

PROGRESS CLAUSE: Start work on June 18, 2012. In no case shall any work be commenced prior to receipt of formal notice of award by the Department.

Staging Date June 18, 2012

Open to Traffic on or before August 17, 2012

The entire project shall be completed on or before August 17, 2012

The low bidder(s) for the work covered by this proposal will be required to meet with City representatives to work out a detailed Progress Schedule. The schedule for this meeting will be set after the low bidder is determined.

The named subcontractor(s) for Designated and/or Specialty Items, as shown in the proposal, is recommended to be at the scheduled meeting if such items materially affect the work schedule.

The City of Mt. Pleasant will arrange the time and place for the meeting.

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 items will be controlling operations. When specified in the Bidding Proposal, the date the project is to be opened to traffic, as well as the final project completion date, shall also be included in the project schedule.

If the Bidding Proposal specifies other controlling dates, these shall also 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.

CITY OF MT. PLEASANT
SPECIAL PROVISION
FOR
GAS/WATER SHUTOFF COVER, ADJ, CASE 1

Page 1 of 1

a. Description

Adjust gas and water shutoff covers according to this Special Provision and as shown on the plans.

b. Materials

The materials used for this work shall meet the requirements of the utility owning the shutoff.

c. Construction

Adjust gas and water shutoff covers in accordance with the requirements of Section 403.03 C of the 2012 Standard Specifications for Construction for drainage structures.

d. Measurement and Payment

The complete work as measured for Gas/Water Shutoff Cover, Adj, Case 1 will be paid for at the contract unit price for the following contract pay items and includes all material, equipment, and labor to complete this item.

PAY ITEM

PAY UNIT

Gas/Water Shutoff Cover, Adj, Case 1

Each

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
PAVEMENT MARKING MATERIALS

OPR:JGM

1 of 1

C&T:APPR:JAR:DBP:08-31-11
FHWA:APPR:08-31-11

Add the following immediately after the first paragraph of subsection 920.01, on page 890 of the 2012 Standard Specifications for Construction:

Use liquid applied pavement marking materials manufactured in the previous 12 months or within the shelf-life directed by the manufacturer, whichever is less. Use solid applied materials within the shelf-life directed by the manufacturer. Provide certification liquid and solid applied pavement marking materials have been stored per the manufacturer's requirements. Materials not in compliance will be rejected and removed at the Contractor's expense.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
GRANULAR MATERIALS

C&T:ACR

1 of 1

C&T:APPR:WRE:DBP:10-13-06
FHWA:APPR:06-01-11

a. Materials. Bottom ash may be used for granular material for the pay items Subbase, LM; Subbase, CIP; Embankment, LM and Embankment, CIP. Bottom ash may not be used for any other pay items, unless approved by the Engineer.

The only approved source for furnishing bottom ash as granular material for Subbase, LM; Subbase, CIP; Embankment, LM and Embankment, CIP is the DTE power plant at Monroe.

Provide written documentation to the Engineer that the bottom ash came from DTE's Monroe plant before using the material on the project. All specification requirements for granular materials will remain the same.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
PAYMENT FOR MINOR TRAFFIC DEVICES AND TRAFFIC REGULATOR CONTROL

OPR:JJG

1 of 1

C&T:APPR:BJO:DBP:07-19-11
FHWA:APPR:07-19-11

Delete Table 812-1 in subsection 812.04.E, on page 625 of the Standard Specifications for Construction, in its entirety and replace with the following.

Table 812-1 Partial Payment Schedule for Minor Traf Devices and Traffic Regulator Control

Percent of Original Contract Amount Earned	Total Percent of Unit Price Paid
First Use	15
25	30
50	55
75	80
90	100

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
**MINOR TRAF DEVICES AND TRAFFIC REGULATOR CONTROL DURING AN
APPROVED EXTENSION OF TIME**

OPR:JJG

1 of 1

C&T:APPR:JAJ:CER:07-19-11

FHWA:APPR:07-19-11

Delete the first sentence of the second paragraph in subsection 812.04.U, Price Adjustments for Authorized Extensions of Time, on page 631 of the Standard Specifications for Construction and replace with the following.

The Department will not make price adjustments for temporary traffic control devices, Minor Traf Devices, and Traffic Regulator Control during authorized extensions of time if liquidated damages are assessed in accordance with subsection 108.08 and subsection 108.09.

Delete the third paragraph and Formula 812-1 of subsection 812.04.U, Price Adjustments for Authorized Extensions of Time, on page 631 of the Standard Specifications for Construction, that starts with “The Department will use the following formula...” and replace with the following.

The Department will use the following formula to calculate the unit price adjustments. The adjustment for Minor Traf Devices will be at a daily rate of (a/b) not to exceed \$900.00 per calendar or work day and the adjustment for Traffic Regulator Control will be at a daily rate of (a/b) not to exceed \$650.00 per calendar or work day. When calculating the adjustment, either calendar or working days will be used for both original contract time and additional days.

$a/b \times c = \text{Unit price adjustment}$

Formula 812-1

where:

a = Original contract unit price

b = Original contract time (For calendar date projects the original contract time will be calculated as the number of calendar days from the date of award to the contract completion date identified in the progress clause).

c = Additional days the item was in use or required to be on standby during the authorized extension of time

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
TRAFFIC CONTROL QUALITY AND COMPLIANCE

OPR:JJG

1 of 2

C&T:APPR:CER:DBP:01-20-11
FHWA:APPR:06-20-11

Delete the subsection 812.03.C, Deficient Traffic Control Operations on page 601 of the Standard Specifications for Construction in its entirety, and replace with the following.

C. Deficient Traffic Control Operations.

1. Traffic Control Quality and Compliance. The following applies to all aspects of the traffic control plan and traffic control devices except the Type D lights on plastic drums which are covered elsewhere in the contract.

a. Traffic Control not Anticipated in Design. If at any time during the project, including the time during the seasonal suspension, the Engineer documents that the traffic control requires improvements beyond the scope of the Traffic Control Plan, the Engineer will provide written instructions to the Contractor and traffic control supplier what improvements are required. The Contractor must develop and submit to the Engineer for approval, a written implementation schedule for improvements. If the schedule is not approved, or if the schedule is approved but is not followed, the Department will adjust the contract according to subsection 812.03.C.1.c.iii. If the implementation schedule is not followed, the Engineer will notify the Contractor and traffic control supplier in writing that they are in violation of this subsection. The work of making traffic control improvements directed by the Engineer that are beyond the scope of the Traffic Control Plan will be paid for as extra work.

b. As Designed Traffic Control. If at any time during the project, including the time during the seasonal suspension, the Engineer documents that the traffic control is deficient, inadequate or improperly placed, the Engineer will provide written notification with instructions for corrective action to the Contractor and traffic control supplier. Upon receipt of the notification of corrective action, the Contractor has 4 hours to correct the traffic control. If the traffic control cannot be corrected within the 4 hour time period, the Contractor will develop a written implementation schedule for the corrective action and submit the schedule to the Engineer for approval within 1 hour of receiving the written notification. If the schedule is not approved, or if the schedule is approved but is not followed, the Department will adjust the contract according to subsection 812.03.C.1.c.iii. If the implementation schedule is not followed, the Engineer will notify the Contractor and traffic control supplier in writing that they are in violation of this subsection.

c. Corrective Action. The Engineer will give written notification to the Contractor as identified above. Failure to make corrections within the timeframe required may result in the following actions by the Engineer:

- i. Stop work on the project until the Contractor completes corrective action,

- ii. Order corrective action by others in accordance with subsection 107.07, subsection 108.02, subsection 812.03.B, and in the interest of public safety.
- iii. A contract price adjustment will be made in the amount of \$100 per hour for every hour or portion thereof the improvements or corrective action remains incomplete as described herein. If improvements or corrections have not been made to the satisfaction of the Department, the contract will be adjusted until the traffic control is acceptable.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
SIDEWALK, CLAY BRICK PAVERS ON SAND BED

OPR:DJA

1 of 3

C&T:APPR:JAR:DBP:08-31-11
FHWA: APPR: 08-31-11

a. Description. This work consists of either preparing base, furnishing and installing a sand bed and furnishing and installing clay brick pavers (pavers) or removing clay brick pavers and the subbase materials in the areas shown on the plans. This work must be performed by workers with satisfactory record of performance on completed projects of comparable size and quality. Provide references to the Engineer if requested.

Review installation procedures and coordinate this work with other contractors or subcontractors working in the area. Furnish and install temporary barricades and warning lights, as required, for public safety and protection of work. Protect adjacent work from damage, soiling, or staining during paving operations.

Before starting this work, construct a 20 square foot (approximately) sample panel using bedding depth, materials, pattern, and joints shown on the plans. Construct the sample panel using the range of clay paver color, texture, and workmanship, proposed for the work. Correct and rebuild sample panel until it is acceptable to the Engineer. Retain the sample panel during construction as a standard for completed paving work.

b. Materials. Provide materials in accordance with standard specifications and this special provision. Store granular materials in a well drained area on a solid surface to prevent mixing with foreign materials. Do not use frozen materials or materials mixed or coated with ice or frost.

1. Pavers. Provide pavers in accordance with ASTM C 902, for Class SX, Type I, Application PS and the dimensions shown on the plans. Supply pavers that are uniform in dimension, color, and texture. Provide manufacturer's product data and installation instructions for pavers.

Tactile pavers, if required, must meet the requirements of the section 803 of the Standard Specifications for Construction and this special provision.

A. Provide only sound pavers free of defects that could interfere with proper installation or reduce the service life of the finished work. Minor cracks and minor chipping incidental to methods of manufacture or handling are subject to visual inspection and the Engineer's acceptance. Excessive cracks and chips will be cause for rejection.

There must be no efflorescence evident upon visual inspection of the pavers at the project site.

B. Provide manufacturer's test data certification, according to the MDOT Quality Assurance Procedures Manual, documenting that the pavers meet these specifications

when tested as specified in ASTM C 902. Conduct freeze - thaw tests not more than 12 months prior to delivery.

If sampling and testing is required, sampling frequency and sample size will be as stated for concrete brick in Section G of the Materials Quality Assurance Procedures Manual.

C. Submit a minimum of five full size samples for each paver color. Include the full range of style, size, exposed finish, color, and texture proposed for the work.

D. Protect pavers from damage, chipping, and soiling during delivery and storage. Store off the ground on pallets or wood platforms. Do not use pavers with chips, cracks, voids, discoloration, or other visible defects exceeding the limits in ASTM C 902.

E. The pavers listed here are acceptable for this project. An alternate source of pavers may be submitted to the Engineer for approval provided they meet all requirements of this special provision. Do not change source of pavers during the course of the work.

Provide red clay brick pavers as indicated on the plans or as directed by the Engineer.

2. Base Material. Use granular material Class II or as specified for base material under adjacent roadway or driveway(s).

3. Bedding and Leveling Material. Use 2NS or 2SS meeting section 902 of the Standard Specifications for Construction or blast furnace slag sand meeting the gradation shown in Table 1 (commercially known as 30A Blast Furnace Slag):

Table 1: Grading Requirements for 30A Blast Furnace Slag

		SIEVE ANALYSIS (ASTM C136)						
		TOTAL PERCENT PASSING						
U.S. Sieve	3/8"	#4	#8	#16	#30	#50	#100	#200
% Passing	100	95-100	70-95	45-75	25-55	15-35	0-20	-

4. Paver Joint Filler. Use 2MS meeting section 902 of the Standard Specifications for Construction.

5. Edge Restraints.

Paver Units (Soldier Course). Fill gaps at the edge of the paved surface with standard edge pieces or with paver units cut to fit.

c. Construction. Maintain pedestrian and vehicular traffic per the contract, in the area during installation of pavers. Do not build on frozen, wet, saturated, or muddy sub-grade. Protect partially completed paving against weather damage when work is not in progress. Remove and replace completed work damaged by frost or freezing.

1. Base Course. Place base course materials only on an approved surface. Spread base course material in layers which when compacted will not exceed 4 inches. Compact each layer

to 95 percent of maximum unit weight. Screed, level, and shape base course surface to required grade and cross section within a tolerance of 1/4 inch.

2. Bedding and Leveling Course. Spread bedding and leveling course materials evenly over the entire area to be paved, screed to a level that will provide a minimum 1 inch thickness when the pavers are placed and vibrated. Protect completed bedding and leveling course from damage until covered with paver units. Do not pre-compact bedding and leveling course.

3. Pavers. Correct any unsatisfactory substrate or installation conditions prior to placing any pavers. Use full pavers wherever possible. Where cutting is required, use the largest size pavers possible. Cut pavers to provide required pattern and to neatly fit adjoining work. Cut pavers with block splitter or other equipment designed to cut masonry with clean, sharp unchipped edges. Ragged cuts will not be accepted. Cut through the full thickness of the pavers. Do not cut more than 1 inch of the 4 inch dimension of a soldier course.

Lay paver units in the pattern shown on the plans. Set all pavers flush to existing adjacent concrete curbs and adjoining work. Maintain uniform 1/16 inch to 1/8 inch joints between pavers.

Vibrate pavers to final grade with three or more passes of a vibrating plate compactor. After the first pass, brush joint filler material over the surface and vibrate into the joints with additional passes. Completely fill joints. After final vibrating, the surface must be true to grade and not vary by more than 1/4 inch when tested with a 10-foot straightedge at any location on the surface.

Remove and replace pavers that are broken, chipped, stained, or otherwise damaged. Provide new matching pavers, install as specified and to minimize evidence of replacement.

