Part I - General Conditions

ARTICLE 101 - DEFINITION AND TERMS

When the contract documents include an abbreviation from the following list, it shall mean:

AAN ..... American Association of Nurserymen
AAR ..... Association of American Railroads
AASHTO ..... American Association of State Highway and Transportation Officials
AISI ..... American Iron and Steel Institute
AREA ..... American Railway Engineering Association
USASI ..... United States of America Standards Institute
ASTM ..... American Society for Testing and Materials
AWS ..... American Welding Society
AWWA ..... American Waterworks Association
ASA ..... American Standards Association
ANSI ..... American National Standards Institute
ASME ..... American Society of Mechanical Engineers
FHWA ..... Federal Highway Administration
SAE ..... Society of Automotive Engineers

Addendum to the Contract. An amendment to the contract documents modifying the obligations of the parties thereunder, including, but not limited to, the performance of the work, the furnishing of labor and materials, and the basis of payment.

Addendum to the Standard Specifications. Specifications adopted subsequent to the publication of these Specifications, which modify, supplement or otherwise depart from these Specifications.

Advertisement for Bids. The advertisement for proposals for all work or materials on which bids are required. Such advertisement will indicate with reasonable accuracy the quantity and location of the work to be done, or the character and quantity of the material to be furnished, and the time and place of submitting the proposals.

Agreement. The written agreement between the City and the Contractor setting forth the obligation of the parties thereunder, including, but not limited to; the performance of the work, the furnishing of labor and materials, the basis of payment, and contract time. Other contract documents are incorporated into the agreement.

Award. The acceptance of a bid by the formal approval of the Common Council.

Bid Deposit. The security furnished with a bid to guarantee that the bidder will enter into the contract if its bid is accepted.

Bidder. Any individual, partnership, limited liability company or corporation submitting a proposal for the work contemplated, acting directly or through a duly authorized representative.

Board of Public Works. The Board of Public Works of the City.

Calendar Day. Every day shown on the calendar, Sundays and holidays included.

Certificate of Compliance. A certification, provided by a manufacturer, producer, or supplier of a product, that the product as furnished to the Contractor complies with the pertinent Specifications or contract requirements.

Certified Report of Test or Analysis. A test report, provided by a laboratory, or by a product manufacturer, producer or supplier, indicating actual results of tests or analyses, covering elements of the specification requirements and validated by certification.

City. The City of Madison, Wisconsin.

Contract Documents. The contract documents include the proposal, bid deposit, agreement, payment and performance bond, Specifications, Supplemental Specifications, special provisions, general and detailed plans specifically identified in the agreement, notice to proceed, contract change orders and agreements that are required to complete the construction of the work in an acceptable manner, including authorized extensions thereof.

Contract Change Order. A written order, authorization or agreement executed by the Contractor and the City covering work not otherwise provided for, revisions in or amendments to the contract, or conditions specifically prescribed in the Specifications as requiring contract change orders. Such document becomes a part of the contract when executed by the contracting parties.

Contract Time. The number of days or the date stated in the agreement for the completion of the work.

Contractor. The individual, partnership, limited liability company, joint venture, corporation or agency undertaking the execution of the work under the terms of the contract and acting directly or through a duly authorized representative.

Detour. A road designated as a temporary route to carry vehicular traffic around a section of a street or highway which is closed to through traffic.

Drip Line. An imaginary circle that could be drawn on the soil around a tree directly under the tips of its outermost branches.

Engineer. The City Engineer of the City of Madison acting personally or through a duly authorized representative.

Equipment. All machinery, equipment, tools, and apparatus, together with necessary supplies for upkeep, operation and maintenance, necessary for the proper construction and acceptable completion of the work.

Highway, Street, or Road. A general term denoting a public way for the purpose of vehicular travel, including the entire area within the right-of-way.

Inspector. A representative of the Engineer assigned and authorized to make detailed inspection of any or all portions of the work or materials therefor.

Materials. Any substances specified for use in the construction of the project and its appurtenances.

Notice of Award. A written notice by the City to the apparent successful bidder stating that upon compliance by that bidder with the conditions precedent stated therein, within the time specified, the City will sign and deliver the agreement.

Notice to Proceed. A written notice to the Contractor of the time within which the Contractor shall begin the prosecution of the work.

NRC. An abbreviation for no root cutting that will be marked on the sidewalk, driveway, or curb that is being repaired or removed. No root cutting shall occur until reviewed by City Forester.

Particulate Matter. A material suspended in the air in the form of minute solid particles, not including smoke or other combustion bi-products.

102.4 Proposals.

Proposals shall be submitted electronically, by hand or mailed.

No bid will be accepted that does not contain an adequate or reasonable price for each and every item named in the Schedule of Unit Prices.

A lump sum bid for the work in accordance with the plans and Specifications is required. The lump sum bid must be the same as the total amounts bid for the various items and it shall be inserted in the space provided.

Unit price figures shall be written numbers in the spaces provided.

In case of conflict between a unit price bid and the corresponding extended amount, or in the absence of an extended amount, the unit price bid shall govern.

All numbers, words, and signatures in the proposal shall be written with ink.

All papers bound with or attached to the proposal form are considered a part thereof and must not be detached or altered when the proposal is submitted. The plans, Specifications and other documents designated in the proposal form will be considered a part of the proposal whether attached or not.

A proposal submitted by an individual shall be signed by the bidder or by a duly authorized agent. A proposal submitted by a partnership shall be signed by a partner. A proposal submitted by a limited liability company shall be signed by an authorized member. A proposal submitted by a corporation shall be signed by an authorized officer or duly authorized agent of such corporation, and the proposal shall show the name of the State under the laws of which such

corporation was chartered. The required signatures shall in all cases appear in the space provided therefor on the proposal.

The bidder shall submit the proposal on the form furnished by the City.

Each proposal shall be placed, together with the Bid Deposit, in a sealed envelope, so marked as to indicate name of project, the contract number or option to which it applies, and the name and address of the Contractor. Proposals will be received at the place and until the hour and date designated in the advertisement. When sent by mail, the sealed proposal marked as indicated above shall be enclosed in an additional envelope. Proposals sent by mail, submitted in person or otherwise delivered must be in the hands of the official conducting the letting by the hour and date designated in the advertisement. Proposals received after the time designated will be returned to the bidder unopened.

~~102.10 Prevailing Wage.~~

~~102.10(a) Prevailing Wage Rate~~

~~All bidders are notified that if prevailing wage rates are required, as specified in Special Provision Section 102.10, all laborers performing work on the Contract must be paid in accordance with the Prevailing Wage Rate Determination included in the Contract Documents.~~

~~For the information of the employees working on the project, a copy of the wage scale included in the contract documents and the provisions of Section 66.0903(8) of the Wisconsin Statutes shall be kept posted by the employer and in at least one conspicuous and easily accessible place at the site of the project.~~

~~The Contractor shall ensure that employees shall be paid unconditionally and shall receive the full amounts accrued at the time of payment, computed at rates not less than those stated in the Prevailing Wage Rate Determination and that each employee's rate shall be determined by the work that is done within the trade or occupation classification which should be properly assigned to such employee. Questions regarding an employee's classification or rate of pay within that classification, shall be resolved by the practice that predominates in the industry and on which the trade or occupation rate/classification is based. Therefore, rate of pay, classification and work jurisdiction disputes shall be resolved by relying upon practices established by collective bargaining agreements and guidelines used in such determinations by appropriate recognized trade unions operating within the City of Madison.~~

~~The Contractor shall agree that the normal rate of wage paid to the Contractor's employees on other projects shall not be reduced or otherwise diminished as a result of the requirement to pay no less than the minimum rate of wage scale on a City project. Mulcting of employees on City projects by contractors, such as by kickbacks or other such devices, is prohibited.~~

~~These contract provisions shall apply to all work performed on the contract by the Contractor with its own organization and with assistance of laborers under its immediate superintendency and to all work performed by piecework or by subcontract. No laborer, worker, or mechanic shall be employed directly upon the site of the work except on a wage basis, but this shall not be construed to prohibit the rental of equipment from individuals.~~

~~102.10(b) Records~~

~~The Contractor shall keep weekly payroll records setting forth the name, address, telephone number, classification, wage rate and fringe benefit package of each employee who worked on such City project, and the Contractor must keep records of the individual time each employee worked on the project and for each day of the project. Records shall include employee demographics or contractor can submit a one-time report of all employee demographics that can be matched up with weekly payrolls. Such records shall also set forth the total number of hours of overtime credited to each such employee for each day and week and the amount of overtime pay received in that week. Such records shall, in addition, set forth the full weekly wages earned by each such employee and the actual hourly wage paid to that employee. The Contractor shall submit payroll records to the Engineer every week for those periods when work is being done on the project. Said submittal shall be within twenty one (21) calendar days of the end of the Contractor's weekly pay period. The first payroll records are due when twenty five percent (25 %) of the contract total has been paid or by the second pay request, whichever comes first. No additional payments shall be made until this first payroll is submitted. During the contract period, the Engineer reserves the right to withhold payment pending payroll information submittal for any contractor working on the project.~~

~~In the event of a refusal by the Contractor to submit payroll records as required by the contract, the City of Madison shall have the option to cancel this contract and request the Surety to perform or to relet the balance of the work for bids, and in that event, to charge the Contractor for any loss which the City may incur thereby.~~

102.~~11~~10 Affirmative Action.

