tables 6 or 7, the Asphalt Binder Sample is eligible for Dispute Resolution. The Dispute Resolution process is as follows:

1. The Contractor must send their corresponding retained asphalt binder sample to an AASHTO accredited asphalt binder laboratory for PG Binder Grade Verification. These results must verify the disputed PG asphalt binder grade.

2. Submit a request for Asphalt Binder Dispute Resolution testing electronically to the Engineer, within 15 working days of being notified of Asphalt Binder Sample failing to meet specification. The request must include the test results that verify the disputed corresponding PG asphalt binder grade. A signed statement certifying that the test results represent the disputed corresponding PG grade is required.

3. The Engineer will document receipt of the request for Dispute Resolution and test results from the Contractor. The Engineer will notify MDOT CFS Laboratory within 2 working days of the receipt of the request.

4. The CFS HMA Laboratory will send the Dispute Resolution asphalt binder sample to a third party AASHTO accredited asphalt binder laboratory for PG Binder Grade Verification.

5. All Dispute Resolution results will replace the original Asphalt Binder results.

6. If any of the Dispute Resolution results fall within the limits shown in Tables 1 through 5, and/or fail to meet criteria in Tables 6 or 7, all costs associated with completing the Dispute Resolution sample will be borne by the Contractor.

7. If the Dispute Resolution results do not fall within the limits shown in Tables 1 through 5, and/or meet criteria in Tables 6 or 7, all costs associated with completing the Dispute Resolution sample will be borne by the Department.

g. Measurement and Payment. Payment for this work is considered included in the price bid for the applicable HMA items of work.

Table 1: Dynamic Shear Rheometer Original Material

% Reduction	Spec. Range (kPa)
2.5	0.98 - <1.00
5	0.93 - <0.98
10	0.88 - <0.93
15	0.83 - <0.88
20	0.78 - <0.83
30	0.73 - <0.78
40	0.68 - <0.73
50	less than 0.68

Table 2: Dynamic Shear Rheometer RTFO Material

% Reduction	Spec. Range (kPa)
2.5	2.08 - <2.20
5	1.98 - <2.08
10	1.88 - <1.98
15	1.78 - <1.88
20	1.68 - <1.78
30	1.58 - <1.68
40	1.48 - <1.58
50	less than 1.48

Table 3: Dynamic Shear Rheometer PAV Material

% Reduction	Spec. Range (kPa)
2.5	>5000 - 5350
5	>5350 - 5600
10	>5600 - 5850
15	>5850 - 6100
20	>6100 - 6350
30	>6350 - 6600
40	>6600 - 6850
50	greater than 6850

Table 4: Bending Beam Rheometer Stiffness

% Reduction	Spec. Range (MPa)
2.5	>300 - 309
5	>309 - 324
10	>324 - 339
15	>339 - 351
20	>351 - 369
30	>369 - 384
40	>384 - 399
50	greater than 399

Table 5: Bending Beam Rheometer M-Value

% Reduction	Spec. Range
2.5	0.292 - <0.300
5	0.285 - <0.292
10	0.270 - <0.285
15	0.255 - <0.270
20	0.240 - <0.255
30	0.225 - <0.240
40	0.210 - <0.225
50	less than 0.210

Table 6. Requirements for Styrene-Butadiene-Styrene (SBS) Modified Binders

Test	Asphalt Grade PG 58-34(P), PG 64-28(P) PG 70-22(P), PG 70-28(P)	Asphalt Grade PG 64-34(P), PG 76-22(P), PG 76-28(P)
Tests On Original Binder, (a)		
Separation of Polymer ASTM D 5892-96a 163°C, 48 hours, (R & B difference between top and bottom), Maximum	2	2
Force Ratio AASHTO T300-95 4°C, 50 mm/min.; 300 mm elongation, Minimum	0.30	0.35
Tests On Residue From Rolling Thin Film Oven, (a)		
Elastic Recovery AASHTO T301-95, 25°C 100 mm elongation, and cut immediately, % Minimum	60	70
a. Report DSR values for $G^*/\sin \delta$, and the phase angle at the high-grade temperature on the original and on the RTFO residue for informational purposes.		

Table 7. Requirements for Styrene-Butadiene-Rubber (SBR) Modified Binders

Test	Asphalt Grade PG 58-34(P), PG 64-28(P) PG 70-22(P), PG 70-28(P)	Asphalt Grade PG 64-34(P), PG 76-22(P), PG 76-28(P)
Tests On Original Binder, (a)		
Separation Of Polymer ASTM D 5892-96a 163°C, 48 hours, (R & B difference between top and bottom), Maximum	2	2
Toughness ASTM D 5801 25°C, 500 mm/min Newton-Meters (inch-pounds), Minimum	12.5 (110)	12.5 (110)
Tenacity ASTM D 5801 25°C, 500 mm/min, Newton-Meters (inch-pounds)	8.5 (75)	8.5 (75)
Tests on Residue from Rolling Thin Film Oven, (a)		
Elastic Recovery AASHTO T301-95, 25°C 100 mm elongation, and cut immediately, %minimum	40	50
a. Report DSR values for $G^*/\sin \delta$, and the phase angle at the high-grade temperature on the original and on the RTFO residue for informational purposes.		