Clean pavers during installation and upon completion of the work. Repair damage to adjacent areas resulting from paver installation operations, as directed by the Engineer.

Remove and properly dispose of all excess material and debris upon completion of paver installation.

d. Measurement and Payment. The completed work, as described, will be measured and paid for at the contract unit price for the following pay items:

Pay Items	Pay Unit
Sidewalk, Clay Brick Pavers	Square Foot
Sidewalk, Clay Brick Pavers, Rem	Square Foot

Sidewalk, Clay Brick Pavers includes all materials, labor and equipment necessary to complete the work as described. Removal, storage and disposal of waste materials per subsection 205.03.P of the Standard Specifications for Construction is included and will not be paid for separately.

Furnishing and installing tactile pavers, if required, will be measured and paid for separately.

Sidewalk, Clay Brick Pavers, Rem includes all labor and equipment necessary to remove all pavers and subbase materials, and disposal per subsection 205.03.P of the Standard Specifications for Construction.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

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

C&T:JFS

1 of 16

C&T:APPR:JAB:DBP:11-22-11
FHWA:APPR:11-29-11

a. Description. The Contractor must administer quality control (QC) and the Engineer 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.

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 total air content of fresh concrete that is used to mold corresponding strength test specimens 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.

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 from the mix design, necessary to optimize the concrete mixture properties. Submit mix design and JMF on the MDOT Job Mix Formula (JMF) Concrete Field Communication form (MDOT Form Number 1976); include accompanying documentation.

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.

Pay Factor (PF). The factor that is determined according to the formula herein, used to calculate the price adjustment for a discrete quantity of concrete. Pay factor determination

will be in accordance with the requirements in subsection d.3 and can not exceed 1.00. Therefore, there will never be a positive pay adjustment.

Quality Assurance (QA). Activities administered by the Engineer dealing with acceptance of the product, including, but not limited to, materials sampling, testing, construction inspection, and review of Contractor QC documentation. All concrete QA sampling and testing will be performed by the Agency. The Agency 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 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. The QC Plan Administrator must be a certified concrete technician (Michigan Level II), or have direct authority over a certified concrete technician (Michigan Level II) for the project.

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 Engineer must approve all changes prior to 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 a respective production lot of concrete.

Sampling Rate. The number of times the fresh concrete is sampled by the Engineer for acceptance. The sampling rate will be determined by the Engineer as described in subsection d.2.B.

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 directed by the Engineer. Price adjustment will not be applied to small incidental quantities provided all other provisions are met for the respective contract item. Requirements for small incidental quantity consideration are described in subsections c.5.G and d.2.B. The corresponding weekly QA 28-day compressive strength test results described in subsection d.2.B must meet specification limits defined in Table 2. ASR requirements specified in subsection c.5.A are not required for small incidental quantities.

Specification Limits. The threshold values defined in Table 2 assigned to each quality characteristic used to evaluate the quality of the material.

Strength Sample Test Result. A strength sample test result consists of the 28-day compressive strength of the 6-inch by 12-inch or 4-inch by 8-inch cylindrical strength test specimens. A strength sample test result is the average of the two companion strength test specimens taken from the same sample of concrete.

Strength Test Specimen. A strength test specimen is defined as each individual 6-inch by 12-inch strength test cylinder or 4-inch by 8-inch strength test cylinder molded and cured according to AASHTO T 23/ASTM C 31 and tested according to AASHTO T 22/ASTM C 39. All respective QC or QA strength test specimens must be the same nominal size.

Note: 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.

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 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 and quality characteristics required in the QC plan include, 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 T 23/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.
- 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).
- S. Mix design and JMFs.
- T. Proposed 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 T 23/ASTM C 31).
- W. Methods to monitor construction equipment loading and open-to-traffic strengths.
- X. Finishing and curing procedure.
- Y. Ride quality control.

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.

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 and test reports 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 identification number that correlates with the Engineer's QA 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 Agency requirements prior to commencement of related

work. Any adjustments to the JMF must be made by a certified concrete technician (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 Portland cement concrete in accordance with the applicable test procedures. Mix designs and their accompanying JMFs must include a statement, signed by a certified concrete technician (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 Tables 601-2 and 701-1 of the Standard Specifications for Construction. Provide the grade of concrete for the section number reference application specified in Tables 601-2 and 701-1, or as specified in the contract. Request variance in writing when proposing a mix design and JMF 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 minimum specified 28-day compressive strength greater than what is designated for the application. The maximum water/cementitious ratio must not exceed 0.45.

The maximum slump for Grades P1 and P2 concrete is 3 inches or as documented on the approved JMF. All other grades of concrete will be according to Tables 701-1 A and B of the Standard Specifications for Construction

The specified air content of fresh concrete is 5.5 - 8.0 percent. Air content of fresh concrete less than 5.5 percent for concrete that lies in the finished work at least 3 feet below the surface of the ground or entirely under water will not be cause for rejection.

Use aggregates from only geologically natural sources.

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 specified otherwise, do not exceed 40 percent substitution by volume of the total cementitious materials with slag cement or fly ash. Use the combined weight of all cementitious materials to determine compliance with the maximum water-cementitious ratio and cementitious material content requirements specified above. Include provisions for cold and hot weather protection in the QC plan.

Use admixture dosage as indicated in the Qualified Products List to reduce mixing water. 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.

A. Alkali-Silica Reactivity. Provide documentation to the Engineer that the concrete mixture does not present the potential for excessive expansion caused by alkali-silica reactivity (ASR). Provide a Test Data Certification with the latest test results (valid for 2 years) conforming to the specified criterion for one of the following standard test

methods ASR requirements specified in subsection c.5.A are not required for small incidental quantities.

(1) Method 1. ASTM C 1260. Mortar Bar Test. If the expansion of the mortar bars is less than 0.10 percent at 14 days of immersion, the fine aggregate is considered non-deleterious to ASR reactivity and may be used in the concrete without the need for ASR mitigation.

(2) Method 2. ASTM C 1293. Concrete Prism Test.

- If the expansion of concrete prisms is not greater than 0.040 percent after 1 year, the fine aggregate is considered non-deleterious to ASR reactivity and may be used in the concrete without the need for ASR mitigation.
- If the expansion of concrete prisms is greater than 0.040, but not exceeding 0.120 percent after 1 year, the fine aggregate is considered moderately deleterious to ASR reactivity and mitigation is required, as follows. A Low-Alkali cement with equivalent alkalis ($\text{Na}_2\text{O} + 0.658 \times \text{percent K}_2\text{O}$) not exceeding 0.60 percent may be used in the concrete mixture to mitigate the potential for ASR reactivity provided the total alkali content for the cementitious materials combination does not exceed 3.0 pounds per cubic yard (Na_2O equivalent).

(3) Method 3. 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 either Method 1 or 2, above, replace 25 to 40 percent of the Portland cement in the concrete mixture with Class F fly ash or Slag Cement (Grade 100 minimum). A blended cement meeting the requirements of ASTM C 595 containing Portland cement and slag cement or Class F fly ash may also be used.

Demonstrate the ability of the fly ash or slag cement 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 for both the aggregates and the cementitious materials proposed 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 at 14 days of immersion, the JMF associated with that combination will be considered non-deleterious to ASR reactivity. If the average expansion is 0.10 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.

If the expansion exceeds the respective threshold limits for the ASTM used, then the Engineer will not approve the use of that concrete mixture.

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 fully evaluate the expected performance of the concrete mixture.

(1) Mix Documentation. Prepare mix designs for each grade of concrete required on the project. Submit JMF for each mix design, including all required documentation, to the Engineer for review 10 working days before the anticipated date of placement. The Engineer will notify the Contractor of any objections within 5 working days of receipt of the mix documentation. Number or otherwise identify each JMF and reference all accompanying documentation to this number. Reference each JMF to the appropriate method of verification. Mix design and JMF submittals that do not include all required documentation will be considered incomplete and the Engineer will return them without review.

Provide all supporting mix documentation, including test reports and mix proportion adjustment calculations. All mix designs and accompanying JMFs must be traceable to a laboratory meeting the requirements of this special provision. Include the necessary documentation described in subsection c.5.

Submit mix design and JMF on the MDOT Job Mix Formula (JMF) Concrete Field Communication form (MDOT Form Number 1976); include accompanying documentation. List the source of materials, bulk density (unit weight) of coarse aggregate (rodding procedure or shoveling procedure), absorption of aggregates, relative density (specific gravity) of aggregates, aggregate correction factors, batch weights, and project specific or historical laboratory test data. Include the recorded air content of fresh concrete using the same admixture and cementitious material sources to be used in the production of the concrete for the project. The 28-day compressive strength and air content of fresh concrete for the concrete which is reported as part of the mix documentation submittal must meet the specification limits described in Table 2.

(2) Job Mix Formula (JMF). Select proportions for concrete mixtures according to ACI Standard 211.1. The volume of coarse aggregate per unit volume of concrete must be 65 to 75 percent, inclusive.

Four methods of verification of proposed JMF are acceptable.

(a) Method 1. Trial Batches. Base trial batches on the same materials and proportions proposed for use on the project. Prepare at least one trial batch for each mix design in sufficient time before starting concrete placement to allow for review according to subsection c.5.B.(1). Provide the results of temperature, slump, density (unit weight), air content of fresh concrete, 28-day compressive strength, and age of concrete at the time of strength testing, for a minimum of three independent samples. For JMF trial batch verification purposes only, 7-day compressive strength test results which report at least 70 percent of the specified 28-day minimum design strength will be sufficient documentation in lieu of 28-day compressive strengths. The average of at least two strength test specimens represents one compressive strength sample test result for each independent sample. A JMF will be considered approved for use only if all of the physical properties of the concrete (as described above) are within specification limits. Provide the necessary ASR documentation as described in subsection c.5.A.

(b) Method 2. Same Mix. Verification based on experience with the same mix design, JMF, and the same materials. Provide the results of temperature,

slump, density (unit weight) air content of fresh concrete, 28-day compressive strength, and age of concrete at the time of strength testing, for a minimum of three independent samples. The average of at least two strength test specimens represents one compressive strength sample test result for each independent sample. Do not substitute material types or sources, including admixtures or cementitious materials, nor change mix proportions in the JMF. A JMF will be considered approved for use only if all of the physical properties of the concrete (as described above) are within specification limits. Provide the necessary ASR documentation as described in subsection c.5.A.

(c) Method 3. Similar Mix. Verification based on experience with a mix design and JMF similar to the proposed mix design that used similar coarse aggregate materials. Substitution of coarse aggregate source is permitted only if the new source is of the same geologic type and meets minimum physical properties as the original aggregate and conforms to the specification requirements for the respective application. Verify, prior to batching, that the proposed changes to the JMF will not affect the properties of the fresh concrete (slump, temperature, air content, density (unit weight), workability), nor result in excessive mortar bar expansion as a result of deleterious reactivity between the aggregates and cementitious materials as described in subsection c.5.A.

Provide the supporting laboratory test documentation as for Method 1. Include all material properties for the original and substituted aggregates. Submit calculations showing how the mix proportions in the JMF were adjusted, based on the documented differences in relative density (specific gravity), bulk density (unit weight) and absorption of the substituted aggregate sources, to produce a theoretical yield of 100 percent.

(d) Method 4. Annual Verification. At the Engineer's option, verification may be accepted annually for a concrete plant rather than on a project basis provided the sources and proportions of the constituent materials, including cementitious materials and source and types admixtures, do not change. If the project is the continuation of work in progress during the previous construction season and written certification is submitted to the Engineer that materials from the same source and with the same mixture properties are to be used, the Engineer may waive the requirement for annual renewal verification of the JMF for the project. Provide the necessary ASR documentation as described in subsection c.5.A.

C. Agency Provided Mixes. Unless otherwise specified in the contract, the Engineer will provide the concrete JMF for the following types of concrete regardless of the total quantity for the project.

- Structural concrete patching mixtures, mortar and grout.
- Prestressed concrete.
- Bridge deck overlay concrete mixtures.
- Project-specific concrete mixtures and grades not defined in Tables 601-2 and 701-1 of the Standard Specifications for Construction.

D. Changes in Materials and Proportions. Any changing from one approved JMF to another for the same grade of concrete must have prior approval by the Engineer. Record all changes to JMF in the QC records along with the rationale for the change. Verify, prior to batching, that the proposed changes to the JMF will not affect the properties of the fresh concrete (slump, temperature, air content, density (unit weight), workability), nor result in excessive mortar bar expansion as a result of deleterious reactivity between the aggregates and cementitious materials as described in subsection c.5.A.

E. QC Sampling and Testing. Conduct startup sampling and testing for temperature, slump, density (unit weight), and air content on the first load. Do not place concrete until testing verifies that the fresh concrete properties have not exceeded the QC action and suspension limit thresholds specified in Table 1. Continue testing subsequent loads as described in the QC plan, for each grade of concrete delivered to the work site each day. The QC sampling and testing must be random and independent from the Engineer's QA sampling and testing.

Ensure that the curing facilities are on site and are equipped to provide the proper environment for initial curing of the QC and QA concrete strength test specimens.