102.10(a) Affirmative Action Ordinance

The Contractor shall comply with the applicable requirements of Section 39.02 of the Madison General Ordinances entitled "Affirmative Action Ordinance". Compliance requires completion and execution of the document entitled "The City of Madison Affirmative Action Plan for Public Works Contractors".

102.10(b) Record Submittal

The Contractor shall keep demographic records setting forth the trade, gender, race, and classification, of each employee who worked on the City project. This information can either be submitted with a one-time report of all employee demographics that can be matched up with weekly payrolls or Monthly Employee Utilization Reports (MEUR). The Contractor shall submit payroll records to the Engineer every week for those periods when work is being done on the project or an MEUR every month to the Department of Civil Rights.

~~The first demographic records are due when twenty five percent (25 %) of the contract total has been paid or by the second pay request, whichever comes first. Payment shall be held until these records are submitted.~~

During the contract period, the Engineer reserves the right to withhold payment pending demographic information submittal for any contractor working on the project.

In the event of a refusal by the Contractor to submit demographic records as required by the contract, the City of Madison shall have the option to cancel this contract and request the Surety to perform or to re-let the balance of the work for bids, and in that event, to charge the Contractor for any loss which the City may incur thereby.

Contractors shall submit monthly the Committed Cost Status Report on Sub Contractors utilized in each contract.

102.~~12~~11 Best Value Contracting.

The Contractor and all Subcontractors shall comply with Madison General Ordinance (MGO) section 33.07(7). The Contractor and all Subcontractors shall participate in a Class A Apprenticeship Program for each separate trade or classification in which it employs craft employees and shall continue to participate in such program or programs for the duration of the project. The Contractor or Subcontractor shall not be required to have an apprentice on this project in order to be in compliance with MGO 33.07(7).

The Contractor shall complete the appropriate "Best Value Contracting" forms in the contract documents.

This Contract shall be considered a Best Value Contract if the Contractor's bid is equal to or greater than the amount set in the contract specifications for a single trade contract; or equal to or greater than the amount set in the contract specifications for a multi-trade contract.

In addition, this contract shall be exempt from Best Value Contracting requirements if the Contractor provides information prior to the award of contract sufficient such that the City Engineer makes a finding that the contracted work is not considered apprenticeable.

Each Contractor or Subcontractor shall comply individually with MGO 33.07(7).

If the Contractor cannot comply with the requirements of MGO 33.07, the City Engineer shall designate the Contractor's bid non-responsive and this Contract shall not be awarded to the Contractor. The contractor shall have four (4) days from the bid opening to provide the City Engineer sufficient information to substantiate the Contractor's compliance with MGO 33.07(7). ~~The Contractor shall promptly provide the City Engineer with addition information as required by the City Engineer to substantiate the means in which the Contractor intends to comply with MGO 33.07(7).~~

If the City Engineer designates the Contractors bid unresponsive, the City Engineer shall notify the Contractor in writing that the Contractor's bid has been designated unresponsive. The City Engineer's decision shall be final and conclusive in all matters unless within ten (10) days after such decision the Contractor applies in writing to the Board of Public Works for a review of such decision.

The Contractor shall insure that each subcontractor used complies with MGO 33.07(7). For each Subcontractor used, the Contractor shall provide all the information required of the General Contractor as indicated above. This information shall be provided prior to beginning work on the Contract. Partial payments shall be withheld if the contractor or subcontractor is working on

the project and has not satisfied the BVC requirements. The Contractor shall not subcontract any portion of this contract to a Subcontractor who cannot comply with the provisions of MGO 33.07(7).

~~If the Contractor cannot provide the City Engineer sufficient information to substantiate the Contractor's compliance with MGO 33.07(7) within four (4) days of the bid opening as determined by the City Engineer, the City Engineer may designate the bid unresponsive.~~

~~If the City Engineer designates the Contractors bid unresponsive, the City Engineer shall notify the Contractor in writing that the Contractor's bid has been designated unresponsive. The City Engineer's decision shall be final and conclusive in all matters unless within ten (10) days after such decision the Contractor applies in writing to the Board of Public Works for a review of such decision.~~

102.~~13~~12 Equal Benefits Requirement (Sec. 39.07, MGO).

This provision applies to contracts executed by the City on July 1, 2012 or later, unless exempt by Sec. 39.07 of the Madison General Ordinances (MGO).

For the duration of this Contract, the Contractor agrees to offer and provide benefits to employees with domestic partners that are equal to the benefits offered and provided to married employees with spouses, and to comply with all provisions of Sec. 39.07, MGO. If a benefit would be available to the spouse of a married employee, or to the employee based on his or her status as a spouse, the benefit shall also be made available to a domestic partner of an employee, or to the employee based on his or her status as a domestic partner. "Benefits" include any plan, program or policy provided or offered to employees as part of the employer's total compensation package, including but not limited to, bereavement leave, family medical leave, sick leave, health insurance or other health benefits, dental insurance or other dental benefits, disability insurance, life insurance, membership or membership discounts, moving expenses, pension and retirement benefits, and travel benefits.

Cash Equivalent. If after making a reasonable effort to provide an equal benefit for a domestic partner of an employee, the Contractor is unable to provide the benefit, the Contractor shall provide the employee with the cash equivalent of the benefit.

Proof of Domestic Partner Status. The Contractor may require an employee to provide proof of domestic partnership status as a prerequisite to providing the equal benefits. Any such requirement of proof shall comply with Sec. 39.07(4), MGO.

Notice Posting, Compliance. The Contractor shall post a notice informing all employees of the equal benefit requirements of this Contract, the complaint procedure, and agrees to produce records upon request of the City, as required by Sec. 39.07, MGO.

Subcontractors. Contractor shall require all subcontractors, the value of whose work exceeds the single-trade minimum set forth in Sec 33.07(7)(b)5., MGO, to provide equal benefits in compliance with Sec. 39.07, MGO.

See Section 39.07 MGO for exemptions from this requirement. Exemptions from this requirement include a Contractor whose employees are under a collective bargaining agreement that was in effect prior to July 1, 2012, however, the Contractor must agree to propose to the applicable collective bargaining unit(s) that an equal benefit requirement consistent with this ordinance be incorporated into the next collective bargaining agreement or in the existing agreement upon amendment, extension or other modification that occurs after July 1, 2012.

102.~~14~~13 Ban the Box – Arrest and Criminal Background Checks (Sec. 39.08, MGO).

This provision applies to all prime contractors on contracts entered into on or after January 1, 2016, and all subcontractors who are required to meet prequalification requirements under MGO 33.07(7)(I). The City will monitor compliance of subcontractors through the pre-qualification process.

A. Definitions. For purposes of this section, "Arrest and Conviction Record" includes, but is not limited to, information indicating that a person has been questioned, apprehended, taken into custody or detention, held for investigation, arrested, charged with, indicted or tried for any felony, misdemeanor or other offense pursuant to any law enforcement or military authority.

"Conviction record" includes, but is not limited to, information indicating that a person has been convicted of a felony, misdemeanor or other offense, placed on probation, fined, imprisoned or paroled pursuant to any law enforcement or military authority.

"Background Check" means the process of checking an applicant's arrest and conviction record, through any means.

B. Requirements. For the duration of this Contract, the Contractor shall:

1. Remove from all job application forms any questions, check boxes, or other inquiries regarding an applicant's arrest and conviction record, as defined herein.

2. Refrain from asking an applicant in any manner about their arrest or conviction record until after conditional offer of employment is made to the applicant in question.

3. Refrain from conducting a formal or informal background check or making any other inquiry using any privately or publicly available means of obtaining the arrest or conviction record of an applicant until after a conditional offer of employment is made to the applicant in question.

4. Make information about this ordinance available to applicants and existing employees, and post notices in prominent locations at the workplace with information about the ordinance and complaint procedure using language provided by the City.

5. Comply with all other provisions of Sec. 39.08, MGO.

C. Exemptions: This section shall not apply when:

1. Hiring for a position where certain convictions or violations are a bar to employment in that position under applicable law, or

2. Hiring a position for which information about criminal or arrest record, or a background check is required by law to be performed at a time or in a manner that would otherwise be prohibited by this ordinance, including a licensed trade or profession where the licensing authority explicitly authorizes or requires the inquiry in question.

To be exempt, under C.1 or 2. above, Contractor shall have the burden of demonstrating that there is a law or regulation that requires the hiring practice in question. If so, the contractor is exempt from this section for the position(s) in question.