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
ACCEPTANCE OF HOT MIX ASPHALT MIXTURE ON LOCAL AGENCY PROJECTS

CFS:KPK

1 of 7

APPR:CJB:JWB:07-05-16

FHWA:APPR:07-05-16

a. Description. This special provision provides sampling and testing requirements for local agency projects using the roller method and the nuclear density gauge testing. Provide the hot mix asphalt (HMA) mixture in accordance with the requirements of the standard specifications, except where modified herein.

b. Materials. Provide aggregates, mineral filler (if required), and asphalt binder to produce a mixture proportioned within the master gradation limits shown in the contract, and meeting the uniformity tolerance limits in Table 1.

Table 1: Uniformity Tolerance Limits for HMA Mixtures

Parameter		Top and Leveling Course		Base Course	
Number	Description	Range 1 (a)	Range 2	Range 1 (a)	Range 2
1	% Binder Content	-0.30 to +0.40	±0.50	-0.30 to +0.40	±0.50
2	% Passing	# 8 and Larger Sieves	±5.0	±8.0	±7.0
		# 30 Sieve	±4.0	±6.0	±6.0
		# 200 Sieve	±1.0	±2.0	±2.0
3	Crushed Particle Content (b)	Below 10%	Below 15%	Below 10%	Below 15%
a. This range allows for normal mixture and testing variations. The mixture must be proportioned to test as closely as possible to the Job-Mix-Formula (JMF).					
b. Deviation from JMF.					

Parameter number 2 as shown in Table 1 is aggregate gradation. Each sieve will be evaluated on one of the three gradation tolerance categories. If more than one sieve is exceeding Range 1 or Range 2 tolerances, only the one with the largest exceedance will be counted as the gradation parameter.

The master gradation should be maintained throughout production; however, price adjustments will be based on Table 1. Aggregates which are to be used in plant-mixed HMA mixtures must not contain topsoil, clay, or loam.

c. Construction. Submit a Mix Design and a JMF to the Engineer. Do not begin production and placement of the HMA until receipt of the Engineer's approval of the JMF. Maintain the binder content, aggregate gradation, and the crushed particle content of the HMA mixture within the Range 1 uniformity tolerance limits in Table 1. For mixtures meeting the definition of top or leveling course, field regress air void content to 3.5 percent with liquid asphalt cement unless

specified otherwise on HMA application estimate. For mixtures meeting the definition of base course, field regress air void content to 3.0 percent with liquid asphalt cement unless specified otherwise on HMA application estimate.

Ensure all persons performing Quality Control (QC) and Quality Assurance (QA) HMA field sampling are "Local Agency HMA Sampling Qualified" samplers. At the Pre-Production or Pre-Construction meeting, the Engineer will determine the method of sampling to be used. Ensure all sampling is done in accordance with *MTM 313 (Sampling HMA Paving Mixtures)* or *MTM 324 (Sampling HMA Paving Mixtures Behind the Paver)*. Samples are to be taken from separate hauling loads.

For production/mainline type paving, obtain a minimum of two samples, each being 20,000 grams, each day of production, for each mix type. The Engineer will sample and maintain possession of the sample. Sampling from the paver hopper is prohibited. Each sample will be divided into two 10,000 gram parts with one part being for initial testing and the other part being held for possible dispute resolution testing. Obtain a minimum of three samples for each mix type regardless of the number of days of production.

Obtain samples that are representative of the day's paving. Sample collection is to be spaced throughout the planned tonnage. One sample will be obtained in the first half of the tonnage and the second sample will be obtained in the second half of the tonnage. If planned paving is reduced or suspended, when paving resumes, the remaining sampling must be representative of the original intended sampling timing.

Ensure all persons performing testing are Bit Level One certified or Bit QA/QC Technician certified.

Ensure daily test samples are obtained, except, if the first test results show that the HMA mixture is in specification, the Engineer has the option of not testing additional samples from that day.

At the Pre-Production or Pre-Construction meeting, the Engineer and Contractor will collectively determine the test method for measuring asphalt content (AC) using *MTM 319 (Determination of Asphalt Content from Asphalt Paving Mixtures by the Ignition Method)* or *MTM 325 (Quantitative Extraction of Bitumen from HMA Paving Mixtures)*. Back calculation will not be allowed for determining asphalt content.

Ensure all labs performing local agency acceptance testing are qualified labs per the *HMA Production Manual* and participate in the MDOT round robin process, or they must be *AASHTO Materials Reference Laboratory* (AMRL) accredited for *AASHTO T 30* or *T 27*, and *AASHTO T 164* or *T 308*. Ensure on non-National Highway System (NHS) routes, Contractor labs are made available, and may be used, but they must be qualified labs as previously stated. Contractor labs may not be used on NHS routes. Material acceptance testing will be completed by the Engineer within 14 calendar days, except holidays and Sundays, for projects with less than 5,000 tons (plan quantity) of HMA and within 7 calendars days, except holidays and Sundays, for projects with 5,000 tons (plan quantity) or more of HMA, after the Engineer has obtained the samples. QA test results will be provided to the Contractor after the Engineer receives the QC test results. Failure on the part of the Engineer or the laboratory to provide Quality Assurance test results within the specified time frame does not relieve the Contractor of their responsibility to provide an asphalt mix within specifications.