Perform QC sampling and testing of the fresh concrete for air content loss at least once during each week of concrete production, or whenever QC tests have shown that QC action limits have been exceeded, whichever is more frequent. Sample and test a representative haul unit of concrete immediately after its discharge but before the paver or pump hopper, where applicable. Sample and test the concrete representing the same haul unit, again, after the paver or after discharge from the pump and after vibration, where applicable. If the difference in measured air content between the two test locations for the same concrete is greater than two percent air by volume of concrete, suspend operations and administer corrective action. Resume concrete placement only after taking the necessary corrective action to reduce the loss in air content of fresh concrete between the two test locations, as approved by the Engineer. Document the corrective action to be taken in the QC records and make the necessary changes to the QC plan, where applicable.

Concrete exceeding the maximum specification limits for slump or temperature must be rejected regardless of the total mixing time or number of mixing revolutions at the time of arrival to the project.

The Engineer may require the Contractor to administer additional QC sampling and testing if the Engineer determines the Contractor's current QC sampling and testing methodology is shown to be insufficient to ensure continual control of the quality of the concrete.

Take the appropriate corrective action, as described in the QC plan, when QC testing shows the QC action limits for any quality characteristic are exceeded. Suspend production if any of the QC suspension limits are exceeded or if the corrective action is not sufficient to restore the quality to acceptable levels.

Resume production only after making all necessary adjustments to bring the mixture into conformance with all applicable specifications and receiving approval to resume work from the Engineer. Document these adjustments in the QC records.

Table 1: Action and Suspension Limits

Quality Characteristic	Action Limits	Suspension Limits
Air Content (percent)	As Defined in the Contractor QC Plan	< 5.5 or > 8.0
Air Content Loss (percent)		Greater than 2.0
Conc. Temp. (Deg. F)		< 45 or > 90 at time of placement
Slump (max.) (inch)		See subsection c.5
Density (unit weight)		N/A

F. Work Progress Test Specimens. Determine the strength of concrete for opening to construction traffic or regular traffic, for removing shoring and forms, or for other similar purposes in accordance with subsections 104.11, 601.03.H and 701.03.D of the Standard Specifications for Construction, and as approved by the Engineer. Cure work progress test specimens in the same manner as the in-situ concrete. Allow the Engineer to witness testing of work progress cylinder or beam specimens and non-destructive testing, including calibration tests.

For pavement repairs described in section 603 of the Standard Specifications for Construction, the maturity method may be used to determine the in-place, opening-to-traffic flexural strength, provided the necessary preliminary flexural strength versus opening-to-traffic time correlations, using the same materials and JMF, are established and approved by the Engineer before placing the concrete.

G. Reduced QC for Small Incidental Quantities. Reduced levels of on-site QC testing for concrete may be considered for small incidental quantities defined in subsection a.1 provided provisions for administering reduced QC testing and oversight are included in the approved QC plan and the following criteria are met.

(1) The small incidental quantity of concrete will be limited to a single day's concrete placement.

(2) The small incidental quantity is not an integral part of a structural load bearing element.

(3) The Engineer received written certification from the Contractor that the concrete supplier has a current QC plan in place and available for review upon request by the Engineer.

(4) The concrete supplier employs a certified concrete technician (Michigan Level II) available at the plant or on call during concrete placement to validate and authorize modifications to the concrete JMF, as necessary.

(5) Prior to the first concreting operation, concrete representing the JMF for the small incidental quantity has been sampled and tested by a certified concrete technician (Michigan Level I or II) to verify that, historically, the JMF produced a concrete mixture meeting the minimum requirements for density (unit weight), slump, air content, and strength. Annual verification may be acceptable provided there are no changes to the material types or sources, including cementitious materials and admixtures.

(6) The Engineer verified that the temperature, slump, and air content conform to specification requirements at the start of the day's concreting operation associated with the small incidental quantity.

(7) The Engineer is notified and provided sufficient opportunity to witness concrete placement.

d. Agency Administered Quality Assurance (Acceptance).

1. Agency Quality Assurance Plan (QA plan). The Engineer will be responsible for administering the quality-based acceptance and will institute any actions necessary toward its successful implementation.

Acceptance of concrete for full-depth pavement repairs will be according to section 603 of the Standard Specifications for Construction.

The Engineer will develop and follow a QA plan. The Engineer will provide the QA plan to the QC Plan Administrator a minimum of 7 calendar days prior to the pre-production meeting. The QA plan will be reviewed at the pre-production meeting and any proposed changes will be documented.

The nominal QA strength test specimen size, defined in subsection a.1 will be noted in the QA plan.

A. Personnel Requirements. The personnel responsible for field inspection and for obtaining QA samples will possess the required qualifications to collect QA samples. Sampling will be performed by qualified personnel possessing the current applicable certification through the Michigan Concrete Association (Michigan Level I or II) or through the Michigan Concrete Paving Association (Level I or II) certified concrete technicians, or where applicable, (MCAT) certified aggregate technician.

B. QA Testing Correlation. The testing equipment and associated testing personnel for both the Engineer's QA and Contractor's QC will conduct side by side testing of the same concrete representing the first production placement for the project to verify correlation of both the Engineer's and the Contractor's test results for slump, temperature, and air content of fresh concrete. The temperature measuring devices used for QC and QA must correlate relative to each other within 2 degrees F. The Engineer will request an Independent Assurance Test in the event the air content results of two tests conducted between the Engineer's and the Contractor's testers differ by more than 1.0 percent air by volume of concrete.

C. Laboratory Facilities. The testing laboratory with responsibility for acceptance testing on this project is the Agency testing laboratory, or a qualified facility under the authority of the Engineer.

2. QA Sampling and Testing. The Engineer will conduct QA sampling and testing, monitor the Contractor's adherence to the QC plan, and inspect field placed materials. Initial approval is required prior to concrete placement for, temperature, slump and air content, and is based on the Engineer's observance of QC startup sampling and testing described in subsection c.5.E.

A. Production Lot Size and Make Up. A production lot will be defined as a single day of concrete, or as determined by the Engineer. A production lot will not include more than one grade of concrete, concrete of the same grade having different specified slump or air content, or concrete of the same grade having different material sources, mix designs or JMFs.

B. Sampling. Representative QA sampling and testing will be determined by the Engineer during concrete placement. The sampling rate will be one sample per 50 cubic yards, approximately, plus or minus, based on the anticipated total quantity of concrete to be placed and site conditions, with a minimum of one sampling for each day of production.

At the option of the Engineer, small incidental quantities as defined in subsection a.1 may be accepted (visually inspected and noted on the Inspector's Daily Report) without daily 28-day compressive strength QA test specimens provided there is a current acceptable strength test history of the JMF for the project prior to placement of the small incidental quantity. One set of compressive strength QA test specimens will then be molded for each small incidental quantity JMF at least once per week during production, thereafter, as directed by the Engineer (note the test results or identification number for the corresponding weekly QA compressive strength test result on the Inspector's Daily Report for each small incidental quantity). Quality control testing and daily QA testing for temperature, slump, and air content are still required as described in subsection c.5.G.

Samples will be taken from the concrete at the location as close to its final placement into the forms or on the grade as practical.

Samples for acceptance will not be taken at the concrete production facility (batch plant), nor prior to discharge from a concrete pump (excluding tremie seal placement applications). Mix adjustments (beyond normal QC) to the haul unit selected for QA sampling and testing will not be permitted prior to QA sampling and testing. QA sampling will be random and without prior notification.

C. Testing. The location(s) within the project limits for QA testing of the fresh concrete and placement of curing facilities for initial curing of the 28-day compressive strength QA test cylinders will be determined by the Engineer in conformance with the following criteria:

(1) The elapsed time between obtaining the first and the final portion of the composite sample must not exceed 15 minutes.

(2) Testing for slump, temperature, and air content of fresh concrete must begin within 5 minutes after obtaining the final portion of the composite sample.

(3) Molding of the 28-day compressive strength QA test cylinders must begin within 15 minutes after obtaining the final portion of the composite sample.

(4) The concrete sample must be protected from the sun, wind, and other sources of rapid evaporation, and from contamination.

The Contractor will provide curing facilities equipped to ensure the proper environment for the Engineer's QA concrete strength test specimens during initial cure. Each initial

cure facility must provide ventilation or insulation, where applicable, to ensure the ambient temperature surrounding the specimens is maintained according to AASHTO T 23. Failure by the Contractor to maintain the proper curing environment during initial cure will not be basis for rejection of QA samples. Each initial curing facility must be capable of being locked, using an Agency provided padlock. The Contractor will ensure that all initial curing facilities are accounted for at all time, and protected against, theft and damage. The Contractor will locate and secure each initial cure facility throughout the project limits in such a manner so as to minimize excessive transport of the test specimens prior to initial cure, as follows:

- Immediately after finishing molded specimens, the Engineer will move the QA concrete strength test specimens to the closest initial cure facility provided by the Contractor.
- Immediately after all QA concrete strength test specimens are placed into the cure facility and the proper initial curing conditions have been established, the Engineer will secure the facility using the Agency provided padlock. Access to the QA concrete strength test specimens, thereafter, must be coordinated with the Engineer and will only be permitted in the presence of the Engineer.
- The Engineer will transport the QA concrete strength test specimens within 48 hours after molding, but not prior to 8 hours after final set of the concrete, from the initial curing facility to the Agency designated testing laboratory for final curing and strength testing. The specimens will be protected with a suitable cushioning material to prevent damage from jarring during transport. The total transportation time must not exceed 4 hours prior to commencement of final curing.

D. QA Stop Production Criteria. The Engineer will issue a Notice of Non-Compliance with Contract Requirements (Form 1165) and concrete production must stop when one or more of the following are observed.

(1) The QA testing shows that one or more of the suspension limits for quality characteristics defined in Table 1 are in non-compliance.

(2) The QC plan is not being followed.

(3) Segregation, excessive slumping of unsupported slipformed edges, or other notable changes in the fresh concrete properties is observed that may prevent proper placement, consolidation and finishing, or compromise the performance or long-term durability of the finished product.

(4) The required curing system is not being applied in a timely manner, as specified by the contract.

(5) If the difference in measured air content between the two testing locations for the same concrete is greater than two percent air by volume of concrete, as follows:

(a) immediately after discharge but before the paver or pump hopper (where applicable), and

(b) after the paver or discharge from the pump (where applicable).

The Engineer will issue a Notice to Resume Work (Form 1165) only after all necessary adjustments are made to restore conformance with all applicable specifications, and the appropriate documentation is made in the QC records.

E. QA Records. The Engineer will maintain a complete record of all QA tests and inspections. The records will contain, as a minimum, signed originals of all QA test results and raw data, and resulting calculations. The QA test results will not be provided to the Contractor until the corresponding QC test results are received by the Engineer.

3. Pay Factor Determination and Price Adjustment. The Engineer's QA test results will be used to determine the pay factor (PF) and price adjustment (ADJ). The Contractor's QC test results will not be used for pay factor and price adjustment analysis. The Engineer will complete pay factor and price adjustment analysis within 7 days after completion of all 28-day compressive strength testing for the representative production lot.

Table 2: Specification Limits

Quality Characteristic	Specification Limits
Air Content (percent)	5.5 – 8.0
Conc. Temp. (Deg. F)	45 - 90 at time of placement
Slump (max.) (inch)	See subsection c.5
28-day Compressive Strength	LSL, subsection c.5
Rejection Limit - Lower 28-day Compressive Strength	0.75 x (LSL)

The specification limits for the fresh concrete properties are defined in subsection c.5. Concrete not conforming to the requirements specified in subsection c.5 may be rejectable and subject to further evaluation, as directed by the Engineer.

Use the following formula to calculate the PF and associated price ADJ for each concrete item.

$$PF = \frac{\text{Tested Strength}}{LSL}$$

$$ADJ = (PF-1) (\text{Price})$$

Tested Strength = QA 28-day compressive strength sample test result

LSL = Lower specification limit (Minimum Design Strength, see subsection c.5)

PF = Pay Factor (carried to two decimal places, not to exceed 1.00)

ADJ = Price adjustment to be applied to the quantity represented by the QA test

Price = Contract unit price bid for the pay item

4. Re-evaluation of Rejectable Concrete. If the tested strength does not achieve the lower rejection limit specified in Table 2, the associated concrete will be rejected and the Engineer will require additional evaluation to decide what further action may be warranted. If the Engineer determines that non-destructive testing (NDT) or coring is necessary, this work will be done by the Contractor in the presence of the Engineer within 45 days from

concrete placement. All costs associated with this work will be borne by the Contractor. The Engineer will take custody of all cores intended for re-evaluation immediately after coring. If NDT is used to estimate the in-situ strength, a calibrated relationship between the concrete mixture and the NDT apparatus must have been established prior to NDT testing according to its respective standard test method. Test results from re-evaluation of rejectable concrete using NDT or coring will not be used for pay factor (PF) and price adjustment (ADJ) purposes. If the results from re-evaluation confirm that the lower rejection limit for 28-day compressive strength has been achieved, the represented quantity of concrete will remain in place and a pay factor (PF) of 0.75 will be applied for price adjustment (ADJ) determination. However, if the results from re-evaluation confirm that the lower rejection limit for 28-day compressive strength has not been achieved, as described above, the Engineer will elect to do one of the following.

A. Require removal and replacement of the entire represented quantity of concrete with new initial tests and pay factor and price adjustment analysis procedure conducted.

B. Allow the represented quantity of concrete to remain in place and apply an adjustment of minus 50.00 percent to all concrete items in the lot.

C. Allow the Contractor to submit a plan for corrective action for the Engineer's approval, to address the disposition of the rejectable concrete. If the Engineer does not approve the plan for corrective action, subsection d.4.A or d.4.B will be applied.

e. Measurement and Payment. If a price adjustment is made for reasons included in this special provision, that adjustment will be made using the original unit price bid for the specific item. If a contract unit price requires adjustment for other reasons not described in this special provision, the adjustments will be made using the original unit price and the adjustments will be cumulative.