104.5 Increased Items.

~~Unless otherwise designated in the proposal~~, ~~a~~Any increase of the contract shall be limited to fifteen (15) percent of the original total contract amount ~~lump sum contract price~~ submitted by the Contractor unless approved by the City Engineer. Any item may be increased up to twenty-five (25) percent of the original quantity in the contract, but in no case may such an increase exceed in dollar value fifteen (15) percent of the original lump sum contract price bid. If it is determined by the Engineer that increases in excess of those mentioned above will prevail, then the Engineer along with the Board of Public Works shall: (a) renegotiate the unit price for all estimated work over the percentage limit shown above, or (b) advertise for and receive bids for estimated excess work. Unforeseen items of extra work not included in the proposal as a bid item shall be included when calculating the total amount of increase over the original lump sum contract price bid.

105.7 Contract Documents.

Unless otherwise provided in the contract documents, the City will make electronic files available ~~furnish~~ to the Contractor, free of charge, all copies of drawings and Specifications reasonably necessary for the execution of the work. The Contractor shall keep one copy of all drawings and Specifications on the project site, in good order, available to the Engineer. The Engineer shall furnish, with reasonable promptness, additional instructions, by means of drawings or otherwise, necessary for the proper execution of the work.

107.1 Public Convenience and Safety.

The Contractor shall avoid as far as possible the maintenance of any condition which might be deemed at law to be an “attractive nuisance”. Where such condition is unavoidable or where apparent or potential hazards occur incident to the Contractor’s conduct of the work, the Contractor shall maintain a proper watch or provide other reasonable safeguards. The Contractor and its surety shall be responsible for all damage, bodily injury, or death arising through the Contractor’s negligence either in maintaining an attractive nuisance or otherwise.

Fire hydrants shall be visible and accessible from the street at all times to the Fire Department. No material or other obstructions shall be placed within ten (10) feet of a fire hydrant.

The Contractor shall strictly adhere to Section 182.0175, Wis. Statutes, regarding notification and location of utilities, including but not limited to three working days advance notice.

When directed by the Engineer, the Contractor shall uncover utility lines within the proposed construction limits well in advance of the construction. The grade of the utility lines shall be determined by the Engineer, and the utility companies will be advised by the Engineer as to their adjustment required. The Contractor shall then backfill and maintain the openings. Costs of this work shall be included in the unit price bid for Utility Line Openings as provided for in Measurement and Payment for Utility Line Openings in Part 5 of these Specifications.

In the case of horizontal boring construction within the Right-Of-Way, the Contractor shall verify that no damage was done to storm sewer mains, sanitary mains and laterals which were crossed, when directed by the Engineer. This may be accomplished by uncovering the line prior to boring or televising the line after boring. In addition, the Contractor may wish to televise the line before boring to verify the existing condition of the pipe. If the Contractor decides not to televise prior to boring, any damage to the pipe shall be considered the responsibility of the Contractor and shall be repaired by the Contractor at their expense. All costs associated with exposing and or televising storm sewer mains, sanitary mains and laterals shall be the responsibility of the Contractor. The Contractor shall coordinate access to homes in order to televise laterals. The video tape shall be date and time stamped and provided to the City Engineer within 24 hours of televising.

The Contractor shall obtain all available information in regard to new utilities and new cables, conduits and transformers, planned for installation concurrent with the improvements, and make proper provision and give proper notification so that new utilities and electrical equipment can be installed at the proper time without delay to the Contractor or unnecessary inconvenience to the owner. The location of new underground utilities and electrical equipment, planned to be installed concurrently with the improvement, shall not be covered with pavement prior to the installation of such facilities.

The Contractor shall schedule the operations so as to cause a minimum of interruption, interference or disturbance to the operation of stores, businesses, office buildings, hotels, churches, etc., and to allow access by pedestrians and emergency, delivery and service vehicles at all times.

The Contractor shall restore parking immediately on the street or portions of the street when construction is expected to be delayed for more than one week regardless of the cause unless the Engineer finds that it is not in the public’s best interest to restore the parking.

Any temporary shutdown of existing services, i.e., sewers, water, gas, electrical power and access, as may be required, shall be performed only at such times and for such duration as agreed to by the Engineer. The interruption of services and access shall be conducted in accordance with a program mutually agreed to by the Engineer and the Contractor.

The Contractor shall work such overtime, including extended hours as required by the Engineer to meet the above requirements at no additional cost to the City.

Gasoline or diesel operated equipment shall be equipped with mufflers and insulators to minimize noise.

During times when work will prevent access to driveways, the Contractor shall notify all residents, a minimum of 48 hours in advance, if vehicular access cannot be provided to their property.

The Contractor shall phase the work in such a way that the maximum cumulative total time in which any residential property is completely without driveway access is twenty (20) calendar days. Should the Contractor desire to provide temporary crushed stone driveways in order to comply with the above time constraints, the unit bid price for crushed stone will be paid by the City. It is anticipated this stone will be reused elsewhere in the contract. Notice shall be given in accordance with Section 107.7 - Maintenance of Traffic.

Should the Contractor need to use high early strength concrete to meet the day requirement, no additional compensation shall be paid.

The Contractor shall maintain access to all commercial drives, at all times unless permission is granted in writing to close the drive. This may be done by phasing of drive construction and/or plating of drives. No additional compensation shall be given for plating to maintain access.

The Contractor shall provide access to handicap residents at all times. The City shall compensate the Contractor for providing temporary gravel driveways to handicap residences at the contract unit price for crushed stone.

The contractor shall assist residents with refuse collection. Assistance shall be provided by either: maintaining access for City of Madison collection vehicles to all properties located in the project limits; or hauling all refuse and recyclables to a common location at the end of the project where City of Madison crews can collect the refuse and recyclables.

If sidewalk exists on both sides of any given block, the Contractor shall complete all repairs and reopen the sidewalk on one side of the block before beginning repairs on the opposite side of the block including work at the intersection. Sidewalk closures shall be signed at the crosswalks prior to the closure. The contractor may propose alternatives for construction of sidewalk ramps such as constructing temporary ramps.

The City will refer any call or claim, the substance of which is an event caused by the Contractor, or by any person or company utilized by the Contractor, to the Contractor for handling. Within two (2) business days after contacting the individual, the Contractor shall provide a factual summary of the event giving rise to the call or claim, along with the Contractor's proposed resolution, to the City's Risk Manager or designee.

107.4(i) ~~Insurance for the Construction of Buildings and Structures.~~ Builders Risk Insurance.

The Contractor shall purchase and maintain, property insurance written on a builder's risk "all-risk" policy form in the amount of the initial Contract sum, plus the value of subsequent Contract

modifications and cost of materials supplied or installed by others, comprising total value for the entire project at the site on a replacement cost basis less the cost of sitework and demolition. Such insurance shall be maintained until the date in time that the City takes occupancy of the building or possession of the structure, unless otherwise agreed to in writing by Contractor and City. This insurance shall include interests of the City, the Contractor and subcontractors. This insurance does not include Contractor's or subcontractor's property which is not intended to be incorporated into the work such as tools, sheds, hoists, canvasses, tarpaulins, mixers, scaffolding, staging towers owned or rented, or similar property not expended in the completion of, or to become a permanent part of the installation of the work. ~~This insurance includes new buildings, structures, and additions; it excludes remodeling, alterations, or renovation of existing buildings.~~ This insurance shall apply to new buildings, structures, additions, remodeling, alterations and renovations of existing buildings.

107.6 Dustproofing (Particulate Matter Control).

~~The Contractor shall take all necessary steps to control dust arising from operations connected with this contract. When ordered by the Engineer, the Contractor shall dustproof the construction area by sprinkling with water to which has been added calcium chloride at the rate of 400 pounds per 1,000 gallons of water. The Contractor shall be paid at the rate of $30.00/1,000 gallons of water applied with a sprinkler truck and $800.00 per ton of calcium chloride so applied. With the Engineer's permission, for limited areas only, the Contractor may control dust by sprinkling with water without the use of calcium chloride, or the calcium chloride may be spread dry by hand.~~

Timely action regarding the control of Particulate Matter is critical to compliance with the City of Madison General Ordinances. Particulate Matter control includes practices used to reduce or prevent the surface and air transport of particulate matter, including but not limited to dust, silica dust from concrete sawing and dust from milling and pulverizing. Control measures for construction activities include minimization of soil disturbance, applying mulch and establishing vegetation, water spraying, surface roughening, applying polymers, spray-on tackifiers, ~~chlorides,~~ and barriers.

It shall be unlawful for any person to unreasonably cause, allow or permit any material to be handled or stored in any manner that permits particulate matter to become airborne and leave the property where the material is being handled or stored.

~~To be assured of compliance, Contractor shall be required to proceed in the following manner.~~

The Contractor shall have adequate measures available as per the plans, special provisions, Standard Detail Drawings, WDNR Conservation Practice Standards, or as determined necessary by the Construction Engineer. WDNR Conservation Practice Standards referenced in these Standard Specifications are available on-line at http://dnr.wi.gov/topic/stormwater/standards/const_standards.html.

(insert new dust control link to DNR?)

Failure to comply and meet this specification shall result in any or all of the following actions by the Engineer:

1) The Contractor shall be charged one (1) day of liquidated damages for failure to comply during the ordered timeframe and an additional day of liquidated damages for each twenty four (24) hour period that passes after the initial forty eight (48) hours during which time the ordered work is not completed.