The correlation procedure for ignition oven will be established as follows. Asphalt binder content based on ignition method from MTM 319. Gradation (*ASTM D 5444*) and Crushed particle content (*MTM 117*) based on aggregate from *MTM 319*. The incineration temperature will be established at the Pre-Production Meeting. The Contractor will provide a laboratory mixture sample to the acceptance laboratory to establish the correction factor for each mix. Ensure this sample is provided to the Engineer a minimum of 14 calendar days prior to production.

For production/mainline type paving, the mixture may be accepted by visual inspection up to a quantity of 500 tons per mixture type, per project (not per day). For non-production type paving defined as driveways, approaches, and patching, visual inspection may be allowed regardless of the tonnage.

The mixture will be considered out-of-specification, as determined by the acceptance tests, if for any one mixture, two consecutive tests per parameter, (for Parameter 2, two consecutive aggregate gradations on one sieve) are outside Range 1 or Range 2 tolerance limits. If a parameter is outside of Range 1 tolerance limits and the second consecutive test shows that the parameter is outside of Range 2, then it will be considered to be a Range 1 out-of-specification. Consecutive refers to the production order and not necessarily the testing order. Out-of-specification mixtures are subject to a price adjustment per the Measurement and Payment section of this special provision.

Contractor operations will be suspended when the mixture is determined to be out-of-specification, but contract time will continue to run. The Engineer may issue a Notice of Non-Compliance with Contract Requirements (Form 1165), if the Contractor has not suspended operations and taken corrective action. Submit a revised JMF or proposed alterations to the plant and/or materials to achieve the JMF to the Engineer. Effects on the Aggregate Wear Index (AWI) and mix design properties will be taken into consideration. Production and placement cannot resume until receipt of the Engineer's approval to proceed.

Pavement in-place density will be measured using one of two approved methods. The method used for measuring in-place density will be agreed upon at a pre-production or pre-construction meeting.

Pavement in-place density tests will be completed by the Engineer during paving operations and prior to traffic staging changes. Pavement in-place density acceptance testing will be completed by the Engineer prior to paving of subsequent lifts and being open to traffic.

Option 1 – Direct Density Method

Use of a nuclear density gauge requires measuring the pavement density using the Gmm from the JMF for the density control target. The required in-place density of the HMA mixture must be 92.0 to 98.0 percent of the density control target. Nuclear density testing and frequency will be in accordance with the *MDOT Density Testing and Inspection Manual*.

Option 2 – Roller Method

The Engineer may use the Roller Method with a nuclear or non-nuclear density gauge to document achieving optimal density as discussed below.

Use of the density gauge requires establishing a rolling pattern that will achieve the required in-place density. The Engineer will measure pavement density with a density gauge using the Gmm from the JMF for the density control target.

Use of the Roller Method requires developing and establishing density frequency curves, and meeting the requirements of Table 2. A density frequency curve is defined as the measurement and documentation of each pass of the finished roller until the in-place density results indicate a decrease in value. The previous recording will be deemed the optimal density. The Contractor is responsible for establishing and documenting an initial or QC rolling pattern that achieves the optimal in-place density. When the density frequency curve is used, the Engineer will run and document the density frequency curve for each half day of production to determine the number of passes to achieve the maximum density. Table 5, located at the end of this special provision, can be used as an aid in developing the density frequency curve. The Engineer will perform density tests using an approved nuclear or non-nuclear gauge per the manufacturer's recommended procedures.

Table 2: Minimum Number of Rollers Recommended Based on Placement Rate

Average Laydown Rate, Square Yards per Hour	Number of Rollers Required (a)	
	Compaction	Finish
Less than 600	1	1 (b)
601 - 1200	1	1
1201 - 2400	2	1
2401 - 3600	3	1
3601 and More	4	1
a. Number of rollers may increase based on density frequency curve.		
b. The compaction roller may be used as the finish roller also.		

After placement, roll the HMA mixture as soon after placement as the roller is able to bear without undue displacement or cracking. Start rolling longitudinally at the sides of the lanes and proceed toward the center of the pavement, overlapping on successive trips by at least half the width of the drum. Ensure each required roller is 8 tons minimum in weight unless otherwise approved by the Engineer.