Separate payment will not be made for providing, implementing, and maintaining an effective QC program. All costs associated with this work will be included in the applicable unit prices for the concrete items. Failure by the Contractor to maintain the proper curing environment during initial cure will not be basis for claim against the Agency.

All costs associated with providing, locating, relocating, maintaining, and securing the adequate number of portable curing facilities for the project, necessary to provide sufficient initial curing for the Contractor's QC and Engineer's QA strength test specimens will be included in the applicable unit prices for the concrete items. No additional payment will be permitted. The Contractor is responsible for damage, theft, subsequent replacement, and removal after completion of the work for each curing facility used on the project.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
ACCEPTANCE OF HMA MIXTURE ON LOCAL AGENCY PROJECTS

C&T:JWB

1 of 2

C&T:APPR:JWB:JAR:07-27-04
FHWA:CON. APPR:06-06-11

a. Description. This special provision provides acceptance testing requirements for use on local agency projects that do not include the quality control/quality assurance special provision. The HMA mixture provided must meet the requirements of the standard specifications, except where modified herein.

b. Materials. Provide a mixture of aggregates, mineral filler (if required), and asphalt binder proportioned to be within the master gradation limits shown in the project documents, and meeting the uniformity tolerances listed in Table 1. The master gradation range is to be used for establishing mix design only. Topsoil, clay, or loam can not be added to aggregates which are to be used in plant mixed HMA mixtures.

c. Construction. After the job-mix-formula (JMF) is established, the aggregate gradation and the binder content of the HMA mixture furnished for the work must be maintained within the Range 1 uniformity tolerance limits permitted for the JMF specified in Table 1. However, if deviations are predominantly either below or above the JMF, the Engineer may order alterations in the plant to bring the mixture to the JMF. If two consecutive aggregate gradations on one sieve, or binder contents as determined by the field tests, are outside Range1 but within Range 2 tolerance limits, the Contractor must suspend all operations. Contract time will continue during these times when the plant is down. Before resuming any production, the Contractor must propose, for the Engineer's approval, all necessary alterations to the materials or plant so that the JMF can be maintained. The Engineer will evaluate the alterations for there effects on AWI and mix design properties and will approve or disapprove the alterations.

The Engineer will perform acceptance sampling and testing. Each day of production, a minimum of two samples will be obtained for each mix type. Acceptance testing will be performed at the frequency specified by the Engineer. No less than three samples will be obtained for each mix type. Quality control measures to insure job control are the responsibility of the Contractor.

The crushed particle content of the aggregate used in the HMA mixture must not be more than 10 percentage points above or below the crushed particle content used in the JMF nor less than the minimum specified for the aggregate in the contract.

Establish a rolling pattern that will achieve the required in place density. The Engineer will measure pavement density with a Nuclear Density Gauge 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 96.0 percent of the density control target.

Table 1: Uniformity Tolerance Limits for HMA Mixtures

PARAMETER	TOP & LEVELING COURSE		BASE COURSE	
	Range 1(a)	Range 2	Range 1(a)	Range 2
Binder Content	± 0.40	± 0.50	± 0.40	± 0.50
% Passing # 8 and Larger Sieves	± 5.0	± 8.0	± 7.0	± 9.0
% Passing # 30 Sieve	± 4.0	± 6.0	± 6.0	± 9.0
% Passing # 200 Sieve	± 1.0	± 2.0	± 2.0	± 3.0
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.				

d. Rejected Mixtures. If for any one mixture, two consecutive aggregate gradations on one sieve or binder contents as determined by field tests exceed the uniformity tolerance of Range 2 under Table 1, or do not meet the minimum requirements for crushed particle content specified in the project documents, the mixture will be rejected. If such mixtures are placed in a pavement, the remaining portions of the failing field samples (split sample) will be sent to the MDOT Central Laboratory to confirm the field test results. If the Laboratory's results do not confirm the field test results and there are no price adjustments required due to test failures on the asphalt binder, then no price adjustments will be made for the mixture involved. If the Laboratory's results confirm the field test results and if, in the Engineer's judgment, the defective mixture can remain in place and there are no price adjustments required due to test failures on the asphalt binder, the contract unit price for the defective mixture involved, as determined from field tests, will be decreased on the following basis:

The contract unit price for material outside of Range 2 or with a crushed particle content below that specified in the project documents will be decreased 25 percent.

If three consecutive aggregate gradations on one sieve, or bitumen contents as determined by field tests are outside Range 1 but within Range 2 tolerance limits, the mixture produced from the time the third sample was taken until the gradation, or bitumen content is corrected back into Range 1 will be decreased in contract unit price by 10 percent. Field tests indicating that mixtures are subject to the 10 percent penalty will be confirmed in the same manner as mixtures subject to the 25 percent penalty as described herein.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
RECYCLED HOT MIX ASPHALT MIXTURE

C&T:CJB

1 of 1

C&T:APPR:SJP:DBP:02-17-11
FHWA:CON. APPR:06-06-11

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 Marshall mixtures.

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

- **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.

For Marshall mixtures lowering the high temperature of the binder one grade is optional except in the Metro Region in which the selected binder grade for the asphalt binder is one grade lower for the high temperature than the binder grade required for the specified project mixture type. For example, if the specified binder grade for the mixture type is PG64-22, the required grade for the binder in the recycled mixture would be a PG58-22.

The asphalt binder grade can also be selected using a blending chart for high and low temperatures. The Contractor must 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. The Contractor must supply the blending chart and the RAP test data used in determining the binder selection.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
SAMPLING ASPHALT BINDER ON LOCAL AGENCY PROJECTS

C&T:MF

1 of 1

C&T: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 shall 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 MDOT's Material Quality Assurance Procedures Manual.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
**NON-COMPLIANCE WITH SOIL EROSION AND SEDIMENTATION CONTROL
REQUIREMENTS**

C&T:DMG

1 of 2

C&T:APPR:JAR:TWK:08-02-06
FHWA:APPR:05-23-11

a. Description. This special provision establishes negative adjustments related to the failure to properly install and maintain soil erosion and sedimentation control (SESC) measures and the conditions under which these adjustments will be determined and applied. Nothing in this special provision modifies section 107 of the Standard Specifications for Construction.

Delays to the project as a result of the Contractor conducting corrective actions for SESC measures do not constitute a valid reason for an extension of time.

Deficiencies with SESC measures must be corrected in the time frame stated herein. For those deficiencies not corrected within the stated time frame, the Engineer will make a negative adjustment to the contract as stated herein.

b. Materials. None specified.

c. Construction. Install all temporary erosion control measures identified on the plans and as directed by the Engineer for an impacted area of the project prior to the start of any earth disturbance including, but not limited to, clearing, grading and excavation in that area. The Engineer will inspect these measures every 7 days and within 24 hours of precipitation events which result in off-site runoff. Deficiencies will be documented on the National Pollutant Discharge Elimination System (NPDES) Inspection Report (Form 1126).

If at any time during the project, including the time during the seasonal suspension, the Engineer documents deficient SESC measures, the Engineer will provide written notification with instructions for corrective action to the Contractor. The time frame for completion of these corrective actions will be specified in the notification and will be discussed with the Contractor as necessary.

Deficiencies are defined as one or more of the following:

1. Failure to install or construct SESC measures shown on the plans or as directed by the Engineer;
2. Failure to maintain the measures;
3. Failure to conduct earth change activities in a manner consistent with all applicable environmental permit requirements;
4. Failure to comply with the time limitations or the area limitations stated in subsections 208.03.B and 208.03.C, respectively, of the Standard Specifications for Construction.

SESC deficiencies are either emergency or non-emergency and the time frame for corrective action is determined accordingly. Sedimentation of a drainage structure or waters of the state or loss of support of the roadbed impacting public safety constitutes an emergency and corrective actions must be completed within 24 hours of notification. Non-emergency deficiencies must be corrected within 5 calendar days of notification.

For those emergency corrective actions not completed within 24 hours of notification, the Contractor will be assessed \$100.00 per hour for every hour the deficiency remains uncorrected after the initial 24 hours of notification. For those non-emergency corrective actions not completed within 5 calendar days, the Contractor will be assessed \$500.00 per day for every day, or part thereof, the deficiency remains uncorrected after the initial 5 days of notification.

If it is not practicable to complete the non-emergency corrective actions within 5 calendar days, the Contractor must document the reasons and propose a corrective action plan to the Engineer within 5 days of notification. The corrective action plan must contain the Contractor's course of action and a time frame for completion. If the reasons and the corrective action plan are acceptable to the Engineer, the Contractor will be allowed to proceed with the plan as proposed without incurring a negative adjustment. If the approved corrective action plan is not completed as proposed, the Contractor will be assessed \$1000.00 per calendar day for every day, or part thereof, the deficiency remains uncorrected after the time frame is exceeded in the approved corrective action plan.

Correct, in the timeframe stated herein, all other emergency or non-emergency SESC deficiencies documented anywhere else on the project during completion of the approved corrective action plan.

d. Measurement and Payment. The Engineer will make the necessary monetary adjustment to the contract amount based on the length of time the Contractor allows the deficiencies to remain uncorrected after the time allowance stated herein and as described to cover any costs incurred by the Department as a result of SESC violations

All costs associated with corrective actions required due to the Contractor's failure to properly install or maintain SESC measures on this project will be borne by the Contractor.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
PROMPT PAYMENT

CSD:JDM

1 of 4

C&T:APPR:JC:DBP:05-09-11
FHWA:APPR:08-01-11

Add the following subsection to Section 109, on page 106, of the Standard Specifications for Construction:

109.08 Prompt Payment.

A. Definitions.

Lower-tier subcontract. An agreement between a subcontractor of any tier and any individual or legal entity to perform a part of the subcontract work.

Lower-tier subcontractor. The individual or legal entity that performs part of the subcontract work through a lower-tier subcontract with a subcontractor.

Supplier. The individual or legal entity that agrees to provide materials or services to the prime Contractor, a subcontractor, or a lower-tier subcontractor for the performance of their contract work.

Sworn Statement. A written verification under oath reflecting all persons or entities, including union fringe benefit funds, who have furnished labor, equipment or materials to a subcontractor or lower tier subcontractor for performance of work on the project and the original contract amount, current amount due, amounts paid to date and balance to finish for each person or entity.

Waiver of Lien. A written release and waiver of any claim or right to payment for payments actually received for labor, equipment or materials furnished for performance of work on the project.

B. Progress Payments. For the first payment, or for a one time payment, the prime Contractor agrees to pay each subcontractor for the work associated with their subcontract no later than 10 calendar days from the date the prime Contractor receives payment from the Department and a duly executed Sworn Statement from the subcontractor.

For the second and subsequent payments, the prime Contractor agrees to pay each subcontractor for the work associated with their subcontract no later than 10 calendar days from the date the prime Contractor receives from the subcontractor its current Sworn Statement and Waivers of Lien from the subcontractor and the subcontractors' lower-tier subcontractors and suppliers verifying the prior payment has been received, but no later than 30 days from the prime Contractor's receipt of payment from the Department for said work.

Proof of payment documentation, using the Department's current form, is also required from the

prime Contractor to the Engineer prior to release of the second and subsequent estimates.

Release of payment from the Department for any work is confirmation that the Department has determined the work to have met the standards of satisfactory completion as defined below.

If the prime Contractor has concerns about the satisfactory completion of subcontractor or lower-tier subcontractor work items, this must be brought to the Engineers attention as soon as the concern is discovered. If the work meets the requirements of satisfactory completion and the prime Contractor has been paid for that work, the Engineer must determine whether the prime Contractor has demonstrated a valid reason for withholding payment from the subcontractor or supplier, or the subcontractor has demonstrated a valid reason for withholding payment from the lower-tier subcontractor or supplier. If the prime Contractor or subcontractor has done so, the Engineer will process a negative estimate pulling back the amount involved in the complaint. If payment has not been made, the Engineer will not include those items of work on an estimate until the issue has been resolved.

The prime Contractor remains responsible to make prompt payments to their subcontractors and suppliers even if the prime Contractor is in violation of other contractual obligations and the Department is withholding payment from the prime Contractor for those violations.

The prime Contractor must include in all subcontracts notice of the Department's prohibiting prime Contractors from holding retainage from subcontractors under 49 CFR 26.29.

This prompt payment provision is a requirement of 49 CFR 26.29 and does not confer third-party beneficiary right or other direct right to a subcontractor against the Department. This provision applies to both DBE and non-DBE subcontractors.

C. Satisfactory Completion. Progress and Partial payments for contract work are made based on this assessment; and satisfactory completion is defined for purposes of this prompt payment provision as:

1. Upon preliminary review, the Engineer finds the work completed in accordance with the contract, plans, and specifications; and
2. Required paperwork, for Progress and Partial payments, including material certifications, payrolls, etc., has been received and reviewed by the Engineer.

The determination of whether work meets the standards of satisfactory completion is the responsibility of the Engineer and not the prime Contractor or subcontractors.