2) At the Engineer's discretion, the work ordered may be completed by City Forces. In this case, the Contractor shall be charged the liquidated damages as described in 1 above and shall be charged the full cost of City Forces responding to complete the ordered work.

3) At the Engineer's discretion, work on the project as a whole may be suspended under Section 109.6 until such time as the Contractor completes the originally ordered work. In this case, the Contractor shall still be charged liquidated damages as described in 1 above. Additionally, days of work will continue to be charged during the suspension of work. If this results in the Contractor failing to complete the project within the allotted contract time then additional liquidated damages shall be charged.

Notwithstanding the foregoing, the failure to comply with an order under this Section may constitute a default under Section 109.10.

The Engineer's decision under this Section may be reviewed under Section 105.2.

107.7 Maintenance of Traffic.

When the contract provides that the street or portions thereof undergoing improvement will be closed to through traffic, the Contractor will not be responsible for maintenance of the detour, unless specified in the contract, that may be necessary on adjacent streets for the accommodation of through traffic. The Contractor shall at all times conduct the work in such a manner as to insure the least possible obstruction to local traffic serving abutting properties along the street being improved and to that end shall provide and maintain in reasonably passable conditions such temporary roads and temporary approaches as are deemed reasonable and practical by the Engineer.

When the contract provides for the maintenance of traffic over or along the street while undergoing improvements or reconstruction, the street shall be kept open to all traffic and the Contractor shall keep the portions of the street being used by public traffic in such condition that traffic will be reasonably and adequately accommodated. The Contractor shall provide and maintain in safe and adequate condition temporary approaches, crossings and intersections with roads and necessary driveways. The Contractor shall bear all of the expense of maintaining traffic over the section of street undergoing improvement and the construction and maintenance of such approaches, crossings, intersections and other features as may be necessary without direct compensation except as to those features of such work which are a part of planned, completed construction work.

During the life of the project the Contractor, at locations designated in the contract, shall provide means satisfactory to the Engineer for crossings for the traffic on intersecting streets in a manner which will not interrupt the flow of such traffic or be harmful to the improvement. Temporary bridges for pedestrians shall be provided as required by the plans or special provisions or as ordered by the Engineer over new pavement, sidewalks, trenches, etc., at street intersections.

During a suspension of work under the terms of the contract or authorized by the Engineer due to unfavorable weather or other conditions which are not the fault of the Contractor and which make such suspension advisable, the Contractor shall make passable and shall open to traffic such portions of the street under improvement and such temporary roadways or portions thereof as may be agreed upon between the Contractor and Engineer for temporary accommodation of necessary traffic during the period of suspension. During the period of suspension, the surface maintenance of the travelway of the temporary route or line of travel agreed upon shall be at the expense of the City. When work is resumed, the Contractor shall replace or renew any work or material lost or damaged because of such temporary use of the highway under improvement. The Contractor shall remove, when required, work or material used in the temporary maintenance thereof, and shall complete the improvements in every respect as though its prosecution had been continuous and without interference except as may otherwise have been agreed upon by the Contractor and Engineer at the time arrangement was made for the temporary accommodation of necessary traffic during the anticipated period of suspension. Replacement of materials and additional work made necessary because of the temporary use of the highway shall be paid for at contract unit prices or as Extra Work.

~~All signing and barricading shall conform with the Federal Highways Administrations "Manual on Uniform Traffic Control Devices" (MUTCD) and the City of Madison Standards for sidewalk and bikeway closures and the State of Wisconsin Standard Detail Drawing S.D.D. 15d30.~~

~~The contractor shall submit an acceptable Traffic Control Plan to the office of the City Traffic Engineer, a minimum of 48 hours prior to the start of work on any project.~~
The contractor shall not restrict traffic during peak hours on streets with a functional classification of collector or arterial. Peak hours are defined as 7:00 a.m. to 8:30 a.m. and 4:00 p.m. to 5:30 p.m.

All signing and barricading shall conform to Part VI of the Federal Highways Administrations "Manual on Uniform Traffic Control Devices" (MUTCD), the State of Wisconsin Standard Facilities Development Manual (including Chapter 16 – Standard Detail Drawings) and the City of Madison Standards for sidewalk and bikeway closures.

The Contractor shall submit an acceptable Traffic Control Plan to the office of the City Traffic Engineer, a minimum of five (5) working days, prior to the pre-construction meeting. The Traffic Control Plan shall include any necessary detour routes, signing and phasing schedule with the dates of lane closures. The Traffic Engineering Division will assist the contractor in determining acceptable lane closures and detours (if needed), if the preliminary Traffic Control plan is submitted to the office of the City Traffic Engineer, at least 10 working days prior to the pre-construction meeting. Failure of the Contractor to obtain approval of a Traffic Control Plan, as specified above, may prevent the Contractor from starting work and shall be considered a delay of the project, caused by the Contractor.

Traffic Control shall be measured as a lump sum. Payment for the Traffic Control is full compensation for constructing, assembling, hauling, erecting, re-erecting, maintaining, restoring, and removing non permanent traffic signs, drums, barricades, and similar control devices, for providing, placing, and maintaining work zone. Maintaining shall include replacing damaged or stolen traffic control devices. The traffic control plan may need to be altered as conditions change in the field or as unexpected conditions occur. This may include relocating

existing traffic control or providing additional traffic control. The Contractor shall install and maintain any necessary modifications or additions to the traffic control, as directed by the City Traffic Engineer, at no cost to the City.

Electronic message boards, arrow boards, temporary tape pavement markings and tubular markers shall be paid for as separate bid items.

Contractor shall supply all necessary mounting hardware and supports for signing. This shall also include covering and uncovering any conflicting overhead signs during the project. Contractor shall display all signing so as to be easily viewed by all users. Contractor shall mount traffic control on posts or existing poles or drive posts whenever possible. Existing poles may be used with approval of Construction Engineer. Contractor shall inspect traffic control daily to ensure all traffic control remains in place during the project.

Type A warning lights shall be installed on all barricades used in the project per State of Wisconsin S.D.D. 15C2-4B. Contractor shall also place Type C warning lights on any barrels used to taper traffic or lane closures.

Contractor shall notify the City of Madison Police Department, Fire Department, and Traffic Engineering 48 hours in advance of closures of streets. Notifications must be given by 4:00 P.M. on Thursday for any such work to be done on the following Monday.

The Contractor may remove parking within the project limits as necessary to facilitate construction. Contractor is responsible for obtaining and installing temporary no parking signs to facilitate traffic control plan or as necessary to complete the work within the contract. The contractor shall contact John Villareal with the City of Madison Parking Utility (608-267-8756) at least 3 working days prior to needing the signs. Contractor shall post signs in accordance with the City of Madison Police Department Guidelines for temporary no parking restrictions for construction or special events. The guidelines can be found at the link listed below. This shall be considered incidental to the traffic control lump sum bid item.

http://www.cityofmadison.com/business/pw/documents/guidelines_temporarynoparkingrestrictions.pdf

The work areas shall be backfilled, plated, or protected by traffic control devices during non-working hours. If steel plates are used, the Contractor shall notify the City of Madison Streets Division, 266-4681, one working day prior to placement of the plates.

109.9 Liquidated Damages.

Should the Contractor fail to complete the work within the time specified in the contract, or within such extra time as may have been allowed by extensions, there shall be deducted from any monies due or that may become due the Contractor, or in the event no monies are due, the Contractor shall pay to the City, the sum set forth in the following schedule for each and every day that the work shall remain uncompleted. This sum shall be considered and treated not as a penalty but as fixed, agreed and liquidated damages due the City from the Contractor by reason of inconvenience to the public, added cost of engineering and supervision, maintenance of detours and other items which have caused an expenditure of public funds resulting from the Contractor's failure to complete the work within the time specified in the contract.

Liquidated damages shall be assessed at 40% of rates below, if the project has been surface paved and the only remaining work is restoration. The contractor shall maintain an acceptable rate of progress as determined by the Engineer. If the rate of progress is not acceptable, liquidated damages shall be assessed at the full rate as listed below.

Per Section 107.1 the maximum cumulative total time in which any residential property is completely without driveway access is twenty (20) calendar days. The City of Madison shall assess the contractor $100 per calendar day per driveway when exceeding the maximum allowable closure.

Per Section 107.7 or as modified in the contract special provisions, the contractor shall not restrict traffic during peak hours on streets with a functional classification of collector or arterial. The City of Madison shall assess the contractor $1000 per occurrence for working during peak hours.

Per Section 109.2 work hours shall be limited to 7:00 a.m. to 7 p.m. The City of Madison shall assess the contractor $1000 per occurrence for working before 7 a.m. or after 7 p.m.