Ensure the initial breakdown roller is capable of vibratory compaction and is a maximum of 500 feet behind the paving operations. The maximum allowable speed of each roller is 3 miles per hour (mph) or 4.5 feet per second. Ensure all compaction rollers complete a minimum of two complete rolling cycles prior to the mat temperature cooling to 180 degrees Fahrenheit (F). Continue finish rolling until all roller marks are eliminated and no further compaction is possible. The Engineer will verify and document that the roller pattern has been adhered to. The Engineer can stop production when the roller pattern is not adhered to.

d. Measurement and Payment. The completed work, as described, will be measured and paid for using applicable pay items as described in subsection 501.04 of the Standard Specifications for Construction, or the contract, except as modified below.

Base Price. Price established by the Department to be used in calculating incentives and adjustments to pay items and shown in the contract.

If acceptance tests, as described in section c. of this special provision, show that a Table 1 mixture parameter exceeds the Range 1, but not the Range 2, tolerance limits, that mixture parameter will be subject to a 10 percent penalty. The 10 percent penalty will be assessed based on the acceptance tests only unless the Contractor requests that the 10,000 gram sample part retained for possible dispute resolution testing be tested. The Contractor has 4 calendar days from receipt of the acceptance test results to notify the Engineer, in writing, that dispute resolution testing is requested. The Contractor's QC test results for the corresponding QA test results must result in an overall payment greater than QA test results otherwise the QA tests will not be allowed to be disputed. The Engineer has 4 calendar days to send the dispute resolution sample to the lab once dispute resolution testing is requested. The dispute resolution sample will be sent to an independent lab selected by the Local Agency, and the resultant dispute test results will be used to determine the penalty per parameter, if any. Ensure the independent lab is a MDOT QA/QC qualified lab or an AMRL HMA qualified lab. The independent lab must not have conflicts of interest with the Contractor or Local Agency. If the dispute testing results show that the mixture parameter is out-of-specification, the Contractor will pay for the cost of the dispute resolution testing and the contract base price for the material will be adjusted, based on all test result parameters from the dispute tests, as shown in Table 3 and Table 4. If the dispute test results do not confirm the mixture parameter is out-of-specification, then the Local Agency will pay for the cost of the dispute resolution testing and no price adjustment is required.

If acceptance tests, as described in section c. of this special provision, show that a Table 1 mixture parameter exceeds the Range 2 tolerance limits, the 10,000 gram sample part retained for possible dispute resolution testing will be sent, within 4 calendar days, to the MDOT Central Laboratory for further testing. The MDOT Central Laboratory's test results will be used to determine the penalty per mixture parameter, if any. If the MDOT Central Laboratory's results do not confirm the mixture parameter is out-of-specification, then no price adjustment is required. If the MDOT Central Laboratory's results show that the mixture is out-of-specification and the Engineer approves leaving the out-of-specification mixture in place, the contract base price for the material will be adjusted, based on all parameters, as shown in Table 3 and Table 4.

In the case that the Contractor disputes the results of the test of the second sample obtained for a particular day of production, the test turn-around time frames given would apply to the second test and there would be no time frame on the first test.

The laboratory (MDOT Central Laboratory or independent lab) will complete all Dispute Resolution testing and return test results to the Engineer, who will provide them to the Contractor, within 13 calendar days upon receiving the Dispute Resolution samples.

In all cases, when penalties are assessed, the penalty applies to each parameter, up to two parameters, that is out of specification.

Table 3: Penalty Per Parameter

Mixture Parameter out-of-Specification per Acceptance Tests	Mixture Parameter out-of-Specification per Dispute Resolution Test Lab	Price Adjustment per Parameter
NO	N/A	None
YES	NO	None
	YES	Outside Range 1 but not Range 2: decrease by 10%
		Outside Range 2: decrease by 25%

The quantity of material receiving a price adjustment is defined as the material produced from the time the first out-of-specification sample was taken until the time the sample leading to the first in-specification test was taken.

Each parameter of Table 1 is evaluated with the total price adjustment applied to the contract base price based on a sum of the two parameter penalties resulting in the highest total price adjustment as per Table 4. For example, if three parameters are out-of-specification, with two parameters outside Range 1 of Table 1 tolerance limits, but within Range 2 of Table 1 limits and one parameter outside of Range 2 of Table 1 tolerance limits and the Engineer approves leaving the mixture in place, the total price adjustment for that quantity of material is 35 percent.

Table 4: Calculating Total Price Adjustment

Cost Adjustment as a Sum of the Two Highest Parameter Penalties		
Number of Parameters Out-of-Specification	Range(s) Outside of Tolerance Limits of Table 1 per Parameter	Total Price Adjustment
One	Range 1	10%
	Range 2	25%
Two	Range 1 & Range 1	20%
	Range 1 & Range 2	35%
	Range 2 & Range 2	50%
Three	Range 1, Range 1 & Range 1	20%
	Range 1, Range 1 & Range 2	35%
	Range 1, Range 2 & Range 2	50%
	Range 2, Range 2 & Range 2	50%

Table 5: Density Frequency Curve Development

Tested by: _____ Date/Time: _____

Route/Location:		Air Temp:	
Control Section/Job Number:		Weather:	
Mix Type:	Tonnage:	Gauge:	
Producer:	Depth:	Gmm:	