D. Less than full payment release. Any delay or postponement of payment from the time frames specified herein, or partial payment from the prime Contractor to a subcontractor or supplier, or from a subcontractor to a lower-tier subcontractor or supplier, may occur only upon receipt of written approval from the Engineer. There may be circumstances where a prime Contractor or subcontractor has a valid reason to withhold payment from a subcontractor or lower-tier subcontractor or supplier. Examples of such circumstances include but are not limited to: a demonstrated failure of the subcontractor to pay, or verify payment to, its lower tier subcontractors or suppliers; a demonstrated breach of the subcontract by the subcontractor such as abandonment of the work, unacceptably tardy progress in the work resulting in delays to the project which may subject or have subjected the prime Contractor to liquidated damages; failure or refusal to correct defective work, failure or refusal to provide required submittals such

as materials certifications, certified payrolls, etc.

E. Non-Payment Claims. Notifications of failure to meet prompt payment provisions can be referred by the prime Contractor, subcontractor, lower-tier subcontractor or supplier to the alleged offending party and must be made in writing and sent certified mail, with a copy to the Engineer and the prime Contractor. All notifications should be mailed within 30 calendar days of the date the payment was to be received. The alleged offending party must respond in writing to the claimant, with a copy to the Engineer, the prime Contractor and the Engineer of Construction and Technology, within 10 calendar days of receipt of the notification of failure to meet prompt payment provisions. Upon receipt of the written notice and response, the Engineer must verify in writing whether grounds exist for the prompt payment complaint. If the alleged offending party provides written evidence of the circumstances outlined in subsection 109.08.D, the parties to the complaint should employ dispute resolution procedures as provided in subsection 109.08.F to resolve the prompt payment issue. At this point, and pending completion of the dispute resolution procedures, there is no basis for any negative action against the alleged offending party. Failure on the part of the alleged offending party to respond to a notification from a claimant shall be considered by the Department as an admission of the violation and may result in sanctions.

Any non-payment claimant has the option of submitting a lien claim to the MDOT Contract Services Division in order to notify the project Surety of the non-payment issue. It is the responsibility of the Surety to ensure that all legitimately due payments are made.

F. Dispute Resolution. The parties must attempt to agree on whether to mediate or arbitrate the dispute and agree upon a mediator or arbitrator within 10 calendar days after a written complaint has been verified by the Engineer. If, within that 10 day period, the parties agree upon a mediator or arbitrator, the entire dispute resolution process must be completed within 60 days from initiation unless, for good cause verified by the mediator or arbitrator, the proceeding will require more time to complete. The cost of the mediation or arbitration shall be borne by the parties as determined by the mediator or arbitrator. Qualified costs of mediation or arbitration, for certified DBEs, will be paid by the Department based on current procedures. The DBE must contact the Office of Business Development for information on current procedures and to receive reimbursement. Outcomes of the dispute resolution will be provided to the Engineer by the mediator or arbitrator within 10 days of the decision. Upon receipt of the status and results of the dispute resolution procedure, the Engineer shall release the disputed payment being held by the Department as outlined by the mediator or arbitrator. If the parties cannot agree upon mediating or arbitrating the dispute or upon a mediator or arbitrator within the 10 day period specified herein, the complaining party shall initiate whatever dispute resolution procedure is specified in the parties' agreement or as available under Michigan law within 30 days of the complaint being verified by the Engineer. The result of the dispute resolution proceeding or litigation shall be provided to the Engineer promptly upon the conclusion of the proceeding and the Engineer shall release the disputed payment being held by the Department in accordance with the result.

At the Engineer's discretion, copies of documents related to prompt payment claims may be requested for inclusion in the project files.

G. Sanctions. Failure to comply with any of the prompt payment requirements by the prime Contractor, subcontractor, lower-tier subcontractor, or supplier may result in sanctions against the offending party. These sanctions may include, but are not limited to: withholding of estimates on projects where prompt payment violations are confirmed; reduction or removal of

prequalification; and/or suspension of bidding privileges.

All provisions of this prompt payment subsection apply to all subcontracts, lower-tier subcontracts, and supplier agreements and must be included in each subcontract for the contract, including all lower-tier subcontracts and agreements.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
HIGH VISIBILITY CLOTHING

SSA:JDG

1 of 1

C&T:APPR:JAJ:BRZ:01-23-09
FHWA:APPR:06-01-11

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.

This special provision will remain in place until the 2009 Federal Manual on Uniform Traffic Control Devices, Part 6, has been adopted by the State of Michigan.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
CONTRACTOR PERFORMANCE EVALUATIONS

C&T:JJG

1 of 2

C&T:APPR:BJO:RRV:06-07-11
FHWA:APPR:06-20-11

a. Description. Project management staff will evaluate the Contractor's performance on this project and the evaluation may be used as a basis for modifying the prequalification ratings of the Contractor. An evaluation may be issued during the course of a project (interim) and will be issued after completion of a project (final). The criteria used for the evaluation will be provided by the Engineer upon written request at the preconstruction meeting or found on the MDOT web site in the Bureau of Highways Instructional Memorandum 2011-01. Any action to modify the Contractor's prequalification ratings will be taken in accordance with the duly promulgated prequalification rules.

If an interim contractor performance evaluation is issued and regardless of whether the Contractor requests a meeting to discuss a Contractor Performance Evaluation, project management staff may require the Contractor to submit a performance improvement plan to address needs identified in the Contractor Performance Evaluation and to attend a meeting to discuss the improvement plan. After the meeting is held, the project management staff may approve the plan or require changes to the plan. Resubmit the plan if changes are required. Immediately implement approved performance improvement plans. If the Contractor does not implement the plan immediately, MDOT will consider the Contractor to be in non-compliance and will take action as described under section c of this special provision.

Within 21 days of the receipt of a Contractor Performance Evaluation, the Contractor may make a written request to meet with project management staff to review the evaluation. As a result of this meeting, the evaluation may be left unchanged or revised as deemed appropriate by the Engineer. The Engineer will then give the Contractor written notice with the final Contractor Performance Evaluation. If the meeting is not requested within the 21-day period, the original evaluation becomes the final and will not be subject to later contest or appeal.

b. Appeals.

1. Appeal of Evaluation. Within 14 days after the date a performance evaluation becomes final and is received by a Contractor, they may file a written appeal of any rating of seven or below to the Engineer. The written appeal must contain documentation supporting the Contractor's position that the rating is not warranted. The appeal will be considered by a Contractor Performance Evaluation Appeal Panel. If no appeal is filed within the 14-day period, the evaluation becomes final and will not be subject to later contest or appeal. Interim Contractor Performance Evaluations cannot be appealed.

2. Appeal of Performance Improvement Plan. Within 14 days after the date that a performance improvement plan is approved and sent to the Contractor, the Contractor may file a written appeal of that plan to the Engineer and request to appear before a Performance Evaluation Appeal Panel. Documentation must include the reasons for the appeal. If a timely written appeal is not filed, the performance improvement plan becomes final and will not be

subject to later contest or appeal.

An appeal filed by a Contractor will be considered by a Contractor Performance Evaluation Appeal Panel. The panel will be composed of three licensed professional Engineers from the Department (following the format of a Central Office Review Panel) who were not directly involved in the management of the project. This panel will review appeals on all Contractor Performance Evaluations for this project. The Contractor and the Engineer will be required to submit supporting documentation relevant to the appeal and will attend a formal appeal hearing. Upon concluding its review, the panel will confirm or modify the Contractor Performance Evaluation. The panel will, within 30 days, send the Contractor and Engineer written notice of its decision along with a copy of the modified Contractor Performance Evaluation if applicable. The original or modified Contractor Performance Evaluation is final and constitutes the Department's decision; it is not subject to further contest or appeal.

c. Non-Compliance. If a Contractor fails to honor a request by project management staff to submit a performance improvement plan or to meet to discuss it, or if a Contractor fails to carry out an approved performance improvement plan, that failure may be used as a basis for modifying the prequalification ratings of the Contractor. Any action to modify the Contractor's prequalification ratings will be taken in accordance with the duly promulgated prequalification rules.

d. Subcontractors. For purposes of this special provision, the word "Contractor" includes subcontractors. Project management staff will evaluate the performance of subcontractors in accordance with this special provision.

NOTICE TO BIDDERS

UTILITY COORDINATION

1 OF 2

The contractor shall cooperate and coordinate construction activities with the owners of utilities as stated in Section 104.08 of the 2012 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 109.05E of the 2012 MDOT Standard Specifications for Construction.

1. General

For protection of underground utilities, the Contractor shall call the Miss Dig system at (800) 482-7171 a minimum of three (3) working days prior to excavating. Members will thus be routinely notified. This does not relieve the Contractor of the responsibility of notifying utility owners who may not be a part of the Miss Dig alert system.

2. Coordination with Utilities

During the course of the construction, the Contractor will encounter both overhead and underground utilities. The contact information of the utility company representatives are as follows:

Consumers Energy - Electric
Richard Klender
1325 Wright Avenue
Alma, MI 48801
(517) 466-4279

Frontier – Telephone
Jeff James
345 Pine Street
Alma, MI 48801
(989) 463-0392

DTE Energy/MichCon – Gas
Dave Newcomb
609 Bjornson
Big Rapids, MI 49307
(231) 592-3244

Charter Communication – Cable TV
Jeff Price
915 E. Broomfield Rd.
Mt. Pleasant, MI 48858
(989) 773-7090

City of Mt. Pleasant – Water, Sanitary & Storm Sewer
Gary Schwerin
1303 N. Franklin Ave.
Mt. Pleasant, MI 48858
(989) 779-5408 or (989) 779-5401

The Contractor's attention is directed to existing underground gas mains, which are located adjacent to or near the work. The Contractor shall use extreme care when working in these areas, and shall notify MichCon Gas Company at least three (3) working days in advance before beginning any excavation in these areas.

3. Relocation

Utility relocation work is anticipated for this project. Contact the appropriate utility company immediately to coordinate relocations. This will minimize delays to the Contractor's operations due to utility work.

Owners of public or private utilities will not be required to relocate utilities in order to facilitate the operations of construction equipment, unless it is determined by the Engineer that such poles or structures constitute a hazard to the public or are extremely dangerous to the Contractor's operations.

CITY OF MT. PLEASANT
SPECIAL PROVISION
FOR
MAINTAINING TRAFFIC

Page 1 of 2

a. Description

Traffic shall be maintained throughout the project according to sections 104.11 and 812 of the Michigan Department of Transportation 2012 Standard Specifications and as specified herein. The Contractor shall for the safety and protection of through and local traffic, furnish, erect, and maintain traffic control devices as shown on the plans and as directed by the Engineer. The Contractor shall remove the traffic control devices in a prompt, safe, and orderly manner upon completion of the work or when directed by the Engineer.

The Contractor shall maintain access to business and residential driveways at all times as described herein.

The Contractor shall notify the Engineer a minimum of 72 business hours prior to the implementation of any detours, street closures, or lane closures.

Traffic control elements, traffic control devices, barricade lighting, barricade spacing, taper lengths, etc., shall conform to the requirements of the 2005 edition of the Michigan Manual of Uniform Traffic Control Devices as amended, unless otherwise specified herein. This includes advance warning signs, barricades and channeling devices at intersecting streets, on which traffic is to be maintained.

The Contractor is required to contact all local and state police, fire, emergency services that have jurisdiction within the construction influence area a minimum of five (5) calendar days prior to the implementation of any lane closure or detours.

Changes and/or adjustments to the maintaining traffic plans and standards may be applied as determined by the Engineer.

1. Construction Influence Area (CIA)

The CIA shall include the right-of-way of Michigan Street from the beginning to the end of the construction signing and inclusive of all the construction signing on the intersecting streets & detours.

b. Materials

All traffic control devices and their usage shall conform to the 2005 edition of the Michigan Manual of Uniform Traffic Control Devices as amended, and as specified as herein.

Construction signing shall be required as shown in the Maintaining Traffic plan sheets. Signs, barricades, and plastic drums shall be cleaned over the entire surface as required by the Engineer.

1. Temporary Signs

All signs must be approved by the Engineer prior to use.

All diamond-shaped warning signs shall be 48" x 48" mounted at a 7' minimum bottom height. Distances shown between construction warning, regulatory, and guide signs shown on the plans and typical are approximate and may require field adjustment, as directed by the Engineer.

All temporary signs shall be constructed with legends and symbols flush to the sign's face and not extending beyond the sign borders or edges. Temporary warning, regulatory, and guide signs not required for a particular work Operation shall be removed, completely covered, or laid down with the legs off, as directed by the Engineer.

c. Construction

The project shall be constructed in two phases. The first phase shall be from Fancher Street to the west side of University Street (Approx. Sta 28+50). The second phase shall be from the west side of University Street (Approx. Sta 28+50) to Washington Street. The contractor shall complete all utility work, sidewalk work, sand subbase, aggregate base, curb and gutter, and the HMA base course on phase one prior to beginning any work on phase two.

Intersection Closures: The contractor shall not close the Washington and Michigan intersection and the Main and Michigan intersection at the same time. In addition, the contractor shall have each intersection closed for a maximum of one week. During the closure, the contractor shall complete all utility work, sand subbase, aggregate base, and curb and gutter.

The contractor shall limit street excavation activities to 300 feet at a time. The contractor's backfill and aggregate base placement shall follow closely behind, such that no more than 300 feet of road shall be without existing pavement or a minimum of four (4) inches of compacted gravel on the sub-base.

The contractor shall schedule no work for July 3,4,5 2012 in recognition of Independence Day.

1. Residential Access

Access to driveways for local residents and businesses shall be maintained and available for use. All driveways shall be open when the contractor is not working, including all evenings, nights, Sundays, and holidays except as approved in writing by the inspector and with written notifications to the residents/owners by the contractor.