The fixed, agreed and liquidated damages shall be assessed, unless otherwise specified, in accordance with the following schedule, which represents the City's estimate of damages at the time of contracting:

Contract Amount			
Contract Amount		**Daily Charge**	
From More Than	**To and Including**	**Calendar Day**	**Working Day**
$0	$50,000	$225.00 ~~200.00~~	$400.00 ~~350.00~~
50,000	100,000	425.00 ~~375.00~~	870.00 ~~750.00~~
100,000	300,000	550.00 ~~480.00~~	1115.00~~960.00~~
300,000	500,000	800.00 ~~670.00~~	~~1600.00~~ ~~1340.00~~
500,000	1,000,000	1250.00~~1055.00~~	2500.00 ~~1910.00~~
1,000,000	2,000,000	1500.00 ~~1355.00~~	3000.00 ~~2510.00~~
2,000,000	-----	2000.00~~1510.00~~	4000.00~~3320.00~~

110.2 Partial Payments.
Partial payments based on the value of the work satisfactorily performed or satisfactory materials furnished, at contract or agreed unit or lump sum prices, will be made to the Contractor as the work progresses, except that partial payments will not be made if the Contractor is in noncompliance with any order given to the Contractor by the Engineer pursuant to the contract.

Twice each month (provided that a payment of $1,000 or more becomes due, which amount may at the Engineer's discretion be reduced for contracts of $25,000 or less) the Contractor will prepare an estimate of the quantities of work performed and the value thereof at contract or agreed unit or lump sum prices. The estimate will be prepared on forms provided by the Engineer. After review and acceptance of the estimate by the Engineer, the City shall issue a partial payment. ~~Workforce Profiles, if applicable, shall be approved prior to the first partial payment.~~

The first demographic records are due when twenty five percent (25 %) of the contract total has been paid or by the second pay request, whichever comes first. Payment shall be held until these records are submitted.

The quantities included shall be computed to reflect the approximate amount of work completed, or substantially completed under each of the pertinent contract items to the date of the estimate less, in each case, an allowance adequate to cover contingencies and costs still to be incurred incident to finishing, maintaining, repairing and restoring of the work, and to cover possible variations between the contract and final quantities in instances where contract quantities are used as a basis for the estimate.

The Engineer may, upon presentation by the Contractor of receipted bills, freight bills or other satisfactory evidence of payment, include in the estimate prepared for partial payment the value of nonperishable materials which are to form a part of the completed work, produced or purchased, and delivered and stored in the vicinity of the work at such location where they will be available for ready incorporation into the work. The amounts paid for such materials shall go to reduce the amount of other partial or final payments due to the Contractor for the work performed as the materials are incorporated into the completed work.

From the total amount of the estimate, determined as provided above, there shall be deducted an amount equal to five (5) percent of the total amount of such estimate to be retained by the City until fifty (50) percent of the work has been completed. At fifty (50) percent completion, further partial payments shall be made in full to the Contractor and no additional amount shall be retained unless the Engineer certifies that the job is not proceeding satisfactorily in accordance with Section 110.5 herein or, the amount retained is not sufficient to provide for recovery of liquidated damages assessable against the Contractor. At fifty (50) percent completion or at any time thereafter, when the progress of the work is not satisfactory, additional amounts may be retained but, in no event shall the total retainage be more than ten (10) percent of the value of the work completed. When the work has been substantially completed except the work which cannot be completed because of weather conditions, lack of materials or other reasons which in the judgment of the Engineer are valid reasons for noncompletion, the Engineer may make additional payments retaining at all times in the amounts sufficient to cover the estimated cost of the work still to be completed or in the alternative may pay out the entire amount retained and receive from the Contractor a guarantee in the form of a bond or other collateral sufficient to insure the completion of the job.

The payment of any current estimate prior to final acceptance of the work by the City shall in no way constitute acceptance of the work, nor in any way prejudice or affect the obligation of the Contractor, to repair, restore, correct, renew or replace any defects or imperfections in the construction or in the strength or quality of the materials used in or about the construction of the work under contract and its appurtenances, or any damage due or attributable to such defects, which defects, imperfections or damage shall have been discovered on or before the final inspection or acceptance of the work. The Engineer shall be the sole judge of such defects, imperfections or damage and the Contractor shall be liable to the City for failure to correct the same as provided herein.

The City reserves the right to pay the Contractor with checks that are made payable to the Contractor and one or more subcontractors. In addition, pursuant to the requirements of Wis.

Stat. Sec. 779.15, the City may also directly pay a subcontractor to satisfy a valid public improvement lien.

110.5 Acceptance and Final Payment.

When the work has been accepted by the Engineer in accordance with Section 105.15, the Engineer will prepare the final estimate of the quantities of the various classes of work performed. After the Contractor reviews and accepts the final estimate, and after the Contractor submits remaining demographic records and Committed Cost Status Reports ~~an affidavit certifying full compliance with Section 66.0903, Wisconsin Statutes, and receipt of evidence of such compliance by all subcontractors,~~ the Engineer will recommend to the Finance Director that the final payment be made. Within thirty (30) days after such action the Contractor will be paid the entire sum then due, subject to deductions for prior payments and setoffs under the contract.

All prior partial estimates and payments shall be subject to correction in the final estimate and payment.

The making of final payment shall not release the surety nor constitute a waiver of rights by the City. The guarantee of Section 105.16 is cumulative and not exclusive.

201.1 General.

Excavation Cut shall consist of the loosening, loading, hauling and disposal of all materials of every description encountered in the performance of the work other than specific materials which have been classified and bid upon, including Rock Excavation, Removal of Miscellaneous Structures, and Clearing and Grubbing. This work shall include the removal and disposal of surface and base course and unsuitable materials, the trimming and finishing of the roadway, and maintaining such work in a finished condition until acceptance.

Rock excavation shall include all hard, solid rock in ledges, bedded deposits and unstratified masses and all conglomerate deposits or any other material so firmly cemented as to present all the characteristics of solid rock; which material is so hard or so firmly cemented that, as determined by the Engineer, it is not practical to excavate and remove same with a ~~power shovel~~ backhoe except after thorough and continuous ~~without~~ drilling and blasting or the use of hydraulic breakers or grinders (trenchers) ~~rippers~~. The use of a ripper is not considered rock excavation. ~~Power shovels~~ Backhoes as referred to above shall be taken to apply to a modern 225-net flywheel horsepower backhoe, having adequate power and being in good running condition in the hands of an experienced operator. Rock excavation shall also include all rock boulders necessary to be removed having a volume of one cubic yard (27 cubic feet) or more. Rock excavation shall not apply to plain or asphalt bound bases or surface courses of macadam, gravel, or broken stone.

201.3 Description.

201.3(a) Under Drain, 6 Inch, Wrapped.

This work shall include all labor, equipment, materials, and incidentals required to install and connect six-inch perforated pipe under drain, wrapped, including open graded base course and geotextile fabric, as shown on the plans or as directed by the Engineer. See the City of Madison Standard Specification for Public Works Construction, Standard Detail Drawing 4.05 for additional information.

All costs associated with the connection of the under drain to the inlet, as shown on the plans or as directed by the Engineer, shall be considered incidental to this item.

The work involved with the placement of the Geotextile Fabric, type SAS as herein provided, and the perforated pipe shall be in accordance with Sections 612 ~~and 645~~ of the latest edition of the Standard Specifications for Highway and Structure Construction of the State of Wisconsin, Department of Transportation, except as modified herein.

201.3(b) Geotextile Fabric, Type SAS (Non-Woven).

This work shall be in accordance with Section 645 of the latest edition of the Standard Specifications for Highway and Structure Construction of the State of Wisconsin Department of Transportation and as herein provided. Geotextile Fabric, Type SAS (Non-Woven) shall be used in undercut areas.

201.3(c) Test Rolling Street Subgrades and Base Course Preparatory to Paving.

This work shall be in accordance with the pertinent provisions of Article 201 and 202 of the Standard Specifications, unless revised by the Engineer

201.4 Materials.

201.4(a) Under Drain, 6 Inch, Wrapped.

The geotextile fabric shall comply with the requirements for Geotextile Fabric, Type SAS (Non-Woven).

The Perforated Pipe Under Drain shall comply with the requirements of Section 612.2.5 of the latest edition of the Standard Specifications for Highway and Structure Construction of the State of Wisconsin, Department of Transportation.

The Pipe Wrapping shall comply with the requirements of Section ~~612.3.2~~ 612.2.8 of the latest edition of the Standard Specifications for Highway and Structure Construction of the State of Wisconsin, Department of Transportation.

Open Graded Base Course shall meet the requirements of size No. 2 of ~~501.2.5.4.4~~ 501.2.5.4.5 of the latest edition of the Standard Specifications for Highway and Structure Construction of the State of Wisconsin, Department of Transportation.

203.2 Construction Methods.

203.2(a) Removing Structures.

All existing structures, with all attached parts and connections, shown on the plans to be removed, or that interfere with the new construction, shall be entirely removed within the limits shown, unless otherwise provided. No equipment or devices shall be used which might damage structures, facilities, or property which are to be preserved and retained. All operations necessary for the removal of any existing structure, which might endanger the new construction, shall be completed prior to the construction of the new work.

All walls, piers, surface drains, foundations and similar masonry structures shall be removed entirely unless otherwise directed by the Engineer.