Roller #1 Type: _____

Pass No.	Density	Temperature	Comments
1			
2			
3			
4			
5			
6			
7			
8			
Optimum			

Roller #2 Type: _____

Pass No.	Density	Temperature	Comments
1			
2			
3			
4			
5			
6			
7			
8			
Optimum			

Roller #3 Type: _____

Pass No.	Density	Temperature	Comments
1			
2			
3			
4			
5			
6			
7			
8			
Optimum			

Summary: _____

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
**QUALITY CONTROL AND ACCEPTANCE OF PORTLAND CEMENT CONCRETE
(FOR LOCAL AGENCY PROJECTS ONLY)**

CFS:JFS

1 of 21

APPR:TES:DBP:06-11-18

FHWA:APPR:06-14-18

a. Description. The Contractor must administer quality control (QC) and the Department will administer quality assurance (QA) procedures that will be used for acceptance of and payment for all Portland cement concrete (PCC) for the project. Except as explicitly modified by this special provision, all materials, test methods, and PCC mixture requirements of the standard specifications and the contract apply.

Do not place concrete until the Engineer's daily startup testing verifies that the fresh concrete properties have been met, in accordance with subsection d.2 of this special provision.

Provide the Engineer a minimum 24 hours notification prior to each concrete placement.

1. Terminology.

Air Content of Fresh Concrete. The recorded total air content of fresh concrete sampled and tested according to this special provision.

Air Content Test Results. The recorded air content of fresh concrete corresponding to the strength test specimens that were molded for acceptance.

Alkali-Silica Reactivity (ASR). A chemical reaction which occurs over time within concrete between high alkaline cement paste and reactive forms of silica found in some aggregates. In the presence of moisture, an expansive ASR gel is formed which can exert pressure within the concrete, causing random cracking and premature deterioration of the concrete. See subsection c.5.A of this special provision.

Base Price. Price established by the Department to be used in calculating incentives or adjustments to pay items and shown in the contract.

Concrete Mix Design. The process, by which the concrete mixture performance characteristics are defined, based on selected materials, performance requirements, environmental exposure considerations, placement methods, and other factors that control the plastic and hardened properties of the concrete in efforts to produce an economical and durable product.

Job Mix Formula (JMF). The actual batch quantities (mixture proportions) of each constituent included in the concrete mixture, based on adjustments to the target weights attained from the mix design process, necessary to optimize the concrete mixture properties.

Pay Factor (PF). The factor that is determined according to subsections d.3 of this special provision, used to calculate the price adjustment for a discrete quantity of concrete relative

to its respective level of quality. Pay factor will not exceed 1.00. Therefore, there will never be a positive pay adjustment.

Price Adjustment (ADJ). The price adjustment applied to the quantity of concrete represented by the respective quality index analysis described in subsections d.3 of this special provision.

Production Lot. A discrete cubic yard quantity of concrete containing the same JMF and used for the same application, as described in subsection d.2 of this special provision.

Quality Assurance (QA). Activities administered by the Engineer dealing with acceptance of the product, including, but not limited to, materials selection, sampling, testing, construction inspection, and review of Contractor QC documentation. All concrete QA sampling and testing will be administered by the Department. Department administered QA is described in section d of this special provision.

Quality Control (QC). All activities administered by the Contractor to monitor, assess, and adjust production and placement processes to ensure the final product will meet the specified levels of quality, including, but not limited to, training, materials selection, sampling, testing, project oversight and documentation. Contractor administered QC is described in section c of this special provision.

QC Action Limits. A range of values established by the Contractor in the QC plan that, if exceeded, requires that corrective action be taken by the Contractor to restore the continuity and uniformity of the mixture and methods in conformance with specification requirements. The QC action limits must not exceed the QC suspension limits.

QC Plan. The project-specific plan developed by the Contractor describing, in detail, all aspects of production and construction for the project to ensure consistent control of quality to meet specification requirements.

QC Plan Administrator. An employee of, or consultant engaged by the Contractor, responsible for developing and overseeing all aspects of QC for the project. This includes, but is not limited to preparing the QC plan, managing the Contractor QC personnel, communicating routinely with the production personnel to ensure quality, initiating corrective action and suspending operations when the process is found to be producing non-conforming materials, and preparing and submitting all necessary QC documentation to the Engineer within the specified time period.

QC Suspension Limits. A range of values defined in Table 1 that, if exceeded on a single QC test, requires that the Contractor suspend operations and determine, correct, and document the deficiencies before resuming production. The QC suspension limit must not exceed specification requirement thresholds.

Sample. A representative quantity of concrete taken during production which is used to measure the quality characteristics for the concrete.

Sampling Rate. The number of times the fresh concrete is sampled, as described in subsection d.2 of this special provision.

Small Incidental Quantity. A single day's placement of less than 20 cubic yards of concrete used for non-structural or non-pavement related applications, including, but not limited to:

curb and gutter, sidewalks and sidewalk ramps (excluding driveways and driveway ramps), installing sign or fence posts, guard rail or cable rail foundations (excluding end anchorage foundations), or other contract items where the small quantity of concrete is not paid for separately, as approved by the Engineer. Requirements for small incidental quantity consideration are described in subsections c.5.G, d.2.B and d.3 of this special provision. The corresponding weekly QA test results must meet specification limits defined in Table 3.