2. Street Closures

Streets within 300 feet (one block) of construction operations may be closed only to through traffic. All other streets and intersections shall be open to all traffic and maintained in good driving condition by the contractor at all times. Intersections shall be open to cross street traffic except when construction work is in progress in those intersections. No more than one intersection may be closed at a time.

3. Residential Refuse and Recycling Collection

The city contractor for trash (refuse) is Republic Services/Allied Waste, 877-698-7274, and MMI Industries, 989-773-6918, for recycling. Collection begins at 7:30 a.m. The contractor shall schedule the work to allow and provide access for refuse and recycling contractors to provide their services to the residential properties. If the refuse and recycling contractors are unable to collect materials due to construction operations, then the construction contractor shall collect and deliver the refuse and recyclable material to a cross street for collection at no cost to the City. It is the responsibility of the construction contractor to contact the refuse and recycling contractors to coordinate operations.

d. Measurement and Payment

PAY ITEM

PAY UNIT

Barricade, Type III, High Intensity, Lighted, Furn	Each
Barricade, Type III, High Intensity, Lighted, Oper	Each
Minor Traf Devices	Lump Sum
Plastic Drum, High Intensity, Furn	Each
Plastic Drum, High Intensity, Oper	Each
Sign, Type B, Temp, Prismatic, Furn	Square Foot
Sign, Type B, Temp, Prismatic, Oper	Square Foot
Traffic Regulator Control	Lump Sum

CITY OF MT. PLEASANT
SPECIAL PROVISION
FOR
MAINTAINING TRAFFIC

Page 1 of 2

a. Description

Traffic shall be maintained throughout the project according to sections 104.11 and 812 of the Michigan Department of Transportation 2012 Standard Specifications and as specified herein. The Contractor shall for the safety and protection of through and local traffic, furnish, erect, and maintain traffic control devices as shown on the plans and as directed by the Engineer. The Contractor shall remove the traffic control devices in a prompt, safe, and orderly manner upon completion of the work or when directed by the Engineer.

The Contractor shall maintain access to business and residential driveways at all times as described herein.

The Contractor shall notify the Engineer a minimum of 72 business hours prior to the implementation of any detours, street closures, or lane closures.

Traffic control elements, traffic control devices, barricade lighting, barricade spacing, taper lengths, etc., shall conform to the requirements of the 2005 edition of the Michigan Manual of Uniform Traffic Control Devices as amended, unless otherwise specified herein. This includes advance warning signs, barricades and channeling devices at intersecting streets, on which traffic is to be maintained.

The Contractor is required to contact all local and state police, fire, emergency services that have jurisdiction within the construction influence area a minimum of five (5) calendar days prior to the implementation of any lane closure or detours.

Changes and/or adjustments to the maintaining traffic plans and standards may be applied as determined by the Engineer.

1. Construction Influence Area (CIA)

The CIA shall include the right-of-way of Michigan Street from the beginning to the end of the construction signing and inclusive of all the construction signing on the intersecting streets & detours.

b. Materials

All traffic control devices and their usage shall conform to the 2005 edition of the Michigan Manual of Uniform Traffic Control Devices as amended, and as specified as herein.

Construction signing shall be required as shown in the Maintaining Traffic plan sheets. Signs, barricades, and plastic drums shall be cleaned over the entire surface as required by the Engineer.

1. Temporary Signs

All signs must be approved by the Engineer prior to use.

All diamond-shaped warning signs shall be 48" x 48" mounted at a 7' minimum bottom height. Distances shown between construction warning, regulatory, and guide signs shown on the plans and typical are approximate and may require field adjustment, as directed by the Engineer.

All temporary signs shall be constructed with legends and symbols flush to the sign's face and not extending beyond the sign borders or edges. Temporary warning, regulatory, and guide signs not required for a particular work Operation shall be removed, completely covered, or laid down with the legs off, as directed by the Engineer.

c. Construction

The project shall be constructed in two phases. The first phase shall be from Fancher Street to the west side of University Street (Approx. Sta 28+50). The second phase shall be from the west side of University Street (Approx. Sta 28+50) to Washington Street. The contractor shall complete all utility work, sidewalk work, sand subbase, aggregate base, curb and gutter, and the HMA base course on phase one prior to beginning any work on phase two.

Intersection Closures: The contractor shall not close the Washington and Michigan intersection and the Main and Michigan intersection at the same time. In addition, the contractor shall have each intersection closed for a maximum of one week. During the closure, the contractor shall complete all utility work, sand subbase, aggregate base, and curb and gutter.

The contractor shall limit street excavation activities to 300 feet at a time. The contractor's backfill and aggregate base placement shall follow closely behind, such that no more than 300 feet of road shall be without existing pavement or a minimum of four (4) inches of compacted gravel on the sub-base.

1. Residential Access

Access to driveways for local residents and businesses shall be maintained and available for use. All driveways shall be open when the contractor is not working, including all evenings, nights, Sundays, and holidays except as approved in writing by the inspector and with written notifications to the residents/owners by the contractor.

2. Street Closures

Streets within 300 feet (one block) of construction operations may be closed only to through traffic. All other streets and intersections shall be open to all traffic and maintained in good driving condition by the contractor at all times. Intersections shall be open to cross street traffic except when construction work is in progress in those intersections. No more than one intersection may be closed at a time.

3. Residential Refuse and Recycling Collection

The city contractor for trash (refuse) is Republic Services/Allied Waste, 877-698-7274, and MMI Industries, 989-773-6918, for recycling. Collection begins at 7:30 a.m. The contractor shall schedule the work to allow and provide access for refuse and recycling contractors to provide their services to the residential properties. If the refuse and recycling contractors are unable to collect materials due to construction operations, then the construction contractor shall collect and deliver the refuse and recyclable material to a cross street for collection at no cost to the City. It is the responsibility of the construction contractor to contact the refuse and recycling contractors to coordinate operations.

d. Measurement and Payment

PAY ITEM

PAY UNIT

Barricade, Type III, High Intensity, Lighted, Furn	Each
Barricade, Type III, High Intensity, Lighted, Oper	Each
Minor Traf Devices	Lump Sum
Plastic Drum, High Intensity, Furn	Each
Plastic Drum, High Intensity, Oper	Each
Sign, Type B, Temp, Prismatic, Furn	Square Foot
Sign, Type B, Temp, Prismatic, Oper	Square Foot
Traffic Regulator Control	Lump Sum

CITY OF MT. PLEASANT
SPECIAL PROVISION
FOR
IRRIGATION SYSTEM

Page 1 of 1

a. Description

Extend the existing irrigation system to the proposed tree and planter locations as shown on the drawings and described in this special provision.

b. Materials

The irrigation pipe used for this work shall meet the requirements for 100 PSI NSF approved poly pipe. Main irrigation line shall be 1 1/4" minimum and lateral lines shall be 1" minimum.

Conduit shall be 3" schedule 40 pvc pipe.

Flood bubblers shall not exceed 1 gal/min flow.

12" low flow popup sprays shall have a 5' – 8' radius coverage area.

Controller wire shall be UL approved #14 gauge single strand

c. Construction

Contractor shall install irrigation to all proposed tree and planter locations as shown on the drawing and directed by the Engineer. Each tree location shall have a flood bubbler installed and each planter shall have 12" low flow popup sprays with a 5' – 8' radius coverage area. The contractor shall install enough popup sprays to cover the entire planter area. All street crossings shall be accomplished using a 3" pvc conduit to protect the irrigation and controller wires. Contractor to utilize existing irrigation controllers (Hunter commercial outdoor controllers) to accommodate new irrigation zones, and shall install 24 volt solenoid electric valve with flow control on each new zone. All irrigation must be retested and inspected upon completion of street, curb, brick, and sidewalk work. Any damage must be repaired at no cost to the City.

d. Measurement and Payment

The complete work as measured for Irrigation System will be paid for at the contract unit price for the following contract pay items and includes all material, equipment, and labor to complete this item.

PAY ITEM

Irrigation System

PAY UNIT

Lsum

CITY OF MT. PLEASANT
SPECIAL PROVISION
FOR
CURB AND GUTTER, CONC, DET F4, MODIFIED

Page 1 of 1

a. Description

Install Curb and Gutter, Conc, Det F4, Modified according to this Special Provision and as shown on the plans.

b. Materials

The materials used for this work shall meet the requirements of Section 802.02 of the 2012 Standard Specifications for Construction except that the reinforcing steel shall be eliminated.

c. Construction

Construct Curb and Gutter, Conc, Det F4, Modified in accordance with the requirements of Section 802 of the 2012 Standard Specifications for Construction except that the reinforcing steel shall be eliminated. The approximate 2 inches to 2.5 inches of material placed under the Curb and Gutter, Conc, Det F4, Modified shall be 22A aggregate, and shall be included in the bid price for Curb and Gutter, Conc, Det F4, Modified, as detailed on the proposed cross-section plan sheet.

d. Measurement and Payment

The complete work as measured for Curb and Gutter, Conc, Det F4, Modified will be paid for at the contract unit price for the following contract pay items and includes all material, equipment, and labor to complete this item.

PAY ITEM

PAY UNIT

Curb and Gutter, Conc, Det F4, Modified

Foot

CITY OF MT. PLEASANT
SPECIAL PROVISION
FOR
SANITARY SEWER MATERIALS AND CONSTRUCTION
1 OF 10

DESCRIPTION

The Contractor shall furnish all labor, equipment, and materials to completely construct, test, and place in operation, the sanitary sewer system as shown on the Plans and specified herein.

MATERIALS

A. Service Pipe

Six-inch (6") service pipe used for riser pipe and house leads shall be constructed of the following material:

PVC conforming to D-3034 with 0.180-inch wall thickness (SDR-35). Joints and couplings shall conform to ASTM D-3212. Pipe shall have a home mark, and shall not be blue in color.

B. Sewer Main Pipe

Unless otherwise specified on the Plans or Proposal form, the Contractor shall utilize the following materials, subject to Specifications and size limitations. Sewer pipe materials may be changed only at manholes.

1. Eight-inch (8") diameter through fifteen-inch (15") diameter pipe - Shall be SDR 35 PVC sewer pipe meeting the requirements of ASTM D-3034.
2. Sixteen-inch (16") diameter pipe and larger - Shall be SDR 35 PVC pipe meeting the requirements of ASTM F-679.
3. Joints shall meet ASTM D-3212 push on type with seating mark. Service lead connections shall be made using standard wye fittings.

C. Manholes

1. Pre-Cast Sections

Manholes shall be constructed of circular pre-cast concrete units with circular reinforcement and shall conform to the requirements of the current Specifications for Pre-Cast Reinforced Concrete Manhole Risers and Tops ASTM C-478.

Marking of the sections shall be done within six (6) days after manufacture. Certification from the manufacturer that the manholes supplied meet the required Specifications shall be provided to the Engineer by the Contractor.

Cone sections shall be the eccentric type with a minimum depth of 12".

Joints between sections shall be rubber O-ring gasket. Mastic sealing compound will not be accepted.

Manhole connections shall be made with an integrally cast seal system, such as "Kor-N-Seal", "Lock-Joint Flexible Manhole Sleeve", or an approved equal. Connections to existing manholes (without flexible coupling) with PVC pipe shall be made using a water stop cemented to the plastic pipe.

2. Manhole Steps

Manhole steps shall be plastic-coated steel. They shall be placed sixteen-inches (16") apart unless otherwise shown and shall be cast in the manhole walls. It will not be acceptable to grout the steps in place after the manhole section is poured.

Plastic-coated steel steps shall consist of a 3/8-inch diameter deformed steel reinforcing rod covered with a copolymer polypropylene plastic. The steel rod shall be grade 60 and conform to the ASTM A-615. The plastic shall conform to ASTM 2146-68, Type II, Grade 49108.

Steps shall also conform to the following standards:

- a. Michigan Department of Labor Occupational Safety Standards, Part 3, Rule 341.
- b. ASTM C-478.
- c. OSHA 1910.27 G

3. Castings

Manhole frames and covers shall be EJIW 1040 or equal and catch basin castings shall be EJIW 7000 or equal. The preferred casting shall be stamped with the City of Mt. Pleasant logo, available at East Jordan Iron Works. Castings shall have a minimum clear internal opening of 24 inches.

Top of casting shall be set as follows:

- a. Flush with paved or grass surfaces.
- b. Four-inches (4") below gravel road surface with eight-inches (8") of adjustment.

4. Cement Mortar

Mortar for block and brick work in manholes and other appurtenances shall be mixed in the proportion of one (1) part Portland cement to three (3) parts sand. Hydrated lime may be added in proportions not to exceed ten percent (10%) of the volume of the cement.

5. Adjusting Rings

Casting adjustments shall be accomplished with pre-cast concrete grade rings conforming to ASTM C478. Rings shall have an ID not less than twenty-four-inches (24") nor greater than twenty-five inches (25"), a minimum thickness of two-inches (2"), and a minimum OD of forty-inches (40").

6. Brick and Block

Fill-in around pipes shall be accomplished with bricks and/or blocks. Brick shall be concrete conforming to ASTM C-55, Grade N. Block shall be concrete conforming to ASTM C-139.

7. Concrete

Concrete used in manhole construction shall be transit mixed with a twenty-eight (28) day compressive strength of 3,000 psi. The approximate proportions of the mix shall be one (1) part cement, two (2) parts fine aggregate, and three (3) parts coarse aggregate. The mix shall contain six (6) sacks of cement per cubic yard with a maximum allowable slump of three and one half-inches (3 1/2").