In removing sewer access structures, catchbasins and inlets, all incoming and outgoing pipes shall be disconnected and any live sewers shall be rebuilt and properly reconnected and a satisfactory bypass service shall be maintained during such construction operations. If the SAS is connected to CIPP, the contractor shall sawcut the host pipe and the liner before removing the existing SAS to avoid shifting. The contractor shall then remove the host pipe to expose the liner. If the liner is damaged during removal of the host pipe, the contractor is responsible for installing a short liner that's compatible with the existing liner in the affected section of pipe after the SAS is installed. Proposed active sewer mains shall remain free of debris or concrete plugs throughout the duration of construction. The void area left from the structure removal shall be backfilled as specified in 203.2(e). Any pipe plugs required shall be incidental to removing the sewer access structure. The structure shall be removed and disposed of by the Contractor at a site to be determined by the Contractor. All castings shall be delivered by the Contractor to the Engineering Service Building storage area at ~~1602~~ 1600 Emil Street.

203.2(c) Abandoning Structures and Pipes.

If the contract calls for abandoning sewer access structures, catchbasins, or inlets, they shall be thoroughly cleaned and the existing pipe connections shall be plugged. Any pipe plugs required to abandon the sewer access structure shall be incidental to abandoning sewer access structures. The roofs of the structure shall be removed. The walls of the structures shall be removed to a depth of two feet or more below the finished grade. The void area left from the structure that was abandoned shall be backfilled as specified in 203.2(e).

Abandoning pipe with slurry shall require the entire pipe be filled with slurry. Vent holes may be required by the Engineer to verify there are no voids left in the pipe. Sawcutting and removal of the existing pipe at the limits of abandonment shall be included in this item. The slurry shall conform to Type ~~B~~ A Slurry Mix as specified in Section 301.9 of these specifications.

203.2(d) Disposing of Materials.

All materials having salvage value shall be carefully removed to avoid damage and shall be disposed of as follows:

1. Sewer access structures, catchbasin and inlet castings shall be hauled to the Engineering Service Building storage yard at ~~1602~~ 1600 Emil Street.

2. All privately owned corrugated culverts shall be placed on the owner's property at the time of grading.

3. All (non-hazardous) City owned pipe shall be hauled to the Engineering Service Building storage area at ~~1602~~ 1600 Emil Street.

205.2 Construction Methods.

Adjusting sewer access structures and catch basin frames includes removing the existing casting; removing the existing adjusting blocks, bricking or rings to a sound brick, block, concrete barrel section or concrete roof base; installing new adjusting blocks, bricking, or rings to the required elevation; and reinstalling the existing casting to the rim elevation as indicated on the plan set or as directed in the field. The existing adjustments shall be disposed of off-site by the Contractor at a site to be determined by the Contractor. New adjusting blocks, bricking or rings shall be of solid concrete and shall be in accordance with the requirements of Standard Plate 5.7.15. Any "pin" type castings shall be removed and disposed of by the Contractor. If a new City of Madison Standard casting is required, one shall be salvaged from another structure on the job site designated for removal or if no acceptable castings are available on site, City Engineering shall provide one.

If a new cone section is required to maintain less than 9 (nine) inches of adjusting rings, the contractor shall be paid for Adjust Sewer Access Structure, Bid Item 20501, contractor shall not be paid for Adjust Sewer Access Structure Casting, Bid Item 20506.

The finished top elevation of castings in the paved area of streets shall be set with a string line at least forty (40) feet long set over the casting parallel to the street direction at the proposed finished grade of the street.

All salvaged castings shall be the property of the City. The Contractor shall haul such replaced castings to the Engineering Service Building storage area at ~~1602~~ 1600 Emil Street and deposit the castings as directed by the person in charge of the storage area.

Unless otherwise specified, the City shall furnish the new castings. The City shall issue replacement castings upon receipt of the Contractor's written request and the Inspector's certification. Replacement castings for storm and sanitary sewers shall be issued from the casting storage at the Engineering Service Building, ~~1602~~ 1600 Emil Street; the Contractor shall notify the Engineering Service

211.1 Description.

Work under this item shall include all work (including but not limited to excavation, removal and disposal of existing material, provision and placement of engineered material and construction of curb cut and flume), all materials (including but not limited to engineered fill, clear stone, concrete, and landscape fabric), labor, and incidentals required to construct the rain garden system meeting the sizes, locations, specifications, and detail drawings contained in this document and in the plan set.

212.3(c) Placing Grouted Riprap.

If the plans specify using grouted riprap, stone shall be laid as specified above under ~~211.3(b)~~ 212.3(b). Fill the spaces between the stones with cement mortar. Use sufficient mortar or concrete to completely fill all voids, except leave the face surface of the stone exposed.

301.1 General.

All concrete used on City of Madison Public Works projects shall comply with the following Subsections of Article 501, "Concrete" of the latest edition of the Standard Specifications for Highway and Structure Construction of the State of Wisconsin, Department of Transportation, Division of Highways, except as modified herein or in the Special Provisions of the contract:

501.2	Materials
501.3	Construction

All concrete used on City of Madison Public Works projects shall also comply with the following requirements, except as modified in the Special Provisions of the contract. Where the following requirements conflict with the above latest edition of the Standard Specifications for Highway and Structure Construction of the State of Wisconsin, Department of Transportation, then these following requirements apply:

1. The minimum compressive strength at twenty-eight (28) days shall be three thousand (3,000) pounds per square inch. ~~The minimum modulus of elasticity at twenty-eight (28) days shall be three million one hundred twenty thousand (3,120,000) pounds per square inch.~~

2. The minimum cement content shall be 565 pounds ~~six (6) bags per cubic yard~~, except for concrete mixes with fly ash. ~~Each bag of cement shall contain ninety-four (94) pounds net.~~

3. From the master limits of the job mix, adjusted as necessary for the specific gravities of the aggregate furnished, the Contractor shall determine and submit to the City Engineer a job mix, using the lowest quantity or percentage of fine aggregate within the range shown therefor which, without exceeding the maximum quantity of water permitted, will yield a mix possessing the necessary workability. The Contractor may use concrete from a pre-approved Supplier without submitting a mix design .

   Contractor shall submit a mix design for concrete annually, when a change of aggregate sources or mix design is made or as directed by the Engineer.

4. All concrete shall be Air-Entrained, and shall contain seven (7) percent air by volume, plus or minus one and one-half (1.5) percent.

5. All concrete for curb and gutter, sidewalks, floors, roof slabs, and other horizontal pours shall have a slump of not less than two (2) inches and not more than four (4) inches. All concrete for walls, columns, and other vertical pours shall have a slump of not less than three (3) inches and not more than six (6) inches.

6. No water shall be added when placing concrete unless approved by the Engineer. If water is added without consent of the Engineer, this shall be considered sufficient grounds for rejecting the concrete.

7. The maximum limit of light chert (specific gravity of 2.40 or less) allowed in coarse aggregate shall be two (2) ~~three (3)~~ percent by weight.

8. Admixtures other than required for air entrainment shall not be used unless approved by the Engineer for a specific project.

9. Aggregate shall be from a Wisconsin Department of Transportation approved source as specified under 106.3.4.2.

10. The percent wear shall not exceed 40, the weighted soundness loss shall not exceed 9 percent, and the weighted freeze-thaw average loss shall not exceed 12 percent.

11. Use clean, hard, durable, crushed gravel or crushed limestone free of an excess of thin or elongated pieces, frozen lumps, vegetation, deleterious substances, or adherent coatings considered injurious.

12. Use virgin aggregates only.

301.2 Concrete Tests.

Tests shall be made as directed by the Engineer to assure compliance with these Specifications. Tests shall be made in accordance with the requirements of Article 106 - Control of Materials, of these Specifications, and as specified below.

1. Slump tests shall be made following the “Methods of Test for Slump of Portland Cement Concrete” (ASTM C-143). Slump tests shall always be made from the same batch of concrete from which strength tests are made, and may be made when strength tests are not made.

   Air content tests shall be made in accordance with the “Method of Test for Air Content of Freshly Mixed Concrete by the Pressure Method” (ASTM C-231). ~~Air content may also be checked by the use of approved Air Content Indicators.~~

301.3 Reinforcing Steel.

All reinforcing bars shall be deformed, and the type used in the work under these Specifications shall be subject to the approval of the Engineer.

1. Where directed by the Engineer the Contractor shall install reinforcing steel in concrete sidewalks, driveways, sidewalk ramps, curb and gutter, special waterways, footings, walls, and other structures. Such reinforcing steel will be measured by length in linear feet of the sizes ordered and installed. ~~In the absence of applicable unit prices for the particular size(s) of reinforcing steel installed, the unit price(s) for the particular size(s) installed shall be arrived at as follows:~~

   ~~a. In proportion to the ratio of the cross sectional area of the size of reinforcing steel installed to the cross sectional area of the smallest size of reinforcing steel included in the contract as a bid item, or~~

   ~~b. In the absence of a unit price included in the contract as a bid item, in proportion to the ratio of the cross sectional area of the reinforcing steel installed to the cross sectional area of #4 (1/2 inch diameter) reinforcing steel, with a unit price of seventy-five ($0.75) cents per linear foot for uncoated bars, and one ($1.00) dollar for epoxy-coated bars.~~

301.4 Expansion Filler.

The filler shall be nonextruding and have the same shape and dimensions as the section in which it is installed. Furnish expansion joint filler conforming to AASHTO M 153 or ASSHTO M 213. Where dowel bars are required, use filler with holes factory-punched at the dowel bar locations and with a diameter not greater than 1/8 inch larger than the nominal dowel bar diameter.