Specification Limits. The threshold values placed on a quality characteristic used to evaluate the quality of the material.

Strength Sample Test Result. The average of the two companion 28-day compressive strength test specimens taken from the same sample of concrete is considered a strength sample test result.

Strength Test Specimen. A strength test specimen is an individual 6-inch by 12-inch strength test cylinder or 4-inch by 8-inch strength test cylinder molded and cured according to *AASHTO T23/ASTM C 31* and tested according to *AASHTO T22/ASTM C 39*. All respective QC or QA strength test specimens must be the same nominal size. Strength test specimen cylinder size of 4-inch by 8-inch is permitted only if the nominal maximum coarse aggregate particle size, as specified for the coarse aggregate in the concrete mixture, is 1-inch, or less.

Sublot. A portion of a production lot, represented by a complete set of QA tests, as described in subsection d.2.A of this special provision. The Engineer and the Contractor may agree to reduce the typical sublot size based on project staging or other project conditions.

Supplementary Cementitious Materials (SCM). A mineral admixture (slag cement, fly ash) used to replace a portion of the Portland cement, either individually or as a blended cement, in the concrete mixture. SCM requirements are described in subsection c.5 of this special provision.

b. Materials. Mixture requirements must be in accordance with the contract.

c. Contractor Administered Quality Control (QC).

1. Contractor Quality Control Plan (QC plan). Prepare, implement, and maintain a QC plan specific to the project for concrete that will provide quality oversight for production, testing, and control of construction processes. The QC plan must be in conformance with the contract and must identify all procedures used to control production and placement including when to initiate corrective action necessary to maintain the quality and uniformity of the work.

Develop concrete mix designs and JMFs, as specified, and conduct QC sampling, testing, and inspection during all phases of the concrete work at the minimum frequency, or at an increased frequency sufficient to ensure that the work conforms to specification requirements.

Project-specific items required in the QC plan include (where applicable), but are not limited to the following:

A. Organization chart.

- B. QC Plan Administrator and contact information.
- C. The name(s) and credentials of the QC staff.
- D. Methods for interaction between production and QC personnel to engage timely corrective action, including suspension of work.
- E. Coordination of activities.
- F. Documentation, procedures, and submittals.
- G. Project and plant specifics.
- H. Concrete production facilities inspections and certifications.
- I. Current testing equipment calibration documentation including calibration factor.
- J. Testing and initial field curing facilities for QC and QA strength test specimens (AASHTO T23/ASTM C 31).
- K. Stockpile management plan.
- L. Corrective action plan.
- M. Mixing time and transportation, including time from batching to completion of delivery and batch placement rate (batches per hour), along with the manufacturer's documentation relative to the batching equipment's capabilities in terms of maximum mixing capacity and minimum mixing time (ASTM C 94).
- N. Placement and consolidation methods including monitoring of vibration, depth checks, and verification of pavement dowel bar alignment.
- O. Process for monitoring stability of air content of fresh concrete during concrete production and placement.
- P. Hot and cold weather protection considerations and methods.
- Q. Control charts with action and suspension limits.
- R. Verification for non-deleterious alkali-silica reactivity (see subsection c.5.A of this special provision).
- S. Mix design and JMFs.
- T. Proposed production lot size and location for use of each JMF on the project.
- U. The frequency of sampling and testing.
- V. Handling, protection, initial curing, and transporting of strength test specimens (AASHTO T23/ASTM C31).

- W. Methods to monitor construction equipment loading and open-to-traffic strengths.
- X. Finishing and curing procedure.
- Y. Ride quality control.
- Z. List of QC records to be submitted to the Engineer in accordance with subsection c.2 of this special provision.

Submit the QC plan, for the appropriate items of work, to the Engineer for review a minimum of 10 working days before the start of related work. The Engineer will notify the Contractor of any objections relative to the content of the QC plan within 5 working days of receipt of the QC plan. Do not begin concrete placement before acceptance of the QC plan by the Engineer. If the approved QC plan fails to provide acceptable work, or acceptable control of the work, the Engineer may require the Contractor to revise the QC plan. Revisions to the QC plan must be approved by the Engineer prior to resuming work.

2. QC Records. Maintain complete records of all QC tests and inspections. Document what action was taken to correct deficiencies. Include sufficient information to allow the test results to be correlated with the items of work represented.

Furnish one copy of all QC records, including test reports for the fresh concrete placement, to the Engineer within 24 hours after the date covered by the record in a format acceptable to the Engineer. The Engineer will withhold acceptance of the concrete for failure to provide properly documented and timely QC records and reports.

If the Engineer is performing QA sampling and testing at the same time the Contractor is performing QC sampling and testing, all associated QC records must include the appropriate production lot identification number that correlates with the Department's QA production lot identification number.