CONSTRUCTION

A. Sewer Main

Polyvinyl chloride (PVC) pipe shall be installed according to the UniBell Plastic Pipe Association Recommended Standards and Practices, and shall conform to ASTM D2321.

The installation, handling, and storage of all pipe shall be in accordance with manufacturer's recommendations. Pipe shall be protected at all times against impact, shocks, and free fall. Stockpiling of pipe at the job site shall be in such a location as to minimize handling.

Trenches for pipe shall be excavated so that there will be a minimum clearance of six-inches (6") on each side of the barrel of the pipe and a maximum width of trench at the level of the top of the pipe of not more than 16 inches greater than the OD of the pipe 30 inch ID or smaller and not more than 24 inches greater than the OD of pipe 33 inch ID or larger. There shall be, at all times, sufficient width to permit the pipe to be laid and to permit first-class construction methods to be used. Sufficient space shall be provided in the trench to permit the joint to be properly made.

The trench bottom shall be undercut a minimum of four-inches (4") below the final location of the pipe and the trench then filled with MDOT 6A crushed limestone compacted with hand tampers to provide a cushion for bedding the pipe. The bedding material shall be free of stone over 1 ½ inches in size.

The trench shall be dry during the pipe laying operation. Bell holes shall be excavated so that after placement, the barrel of the pipe will have full bearing on the trench bottom. The laying of pipe shall commence at the outlet and proceed upgrade with spigot ends pointing in the direction of flow.

All pipe shall be laid to the line and grade called for on the Plans utilizing an in-line laser beam system for vertical and horizontal control. Each pipe, as laid, shall be checked by the Contractor with a suitable target to insure that this result is obtained. Vertical elevation of the invert shall, at any point, be within plus or minus 0.04 foot (1/2-inch) of plan elevation. Horizontal alignment must meet the same tolerance.

Joints shall be made in accordance with the manufacturer's requirements. The socket of the pipe last laid shall be wiped clean and the spigot end of the pipe to be laid shall then be centered and pushed home to the stop mark. The pipe shall be centered so that they will form a sewer with a uniform invert.

After the pipe is laid, MDOT 6A crushed limestone shall be placed the entire width of the trench up to the spring line of the pipe. Backfill shall be carefully tamped under the haunches of the pipe. Care shall be taken during backfilling and tamping so that the line and grade of the pipe are not disturbed. After compacting, MDOT 6A crushed limestone shall be placed until the entire width of the trench is filled to not less than one foot (1') above the top of the pipe. The maximum stone size for backfill material within one foot (1') of the top of pipe shall be 1 ½ inches.

The remainder of the backfilling may be done with Class II sand backfill. All backfill is to be compacted in maximum one-foot (1') lifts to a density of ninety-five percent (95%) of the maximum unit weight as determined by the modified proctor and shall contain no debris, frozen material, organic material, etc., within two feet (2') of the top of the pipe.

Main sewer line stubs for future connections shall be furnished and placed by the Contractor according to details shown on the drawings and as directed by the Engineer. The end of the stub where future connections will be made shall be properly supported on MDOT 6A crushed limestone so that any settlement will not disturb the connection. The end of the main sewer line stub shall be witnessed and marked in the manner described for sanitary sewer leads.

Excavation for structures shall be extended sufficiently beyond the limits of the structure to provide ample room for form construction, backfill compaction, and other construction methods to be followed, wherever necessary.

In case soft material is encountered in the bottom of a sewer trench or underneath a drainage structure which, in the opinion of the Engineer, is not suitable for supporting the pipe, the Engineer may order the removal of this soft material and its replacement with MDOT 6A crushed limestone in order to make a suitable foundation for the construction of the sewer structure.

Where the construction is on or along the line of an existing sewer, the Contractor shall maintain sanitary sewer services by means of bypass pumping or other methods approved by the Owner.

The pumps, when used, shall be large enough to handle the peak daily flow of the pipe which is being bypassed. If flow exceeds the pump capacity, the plugs shall be pulled allowing the flow to pass through the downstream sewer. When plugs are used to control flow or for pumping, they shall be of the pneumatic type to allow for quick release without entering the manhole.

If sand bags are used to block a downstream pipe in a manhole, each bag shall be tied off with a rope to allow removal of the sand bag without entering the manhole.

Flow control shall be monitored so that surcharging of sewers, flooding of private or public property (including basements) does not occur. Any damage caused by the control of flow shall be the Contractor's responsibility to repair, correct or indemnify.

Smaller sewers with low flow, which must be temporarily blocked, shall use the bypass pumping procedure or temporary fluming to maintain flow.

The Contractor shall be responsible for any damage that may result from failure to maintain sewer flow.

B. Service Leads

1. Riser Pipe

Where shown on the Plans or where directed by the Engineer, the Contractor shall put in six-inch (6") pipe risers extending from the branch connection in the sewer up to within eleven-feet (11') of the ground surface or to a depth adequate to serve the house lead elevation shown at the property line. These pipes shall be laid up with a joint as specified, and the top pipe shall be closed with a stopper. All risers shall be laid up and held securely in place and the backfill shall be carefully placed around them so as not to disturb them. MDOT 6A crushed limestone, six-inches (6") thick shall be placed under and around the "Y" branch and over it to a height of six-inches (6") above the sewer to furnish an adequate support to the riser pipe.

The top of each riser pipe shall be measured and recorded by the Contractor in the same manner as specified for measuring and marking stub connections.

2. Sewer Leads

Sewer leads shall be installed at the locations and elevations shown on the Plans or as directed by the Engineer. Before sewer leads are installed, the Contractor shall confirm the exact location with the property owner, if property is occupied. On vacant lots, the sewer leads will generally be located at approximately the mid-point of the front lot line, unless the owner requests another location. The sewer leads shall connect to the six-inch (6") wye or six-inch (6") riser and generally extend to the street right-of-way line. All sewer leads that do not have other pipe connected to them immediately shall be fitted with suitable stoppers and braced for pressure tests.

In order to properly mark the location of every wye, riser, clean out, and sewer lead, the Contractor shall make accurate measurements of each installation before the sewer lead is backfilled. The measurements shall indicate the distance from each wye to the center of the downstream manhole. The measurement of risers, clean outs, and sewer leads shall indicate the distance from the main line sewer and to two (2) fixed reference points, i.e. fire hydrants, manholes, building corners.

The Contractor shall furnish the Engineer with a copy of these measurements immediately upon the completion of each street.

In addition to measurements, the Contractor shall furnish and place a treated two inch by four inch (2" x 4") marking stick at each lead of such length that it will reach from the lead to within six-inches (6") of the ground surface. Each marker shall be set in a vertical position and held vertical while backfilling the trench. Two (2) 16-penny common nails shall be driven into the top of each two inch by four inch (2" x 4") marking stick so the sewer lead location may be found with a magnetic locator.

3. Tapping Existing Mains

Where existing main sewer lines are to be tapped, the Contractor shall use a pre-formed saddle approved by the Engineer. A hole shall be cored to the proper size in the main line and all rough edges smoothed to prevent obstructions. Tap shall be horizontal to forty-five (45) degrees above horizontal. No vertical taps are allowed. The exterior of the main line pipe shall be thoroughly cleaned in order to provide a prepared surface for gluing the saddle onto the main line. The Contractor shall clean the main line of all debris, which may enter during his tapping operation. The Contractor shall insure that the sewer lead does not protrude into the main.

The Contractor shall notify the Engineer prior to making any connection to the main line and shall not backfill the connection prior to approval of the Engineer. If the pipe becomes covered with water or backfill material, the Contractor shall remove the water or material to facilitate the inspection.

C. Manholes

Sanitary sewer manholes are to be constructed as shown on the detailed drawings. Precast concrete manholes sections shall be installed in a plumb position.

All masonry items shall be clean and shall be thoroughly wetted by immersion, when practical to do so, just before laying. If immersion is impractical, masonry items shall be thoroughly sprinkled before laying.

All items shall be laid in a full bed of mortar, without subsequent grouting, flushing or filling and shall be thoroughly bonded. Interior joints shall not be more than 1/4-inch in width. Whole brick and block only shall be used, except to effect closures.

Mortars mixed by hand shall be prepared in a suitable clean watertight box. The ingredients, except water, shall first be thoroughly mixed dry until of uniform color; then water shall be added and the mixing continued until proper consistency and uniform texture is produced.

No re-tempered mortar or mortar that has been mixed for more than thirty (30) minutes shall be used in the work. No cement mortar shall be mixed when temperature is below thirty (30) degrees Fahrenheit without properly heating the sand and water.

All manholes shall be finished so that all visible leakage is repaired. The interior and exterior joints between manhole sections and adjusting rings shall be plastered with at least one-half-inch (1/2") thick mortar. All plastered areas shall have a brushed finish. All lift holes shall be mortared and finished. The bottom of the manhole, the flow line of the sewer, and the steps shall be clean of all mortar, concrete, dirt and other debris.

The flow channels shall be constructed with a minimum depth of 80 percent of the pipe diameter. The flow channel and manhole bottom shall be sloped to prevent accumulation of sewage and shall have a brushed finish.

No sanitary sewer leads shall be connected to a sanitary manhole. Sanitary sewer leads shall connect to the main sewer line. Backfill materials around manholes shall meet the same requirements as trench backfill for pipe that is installed under and within the zone of influence of pavement.

Where shown on the Plans, new sewers shall be connected into existing manholes. In such cases, new channels shall be constructed using 3,000 psi concrete. Where required, existing manholes shall be demolished. This work shall be included in other items of the project.

CLEANING AND TESTING SANITARY SEWERS

A. Cleaning

Before the sewer may be tested, the Contractor shall clean the sewers using a hydraulic system consisting of a high-pressure pump feeding water to a nozzle, which directs the water against the walls, and flow line of the pipe, dislodging the debris and flushing it toward a manhole. All debris shall be removed at the nearest downstream manhole.

B. Testing

The Contractor shall furnish all equipment and personnel to conduct an acceptance test using low-pressure air. The test shall be conducted under the supervision of the Engineer.

All stubs, sewer leads and risers shall be installed completely and securely plugged with suitable stoppers that will withstand the internal test pressures. The section of line being tested shall also be securely plugged at each manhole. All stoppers shall be adequately braced.

Low-pressure air test of installed PVC pipe shall be in accordance with the most recent Recommended Practice (Uni-B-6-79) of the UniBell Plastic Pipe Association, as well as ASTM F1417.

The completed installation of PVC sewers shall at no point have out-of-round pipe deflections greater than five percent (5%). The contractor shall provide "go-no-go" test mandrels to test the deflection of the PVC pipe. The test shall be conducted not less than at least thirty (30) days after pipe installation. Testing shall be performed by the Contractor under the supervision of the Engineer.

C. Infiltration

The maximum allowable infiltration shall not exceed 100 gallons per day per inch diameter per mile.

D. Connections

If the sewer installation fails to meet these requirements, the Contractor shall determine the source or sources of the leakage and all defective materials or workmanship shall be repaired or replaced. The completed sewer installation shall meet the requirement of the test.

METHOD OF MEASUREMENT AND PAYMENT

A. Sewer (San), __", Modified

1. Description

The work of Sewer (San), __", Modified, shall consist of excavation, removal and disposal of existing sewer pipe, furnishing and placing SDR 35 plastic sewer pipe and cap, and trench backfill, in accordance with section 402 of the 2012 MDOT Standard Specifications for Construction, MDOT Standard Plan R-83-B, and special details within the construction plans, except as modified.

2. Method of Measurement and Basis of Payment

Sewer (San), __", Modified, will be measured in place by length in feet and will be paid for at the contract unit price which price shall be payment in full for any fittings, couplers, cap, sheeting or shoring trench walls, backfill as required and all labor, material and equipment needed to accomplish this work. Removal of existing sewer less than 12 inches in diameter will not be paid for separately, but will be included in the pay item for construction Sewer (San), __", Modified

B. Dr Structure (San), __ inch dia,

1. Description

Dr Structure (San), __ inch dia, shall consist of excavation, the furnishing and placing of pre-cast sections, concrete work, drop pipes, connection of existing and new pipes, and backfilling, in accordance with section 403 of the 2012 MDOT Standard Specifications for Construction and special details within the construction plans.

2. Method of Measurement and Basis of Payment

Dr Structure (San), ___ inch dia, will be measured and paid for by the unit each shall be payment in full for all labor, material and equipment needed to accomplish this work. This work shall include but is not limited to: excavation, backfill, concrete, reinforcing steel, waterstops, temporary sewer supports, removing portion of sewer, connecting existing and proposed sewers, construction of a manhole riser, boots, drop inlets (if required), grade rings, concrete bench and flow channel, and casting and cover.

C. Dr Structure, Tap, ___ inch

1. Description

Dr Structure, Tap, ___ inch, shall consist of coring the Dr Structure at the correct elevation, location, and size utilizing a coring machine. This work shall include using a water stop, stopping all leaks and removing and reconstructing the existing flow channel, as directed by the Engineer.

2. Method of Measurement and Basis of Payment

Dr Structure, Tap, ___ inch, will be measured and paid for by the unit each shall be payment in full for all labor, material and equipment needed to accomplish this work.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Sewer (San), ___", Modified	Foot
Dr Structure (San), ___ inch dia,	Each
Dr Structure, Tap, ___ inch	Each

CITY OF MT. PLEASANT
SPECIAL PROVISION
FOR
IRRIGATION SYSTEM

Page 1 of 1

a. Description

Extend the existing irrigation system to the proposed tree and planter locations as shown on the drawings and described in this special provision.

b. Materials

The irrigation pipe used for this work shall meet the requirements for 100 PSI NSF approved poly pipe. Main irrigation line shall be 1 1/4" minimum and lateral lines shall be 1" minimum.