All materials for expansion joints shall be furnished and installed by the Contractor and the costs shall be included in the unit prices bid for the various items of work.

301.5 Placing and Finishing.

Retempering of mortar or concrete which has partially hardened, that is mixing with additional materials or water, shall not be permitted.

No concrete shall be deposited in water or mud. During the pouring of bottom slabs and walls, the Contractor shall furnish sufficient pumping equipment to keep the water below the bottom of the floor of the structure. After concrete has been poured the Contractor shall keep the pumping equipment in continuous operation for thirty-six (36) hours.

Concrete shall not be deposited on frozen subbase material, on or against ice or frost, or on reinforcing steel having a temperature at pouring time of less than 36°F.

Do not resume concreting operations until an ascending air temperature in the shade and away from artificial heat reaches 32°F.

Concrete when deposited shall have a temperature of not less than 55°F. and not more than 100°F.

Concrete shall be handled from the mixer to placement as rapidly as practicable and in a manner that will prevent segregation of the ingredients until the unit of operation, approved by the Engineer, is completed. It shall be deposited in the forms as nearly as practicable in its final position to avoid rehandling. Concrete as it is deposited shall be puddled with suitable tools or equipment until forms are completely filled and reinforcement and embedded fixtures thoroughly incorporated in the mass.

Concrete adjacent to the forms, joints, or structures shall be deposited and spaded or vibrated in a manner to prevent the formation of voids or rock pockets. All cavities produced by the removal of form ties and any voids or rock pockets of more than casual occurrence found after the forms are removed, shall be filled immediately with a well mixed grout, composed of one (1) part of Portland cement and three (3) parts of fine aggregate (masonry sand) and finished to the true surface of the face of structure by the following method: Defective areas shall be chipped away to a depth of not less than one (1) inch measured at right angles to the surface. The area shall be thoroughly wetted, brushed with grout, and patched with grout. The patch shall be cured as specified for concrete structures. Defects appearing on the patch shall be repaired at the Contractor's expense.

An accumulation of water on the surface of freshly deposited concrete shall immediately be removed in a manner satisfactory to the Engineer.

Concrete shall be so deposited as to maintain, until the completion of the unit, a plastic surface, approximately horizontal. Forms for walls or other thin sections a height in excess of eight (8) feet shall be provided with openings, or other devices, that will permit the concrete to be placed in a manner that will avoid accumulation of hardened concrete on the forms or metal reinforcement. Under no circumstances shall concrete that has partially hardened be deposited in the work.

When concrete is conveyed by chuting, the mixer shall be of such size and design as to insure a practically continuous flow in the chute. The angle of the chute with the horizontal shall be such as to allow the concrete to flow without separation of the ingredients. An angle of twenty-seven (27) degrees, or one (1) vertical to two (2) horizontal, is the minimum slope which is considered permissible. Chuting through a vertical pipe is satisfactory when the lower end of the pipe is maintained four (4) feet or less above the surface of the deposit. The delivery end of the chute shall be within four (4) feet of the point of deposit. When the operation is intermittent, the spout shall discharge into a hopper. The chute shall be thoroughly flushed with water before and after each run; the water used for this purpose shall be discharged outside the forms but not into paved streets, walks, gutters or inlets.

All reinforced concrete shall be vibrated in place to the satisfaction of the Engineer with mechanical vibrators. Vibrators shall also be required for non-reinforced concrete structures when other methods of compaction or "puddling" do not give the desired results in the opinion of the Engineer.

Before depositing new concrete on or against concrete which has been set, the forms shall be retightened, the surface of the set concrete shall be roughened as required by the Engineer, thoroughly cleaned of foreign material and saturated with water.

Joints not indicated on the plans shall be so designed and located as to least impair the strength and appearance of the structure. All joints shall provide sufficient resistance to shear to which they may be subjected. Horizontal joints required to be watertight shall be constructed by forming continuous keyways in the lower portion of the concrete before the concrete has hardened. Before placing the superimposed concrete, the joint shall be thoroughly cleaned of foreign material and saturated with water. Vertical joints required to be watertight, and expansion joints shall be provided with suitable keyways subject to the approval of the Engineer.

Top surfaces of roof slabs, unless otherwise specified, shall be smoothed with a wood float. Care shall be taken to avoid an excess of water in the concrete, and to drain or otherwise promptly remove any water that comes to the surface. Dry cement or a dry mixture of cement and sand, shall not be sprinkled directly on the surface.

Top surfaces of concrete floor slabs, unless otherwise specified, shall be wood floated and then troweled with a steel hand trowel or a mechanically operated steel trowel to a smooth, dense finish. Steel troweling shall be done after the water has disappeared from the surface.

Unless otherwise specified, all edges of concrete along joints and forms shall be finished with a steel edging tool of one-fourth (1/4) inch radius.

~~Where concrete is to be placed in two lifts, as for cunettes, pavements, and other structures with wire mesh reinforcements, the concrete for the lower lift shall be placed, the required reinforcement positioned and secured and the upper lift of concrete placed. Any portion of the lower lift of concrete not covered with the upper lift of concrete within thirty (30) minutes after being placed, shall be removed. Concreting operations shall be discontinued due to insufficient natural light, unless an adequate and approved artificial lighting system is provided and operated.~~

301.9 Concrete Slurry.

Type A ~~and Type B~~ slurry mix~~es~~ as listed below shall be used as called for on the plans or as specified in the field by the Engineer on storm or sanitary sewer projects. Flowable fill shall be excavatable and have strengths between 200 psi and 300 psi. The above mix~~es~~ shall conform to the following one (1) cubic yard of mix of flowable slurry:

Type A Slurry	
3000 lb.	Sand
50 lb.	Portland Cement
~~300~~ 200 lb.	Class C Fly Ash
50 gal.	Water
20% ~~1.4 oz.~~	Air Entraining Admixture

~~**Type B Slurry**~~

~~2700 lb.~~	~~Sand~~
~~100 lb.~~	~~Portland Cement~~
~~300 lb.~~	~~Class C Fly Ash~~
~~50 gal.~~	~~Water~~

NOTES:

1. All design aggregate batch weights are saturated surface dry.
2. Aggregate batch weights shall be adjusted for free moisture at time of mixing.
3. Admixture quantity may be varied within manufactures recommended dosage to provide desired results.

302.2(d) Joints.

Full contraction joints shall be a minimum of three (3) inches in depth, and shall be uniformly spaced not less than six (6) feet nor more than fifteen (15) feet apart unless otherwise directed by the Engineer.

If machine methods are used for forming and finishing curb and gutter the Contractor may saw contraction joints or planes of weakness may be created by the insertion of approved partial depth separator plates having a minimum depth of three (3) inches. The depth of cut and equipment used in sawing shall meet the approval of the Engineer. The sawing shall be done as soon as practicable after the concrete has set sufficiently to preclude raveling during the sawing and before any shrinkage cracking takes place in the concrete. If this method results in random cracking the Contractor shall be required to use the partial depth separator plates.

Transverse expansion joints shall be one-half (1/2) inch in width and shall be placed across the curb and gutter perpendicular to the curb line at all radius points of curves having a radius of two hundred (200) feet or less, and on both sides of all inlets installed in curb and gutter. All expansion joints shall extend through the entire thickness of the curb and gutter and shall be perpendicular to the surface. All expansion joints shall be formed by inserting during construction, and leaving in place, the required thickness of joint filler which shall extend through the entire thickness of both curb and gutter.

Curb and gutter placed adjacent to concrete pavement should only have expansion joints aligning with expansion joints in the concrete pavement.

Where curb and gutter and concrete sidewalk or concrete driveways join, an expansion joint one (1) inch in width must be constructed between walks and curb.

The joint filler in transverse joints shall be flush with the finished surface of the gutter. The concrete adjacent to these joints shall be finished with a wooden float which is divided through the center and which will permit finishing on both sides of the filler at the same time. Before the curb and gutter is opened to traffic, excess joint filler shall be cut off level with the finished surface.

302.3(c) Damage to Inlets.

Any damage to cast-iron inlets during construction occasioned by the Contractor shall be charged to the Contractor.

Any existing cast-iron inlet found to be defective shall be hauled to the Engineering Division Service Building storage yard at ~~1602~~ 1600 Emil Street and a new inlet will be furnished by the Contractor and shall be paid for by the City to the Contractor upon the presentation of a receipted bill.

303.2(b) Forms.
Sidewalk forms shall be of steel construction and have a vertical height of at least five (5) or seven (7) inches. Wooden forms may be used only with the Engineer's approval on short radius curves and in special cases where accessibility is limited.