3. Personnel Requirements. The QC Plan Administrator must have full authority and responsibility to take all actions necessary for the successful implementation of the QC plan, including but not limited to, the following:

A. Monitoring and utilizing QC tests, control charts, and other QC practices to ensure that delivered materials and proportioning meets specification requirements.

B. Monitoring materials shipped to the project, prior to their use, to ensure their continued compatibility toward producing consistent quality.

C. Periodically inspecting all equipment utilized in transporting, proportioning, mixing, placing, consolidating, finishing, and curing to ensure proper operation.

D. Monitoring materials stockpile management, concrete batching, mixing, transporting, placement, consolidation, finishing, and curing to ensure conformance with specification requirements.

E. Maintaining and submitting all QC records and reports.

F. Directing the necessary corrective action to ensure continual conformance within

the QC action limits.

G. Suspending production for the project when suspension limits are exceeded.

H. Conducting or monitoring adjustments to the JMF.

Individuals performing QC tests must demonstrate that they are proficient and capable of sampling and testing concrete or aggregate, where applicable, in accordance with the associated test procedures and Department requirements prior to commencement of related work. Any adjustments to the JMF must be made by a certified concrete technician (Michigan Concrete Association (MCA) Michigan Level II).

4. QC Laboratory Requirements. Laboratories, including field laboratories and all associated testing equipment that prepare concrete mixes or perform QC testing, must demonstrate to the Engineer that they are equipped, staffed, calibrated, and managed so as to be capable of batching, and testing PCC in accordance with the applicable test methods and procedures. Mix designs and their accompanying JMFs must include a statement, signed by a certified concrete technician (MCA Michigan Level II), that all applicable standard test methods have been followed in verifying the mix design and JMF.

5. Mix Design and Documentation. Design concrete mixtures meeting the requirements specified in Table 1. Provide the grade of concrete for the section number reference application specified in Table 1, or as specified in the contract. Request variance in writing when proposing a mix design that exhibits temperature, slump or air content other than those specified. Include the proposed mix design, JMF, and associated trial batch verification test data. Do not use a grade of concrete with a lower specification limit (LSL) 28-day compressive strength greater than what is designated for the application.

Blended cement meeting the requirements of *ASTM C 595 Type II* is permitted.

Ensure supplementary cementitious materials are from an MDOT Approved Manufacturer. Slag cement must meet the requirements of subsection 901.06 of the Standard Specifications for Construction. Fly ash must meet the requirements of subsection 901.07 of the Standard Specifications for Construction.

Secure prior approval from the Engineer to use concrete intended for early opening to traffic to facilitate driveway gaps or other features necessary for required local access.

Unless otherwise specified in the contract, set accelerating admixtures are prohibited.

Optimized aggregate gradation is required for high performance concrete and concrete mixtures that are placed using a pump. Concrete mixtures for tremie and drilled shaft applications do not require optimized aggregate gradation. The physical requirements for coarse and intermediate aggregates specified in subsection 902.03.C of the Standard Specifications for Construction apply to high performance concrete pavement mixtures. The physical requirements for aggregates used in concrete mixtures for all other applications will be according to the contract.

Unless otherwise specified in the contract, provide either concrete Grade P1 or Grade D for bridge approach slab applications.

Unless otherwise specified in the contract, do not exceed 40 percent replacement of the Portland cement in the concrete mixture with a supplementary cementitious material. Do not exceed 40 percent total replacement of the Portland cement if more than one supplementary cementitious material is used in the concrete mixture.

Use the combined weight of all cementitious materials to determine compliance with the maximum water-cementitious ratio and cementitious material content requirements specified in Table 1.

For night casting, where applicable, a water-reducing admixture may be used in lieu of a water-reducing and retarding admixture, provided the concrete can be placed and finished in the sequence specified on the plans prior to initial set, is not subjected to residual vibration, or is not within the areas influenced by dead load deflections as a result of adjacent concrete placement operations. When the maximum air temperature is not forecast to exceed 60 degrees F for the day, the Contractor may use a water-reducing admixture or a water-reducing retarding admixture.