Conduit shall be 3" schedule 40 pvc pipe.

Flood bubblers shall not exceed 1 gal/min flow.

12" low flow popup sprays shall have a 5' – 8' radius coverage area.

Controller wire shall be UL approved #14 gauge single strand

c. Construction

Contractor shall install irrigation to all proposed tree and planter locations as shown on the drawing and directed by the Engineer. Each tree location shall have a flood bubbler installed and each planter shall have 12" low flow popup sprays with a 5' – 8' radius coverage area. The contractor shall install enough popup sprays to cover the entire planter area. All street crossings shall be accomplished using a 3" pvc conduit to protect the irrigation and controller wires. Contractor to utilize existing irrigation controllers (Hunter commercial outdoor controllers) to accommodate new irrigation zones, and shall install 24 volt solenoid electric valve with flow control on each new zone. All irrigation must be retested and inspected upon completion of street, curb, brick, and sidewalk work. Any damage must be repaired at no cost to the City.

d. Measurement and Payment

The complete work as measured for Irrigation System will be paid for at the contract unit price for the following contract pay items and includes all material, equipment, and labor to complete this item.

PAY ITEM

Irrigation System

PAY UNIT

Lsum

CITY OF MT. PLEASANT
SPECIAL PROVISION
FOR
GAS/WATER SHUTOFF COVER, ADJ, CASE 1

Page 1 of 1

a. Description

Adjust gas and water shutoff covers according to this Special Provision and as shown on the plans.

b. Materials

The materials used for this work shall meet the requirements of the utility owning the shutoff.

c. Construction

Adjust gas and water shutoff covers in accordance with the requirements of Section 403.03 C of the 2012 Standard Specifications for Construction for drainage structures.

d. Measurement and Payment

The complete work as measured for Gas/Water Shutoff Cover, Adj, Case 1 will be paid for at the contract unit price for the following contract pay items and includes all material, equipment, and labor to complete this item.

PAY ITEM

PAY UNIT

Gas/Water Shutoff Cover, Adj, Case 1

Each

CITY OF MT. PLEASANT
SPECIAL PROVISION
FOR
DRIVEWAY OPENING, CONC, DET M, MODIFIED

Page 1 of 1

a. Description

Construct Driveway Opening, Conc, Det M, Modified in accordance with the requirements of Standard Plan R-29 series and Section 802 of the 2012 Standard Specifications for Construction.

b. Materials

The materials used for this work shall meet the requirements of Section 802.02 of the 2012 Standard Specifications for Construction except that the reinforcing steel shall be eliminated.

c. Construction

Construct Driveway Opening, Conc, Det M, Modified in accordance with the requirements of Standard Plan R-29 series and Section 802 of the 2012 Standard Specifications for Construction except that the reinforcing steel shall be eliminated. The approximate 2 inches to 2.5 inches of material placed under the Construct Driveway Opening, Conc, Det M, Modified shall be 22A aggregate, and shall be included in the bid price for Construct Driveway Opening, Conc, Det M, Modified.

d. Measurement and Payment

The complete work as measured for Driveway Opening, Conc, Det M, Modified will be paid for at the contract unit price for the following contract pay items and includes all material, equipment, and labor to complete this item.

PAY ITEM

PAY UNIT

Driveway Opening, Conc, Det M, Modified

Foot

CITY OF MT. PLEASANT
SPECIAL PROVISION
FOR
RESTORATION, MODIFIED

Page 1 of 5

a Description

This work shall include all labor, materials and equipment to clean up and restore public and private ground to a condition equal to or better than that which existed prior to construction. This includes removal and legal disposal of all construction debris, litter, and materials.

b Materials

1. Topsoil

Black dirt or natural surface soil, high in organic material, free from stones, brush, debris, objectionable weeds, or other litter, and approved by the City Engineer prior to spreading. The engineer may perform a soil test prior to approval. Peat material is not acceptable.

2. Fertilizer

Fertilizer shall be commercial seed starting 20-10-10 grade supplied in the manufacturer's packaging with composition clearly marked. Bulk fertilizer may be used when certified delivery slips are furnished by the Contractor, meeting section 816 of the 2012 MDOT specifications.

3. Seed

Seed material and application shall meet section 816 of the 2012 MDOT specifications, using TUF seed mixture.

4. Mulch and Adhesive

Mulch and adhesives shall meet section 816 of the 2012 MDOT specifications, for wood fiber mulch. Paper mulch or straw are not acceptable.

c Construction

1. Preparation of Seed Bed

A. Grading

Grades on areas to be seeded shall be maintained in a true and even condition. Where the grades are not defined, they shall be established by the Contractor to blend with existing adjacent grades without irregularities and shall provide for

proper drainage.

B. Placing Topsoil

Topsoil shall be evenly spread by blade graders, or other approved methods, to a minimum depth of four inches (4"). Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions where water will stand. Topsoil shall not be placed until the subgrade has been smoothly graded and compacted, and the engineer or inspector approves the subgrade in writing.

C. Application of Fertilizer

Fertilizer shall meet the requirements of section 812 of the 2012 MDOT specifications for Class A fertilizer.

D. Cleanup

After completion of the above operations, the surface shall be cleared of stones, roots, brush, wire, grade stakes, and other objects that might be a hindrance to maintenance operations.

2. Seeding

TUF seed mixture meeting requirements of section 816 of the 2012 MDOT specifications shall be used on all lawn areas and adjacent backslopes. No seeding shall be done until the Engineer has inspected the seed container and has given written approval of the topsoil. Seeding for erosion control measures shall be cereal rye seed.

3. Mulching

A. Straw and Hay Mulch

As part of the seeding and fertilizing operations, wood fiber mulch shall be spread over the surface as required in section 816 of the 2012 MDOT specifications. Paper mulch is not acceptable.

B. Mulch Adhesive

Mulch shall be held in place by a spray coating of mulch adhesive. The Contractor shall protect all traffic, signs, structures, and other objects from being marked or disfigured by the adhesive material. Fire hydrants shall be covered prior to the placement of all sprayed materials. Adhesive material shall be applied uniformly at a rate of 400 gallons per acre, sprayed simultaneously with the mulch, or a surface application of adhesive sprayed immediately following mulching.

4. Establishment of Seeded Areas

The Contractor shall be responsible for the proper care of the seeded area during the period when the grass is becoming established, and shall be responsible for a total grass cover. The acceptance of the work will not be given until grass cover is established.

A. Watering

Seeded areas shall be watered whenever excessive drying is evident during the period set for establishment of the seeded area. The Contractor shall be responsible for the proper care of the seeded areas and for the establishment of a uniform stand of grass until final acceptance of the entire work covered by the Contract.

The City has established a program to encourage residents to water the newly seeded areas, to help establish the lawn. Residents will be given a credit on their water bill for watering the newly seeded areas.

5. Weeds

After the grass has become established, if it appears to have more than ten percent (10%) weeds, the Contractor shall spray with an approved herbicide (weed killer).

d Measurement and Payment

Restoration, Modified

1. Description

Restoration, Modified includes final grading, furnishing and installing topsoil, seed, fertilizer, and mulch.

2. Measurement and Payment

Restoration, Modified shall be paid for by the square yard disturbed by construction. The price paid shall be payment in full for all Restoration, Modified work.

PAY ITEM

PAY UNIT

Restoration, Modified

Syd

CITY OF MT. PLEASANT
SPECIAL PROVISION
FOR
PRECONSTRUCTION AUDIO VIDEO TAPING

Page 1 of 4

a Description

The work covered under this section of the specifications consists of furnishing all labor, materials and equipment to provide color and audio-video electrography along the entire length of the project to serve as a record of "original" conditions.

b Equipment

All audio-video taping equipment shall be supplied and operated by professional electrographers actively engaged in pre-construction color audio-video tape recording.

c Inspection

1. Requirements

Prior to commencing any work, a continuous color audio-video tape recording shall be made of the project.

A. Coverage Area

Shall include all above ground features located within the zone of construction influence. Of particular concern are any existing faults, fractures, defects or other imperfections exhibited by any above ground features.

2. Qualifications

The audio-video taping shall be done by professional electrographers actively engaged in pre-construction color audio-video tape recording.

3. Sample Tape

Prior to taping the entire project site, the electrographer shall tape a "sample" route as designated on the plans. The audio-video tape recording quality and standards for the entire project will be based upon the "sample", approved by the Engineer. The "sample" tape shall be submitted to the Engineer within three (3) weeks from date of written authorization. The "sample" shall be retaped as many times as necessary until a tape is produced that meets the requirements specified herein.

4. Entire Project Site

The entire project site shall be taped upon written approval of the Engineer. It will not be necessary to retape the portion of the project included in the accepted "sample" tape.

5. Equipment

When conventional wheeled vehicles are used for taping, the distance from the camera lens to the ground shall not be less than twelve (12) feet to insure proper perspective. In some instances, audio-video tape coverage will be required in areas not accessible on conventional wheeled vehicles. Such coverage shall be obtained by walking or special conveyance approved by the Engineer.

A. Audio-Video Tape

The audio-video tape provided shall be a color cassette utilizing the VHS format and shall be compatible with the City's tape player or in a DVD format.

B. Camera(s)

A color video camera shall be used that shall have a horizontal resolution of at least 300 lines at center. The camera shall be a professional quality camera acceptable to the Engineer.

6. Execution

A. Audio

Each tape shall begin with the current date, project name, project number and municipality, and be followed by the general location; i.e. name of the street or location of "cross country" line, viewing side and direction of progress.

B. Video

To preclude the possibility of tampering or editing in any manner, all video recordings shall, by electronic means, display continuously and simultaneously generated transparent digital information to include the date and time of recording, as well as the corresponding engineering stationing numbers. The date information will contain the month, day and year. For example, 3/16/01, and shall be placed directly below the time information. The time information shall consist of hours, minutes, and seconds, separated by colons. For example, 11:25:14. This transparent information shall appear on the extreme upper left-hand third of the screen.

1. Engineering Station Numbers

Station numbers shall be continuous, accurate, correspond to the project stationing and include the standard engineering symbols (for example, 16+50). This information shall appear in the lower half of the viewing screen.

2. Additional Information

Below the engineering stationing, periodic transparent alphanumeric information, consisting of the name of the project, name of the area

covered, direction of travel, viewing side, etc., shall appear.

C. Audio-Video Tracks

The audio-video tape shall consist of one (1) video and two (2) audio tracks, all of which shall be recorded simultaneously. All tracks shall consist of original, live recordings and, thus, shall not be copies of other audio or video recordings. Audio track 1 shall contain the narrative commentary of the electrographer, recorded simultaneously with his fixed elevation video record of the zone of influence of construction. Audio Track 2 shall contain the narrative commentary and evaluations of the ground level remote technician whose function shall be to provide a complete circumsppection of any features not adequately visible to the electrographer and to describe in detail the extent of any damage encountered. In order to maintain viewer orientation, transition from fixed camera overview to remote camera picture shall be by means of an electronic dissolve.

D. Lighting Requirements

All taping shall be done during times of good visibility. Auxiliary lighting may be required to fill in shadow areas and/or when taping inside a building. The lighting shall be sufficient to illuminate all details in the area. Lighting shall be required upon the request of the Engineer.

E. Tape Coverage

Tape coverage shall include all surface features located within the zone of influence of construction specified on the plans and supported by appropriate audio description. Audio description shall be made simultaneously with video coverage.

1. Coverage

Tape coverage shall include, but not be limited to, all existing driveways, sidewalks, curbs, ditches, streets (including condition of paving for full width), landscaping, trees, culverts, catch basins, manholes, headwalls, retaining walls, fences, visible utilities, and all buildings located within the zone of influence. Of particular concern are any existing faults, fractures, defects, or other imperfections exhibited by the above-mentioned surface features.

2. Houses and Buildings

Structures shall be identified visually by house or building number, when possible, in such a manner that the progress of the tape and the proposed construction may be located by reference to the houses and buildings.

3. General

Taping shall not be done during periods of visible precipitation or when more than 10% of the ground area is covered with snow, leaves, floodwaters or debris, unless otherwise authorized by the Engineer.

F. Rate of Speed

The rate of speed in the general direction of travel of conveyance used during taping shall not exceed 48 feet per minute. Panning rates and zoom-in, zoom-out rates shall be controlled sufficiently such that the rates will produce clarity of the object viewed during playback of the tapes.

G. Coverage Area

The Engineer shall have the authority to designate areas that may be omitted or added for audio-video coverage.

H. Identification

1. Tape Cassettes and Tape Cases

Cassettes and cases shall be properly identified by tape number, location and project name and municipality in a manner acceptable to the Engineer.

2. Records

A record of the contents of each tape shall be supplied by a sheet identifying each segment of the tape by location; i.e. roll number, street or road viewing, tape counter number, viewing side, point starting from, traveling direction and ending destination point.

d Measurement and Payment

The complete work as measured for Preconstruction Audio Video Taping will be paid for at the contract unit price for the following contract pay item and includes all material, equipment, and labor to complete the item.

PAY ITEM

PAY UNIT

Preconstruction Audio Video Taping

Lump Sum