Table 1: Minimum Mix Design Requirements for Concrete

Mix Design Parameter	Grade of Concrete						
	P1M (a,b,e)	P1 (a,b)	D,DM (a,b,e)	T	S1 (a)	S2,S2M (a,b,e)	S3/P2 (a)
Lower Specification Limit (LSL) (28-day compressive, psi)	3500	3500	4500	3500	4000	3500	3000
Rejection Limit for an Individual Strength Sample Test Result	3000	3000	4000	3000	3500	3000	2500
Maximum Water/Cementitious Ratio (lb/lb) (c)	0.45						
Cementitious Material Content (lb/yd3) (d)	470-564	517-611	517-658	517-611	517-611	517-611	489-517
Air Content (percent) (f)	5.5-8.5						
Slump (inch) (max.)	(g)						
Section Number Reference (h)	602, 603	602, 603, 801, 802, 803, 810	706, 711, 712	706, 718	705	401, 706, 712, 713, 718, 801, 802, 803, 810, 819	402, 403, 602, 803, 804, 806, 808, 810, 813, 814
a. If the local average minimum temperature in the next 10 consecutive days is forecast to be below 40 degrees F, submit a revised QC plan for the Engineer's approval, addressing in detail changes in materials, concrete batching and mixing processes, construction methods, curing, and protection of the in situ concrete to ensure that the necessary quality characteristics of the hardened concrete product will not be compromised as a result of the cold weather. The revised QC plan must be approved by the Engineer prior to cold weather concrete placement. Do not remove supplementary cementitious material from the concrete mixture. b. Use aggregates from only geologically natural sources for pavement, shoulder, miscellaneous pavement (including ramps), concrete pavement overlay, bridge approach slab, structural concrete, drilled shaft, bridge railing, and bridge sidewalk applications. c. Use admixtures as listed in the Qualified Products Lists to reduce mixing water. Ensure concrete in concrete diaphragms contains a water-reducing admixture, or a water-reducing retarding admixture. d. Type III cement is not permitted. e. For grades of concrete requiring optimized gradation, aggregates must meet the physical requirements specified in subsection 902.03.C of the Standard Specifications for Construction. f. For action, suspension, and specification limits, see Tables 2 and 3, where applicable. g. The maximum slump for Grades P1, P1M, and P2 concrete is 3 inches or as documented on the approved JMF. All other grades of concrete will be according to Table 701-1 of the Standard Specifications for Construction.							
h. Section Number Reference:			402 Storm Sewers 602 Concrete Pavement Construction 705 Foundation Piling 711 Bridge Railings 713 Bridge Rehabilitation-Steel 801 Concrete Driveways 803 Concrete Sidewalk, Sidewalk Ramps, and Steps 806 Shared Use Paths 810 Permanent Traffic Signs and Supports 814 Paved Ditches				
401 Pipe Culverts 403 Drainage Structures 603 Concrete Pavement Restoration 706 Structural Concrete Construction 712 Bridge Rehabilitation-Concrete 718 Drilled Shafts 802 Concrete Curb, Gutter and Dividers 804 Concrete Barriers and Glare Screens 808 Fencing 813 Slope Protection 819 Electrical and Lighting							

A. Alkali-Silica Reactivity. Provide documentation to the Engineer that the concrete mixture does not present the potential for deleterious expansion caused by alkali-silica reactivity (ASR). Provide current ASR test results (valid for 2 years from completion of testing), for the fine aggregate that is proposed to be used in the concrete, from an independent testing laboratory proficient in ASR testing. The independent testing laboratory must certify in writing, including a signed statement that all testing was conducted in accordance with the designated standard test procedures, described herein. Test results must conform to the specified criterion for one of the following standard test methods. ASR testing is not required for concrete pavement repairs and temporary concrete pavements. Use the Rounding Method described in *ASTM E 29* when determining significant digits for reporting expansion test results.

(1) Method 1. *ASTM C 1293*. Concrete Prism Test. If the expansion of concrete prisms is not greater than 0.040 percent (rounded to the nearest 0.001 percent) after 1 year, the fine aggregate is considered non-deleterious to ASR and may be used in the JMF.

(2) Method 2. *ASTM C 1567*. Mortar Bar Test. If no previous test data are available for the fine aggregate that shows it is resistant to ASR using Method 1, above, replace 25 to 40 percent of the Portland cement in the concrete mixture with a supplementary cementitious material. A blended cement meeting the requirements of *ASTM C 595* containing the above Portland cement and supplementary cementitious material proportions may also be used.

Demonstrate the ability of the supplementary cementitious material to control the deleterious expansion caused by ASR by molding and testing mortar bars according to the standard test method described in *ASTM C 1567* using the mix proportions and constituent sources for both the aggregates and the cementitious materials that will be used for the project. Make at least three test specimens for each cementitious materials-aggregate combination. If the average of three mortar bars for a given cementitious materials-aggregate combination produces an expansion less than 0.10 percent (rounded to the nearest 0.01 percent) at 14 days of immersion, the JMF associated with that combination will be considered non-deleterious to ASR. If the average expansion is 0.10 percent (rounded to the nearest 0.01 percent) or greater, the JMF associated with that combination will be considered not sufficient to control the deleterious expansion caused by ASR and the JMF will be rejected.

(3) Method 3. *ASTM C 1260*. Mortar Bar Test. If the expansion of the mortar bars is less than 0.10 percent (rounded to the nearest 0.01 percent) at 14 days of immersion, the fine aggregate is considered non-deleterious to ASR and may be used in the concrete without the need for ASR mitigation.

The Engineer will not approve the use of the JMF if the expansion exceeds the respective threshold limits for the respective ASTM test method used.

B. Contractor Provided Mixes. Provide mix design and accompanying JMFs using the methods of verification included in this special provision. Include sufficient information on constituent materials and admixtures along with trial batch verified physical properties of the fresh concrete, mix proportions per cubic yard for all constituents and compressive strength test results necessary to allow the Engineer to