ARTICLE 402 - ASPHALT CONSTRUCTION

402.1 Materials for Asphalt Construction.

The materials intended for use in base, lower, and upper layer mixtures, tack and seal coats, surface treatments, and similar work, shall comply with the requirements of Part 4, "Pavements" of the latest edition of the Standard Specifications for Highway and Structure Construction of the State of Wisconsin, Department of Transportation, except as modified herein or in the Special Provisions of the contract.

Wherever the terms "Division", "Divisions", "Department" or "Departments" appear in the above mentioned specifications, such terms shall be understood to mean "City" or "City's" respectively.

Aggregate shall be from a Wisconsin Department of Transportation approved source as specified under 106.3.4.2 except the ~~The~~ Contractor shall provide to the City the results from the Freeze / Thaw Test (AASHTO T103) for quarried course aggregates used in the work produced from limestone/dolomite sources. The maximum percent loss for aggregates used in the work shall be four percent (4%).

The Contractor shall provide Asphalt Pavement mix designs in accordance with the aforementioned Part 4 of the latest edition of the Standard Specifications for Highway and Structure Construction of the State of Wisconsin, Department of Transportation. ~~The asphaltic materials used shall be PG 58-28 for E-0.3, E-1 and E-3 mixes, and PG64-28 for E-10 mixes unless otherwise specified in the Special Provisions of the contract.~~ The Engineer reserves the right to designate a grade of asphalt at the time of construction other than that specified in the contract. ~~The City of Madison has not adopted the latest Wisconsin Department of Transportation designations for HMA mixes. Please refer to the Standard Specifications for Highway and Structure Construction of the State of Wisconsin, Department of Transportation 2016 Edition as appropriate for 'E' mixes.~~

For all mixes mixes, determine the target JMF asphalt binder content for production from the mix design data corresponding to 3.0% air voids (97% Gmm) target at the design the number of gyrations (Ndes). Add liquid asphalt to achieve the required air voids at Ndes.

402.3 Asphalt Pavement.

Unless otherwise specified or directed by the Engineer, asphalt driveways and asphalt terrace paving shall be constructed of three (3) inches of upper layer pavement installed in one (1) lift on select fill, or as directed by the Engineer. ~~E-0.3~~ 4 LT 58-28 S, 5 LT 58-28 S mixture ~~with 9.5mm nominal aggregate size~~ or an approved commercial mix shall be used, unless a substitute is approved by engineer.

403.1 General.

The following specifications cover the work involved in the asphalt pavement resurfacing program of various streets. The resurfacing program includes: contract(s) to replace curb & gutter and utility castings; grind or pulverize various streets; patch and resurface various streets.

The proposed listing of streets and proposed quantities of work listed in the contract shall be subject to additions or deletions by the Engineer. The Engineer shall give written notice to the Contractor of any such additions or deletions. The work to be done on the various streets shall be itemized on “standard walk sheets” included in the Special Provisions.

The City of Madison reserves the right to add or delete streets from the contract dependent on funds available. The Contractor shall not be entitled to additional compensation in the event streets are added or deleted.

The City reserves the right to decrease or increase any of the quantities of the items bid upon without any change in the unit price bid, unless by mutual agreement by both the Contractor and the City.

If the quantities of any item is reduced, such decrease **SHALL NOT** constitute a claim for damages by the Contractor for loss of anticipated profits, **NOR** shall the Contractor be compensated for any overhead, equipment, material and labor charges, or any other costs incurred in the expectation of any quantity of work originally estimated in the Contract.

The various public and private utilities, including, but not limited to, sanitary sewers, storm sewers, water, gas, electric, telephone, traffic signals, street lighting, and cable television, may have facilities within the limits of the streets to be resurfaced which will require repairs or alterations. All such repairs or alterations which are required shall be completed before the installation of the asphalt upper layer. The Contractor shall so schedule his work that those utilities which have to make repairs or alterations to their facilities will not cause the final completion date of all work included with the contract to extend beyond the specified time of completion.

The Contractor shall so schedule its work with the Engineer so as not to interfere with the work of other concurrent City contracts for reconstructing curb and gutter, base patching, adjusting utility castings, grinding, or paving of the various streets. All other work shall be completed on the street prior to starting the paving operations, unless otherwise approved by the Engineer.

If a specific operation (i.e., grinding) will not take place within two (2) days of the preceding specified operation (i.e., base patching) the Contractor shall remove the No Parking signs and re-post the No Parking signs before the next specific operation begins.

The Contractor shall notify, one week in advance, the Traffic Engineer at 266-4761 before moving to and starting work on each of the various streets. The Contractor shall also notify, one week in advance, the bus utility before starting work on a designated bus route.

The Contractor shall notify the Engineer daily of all work to be performed. If the Contractor performs work without notification of the Engineer said work and materials shall be at no cost to the City. The Contractor shall designate one person on each work crew, including subcontractors, to supervise the work crew and to be responsible to the Engineer for traffic control settings, marking and measuring work, acquisition of construction materials, systematic scheduling, etc. The said designated person shall be familiar with the work and may be a member of the work crew.

~~All traffic signing and barricading shall conform to the Federal Highways Administrations "Manual on Uniform Traffic Control Devices" (MUTCD) and City of Madison Supplements for sidewalk and bikeway closures and the State of Wisconsin Standard Detail Drawing S.D.D. 15e 11-5.~~

~~The Contractor shall submit an acceptable Traffic Control Plan and a list of names and emergency phone numbers for individuals who are responsible for the maintenance of traffic control for this project to the office of the City Traffic Engineer, a minimum 48 hours prior to the start of work on this project.~~

~~Section 107.7 – Maintenance of Traffic, Section 107.8 – Notification when Closing Street, Section 107.9 – Barricades, Warning Signs and Flagging and Section 107.10 – Opening of Section of Highway to Traffic shall govern over Section 403.1 paragraphs six through twelve.~~

~~On street parking may be removed by the contractor to facilitate construction, resurfacing and maintain traffic flow. The contractor shall notify the traffic Engineering Division, forty-eight (48) hours in advance of proposed parking removal. The contractor shall obtain from the City and place "No Parking" portables, "No Parking" cardboard signs or meter bags whichever is applicable for the particular street. "No Parking" restrictions must be placed a minimum of 48 hours in advance of the beginning of construction. On streets where Zone Parking, (2 hour) is in effect or signed loading zones in effect, the contractor shall cover these signs with black plastic bags when No Parking portables or signs are placed in the same area.~~

~~On streets where there is not time restriction on parking, the Contractor shall post said streets at least forty-eight (48) hours prior to beginning work with "No Parking" signs legibly marked with the date and time of restricted parking. The Contractor shall notify the Police Department Traffic Bureau at 266-4622 during regular hours or the Police Dispatcher after regular hours stating the construction company name, the contract number, the street or streets posted, the time and date posted, and shall request that Police Department Personnel check the posting.~~

~~On all streets where there is a time restriction on parking, the Contractor shall post said street at least twelve hours prior to beginning work with "No Parking" signs legibly marked with the date~~

and time of restricted parking. The Contractor shall notify the Police Department Traffic Bureau the same as above.

On streets where residential permit parking is allowed, the Contractor shall post said street at least forty-eight (48) hours prior to beginning work with "No Parking" signs legibly marked with the date and time of restricted parking. Residential permit parking zones are indicated with a zone number located in the lower corner of the permanent time restriction sign. The Contractor shall notify the Police Department Traffic Bureau the same as above.

The Contractor shall post "no parking" signs at the beginning, midpoint, and the end of each block plus additional signs as needed. "No parking" signs shall be posted a minimum of three (3) feet above curb elevations. If no work is begun on the posted street within two (2) days of the posted start date, the Contractor shall remove the "no parking" signs and repost the street when ready to begin work on that street.

The Contractor shall be responsible for erecting, re-erecting, maintaining, and removing those "No Parking" controls devices stated above.

The Contractor shall maintain two-way traffic on all two-way streets governed by the contract. Traffic lanes shall be a minimum of eleven (11') feet in width. When necessary, because of certain construction operations, the Contractor may reduce the roadway width to twelve (12') feet with two way traffic maintained by flag persons in accordance with the Federal Highways Administration "Manual on Uniform Traffic Control Devices" (MUTCD).

Construction on one way streets will require a minimum fifteen (15') feet traffic lane.

The Contractor shall observe peak hour traffic restrictions on certain streets between the hours of 7:00 A.M. to 8:30 A.M. and 4:00 P.M. to 5:30 P.M. Peak hour traffic restrictions apply to all signalized intersections and arterial streets. During these hours, no work shall be performed in or adjacent to the roadway where traffic is being maintained or deliveries being made to the site that will in any way interfere with the movement of traffic. The list of streets with peak hours restrictions shall be listed in the Special Provisions. Exceptions to this time restriction require approval of the Engineer.

All openings made in the existing base course shall be backfilled or plated on the same day as the base course is removed. Temporary backfilling and the removal and disposal of temporary backfill material shall be at the expense of the Contractor.

The Contractor shall furnish, install and maintain all provisions for traffic control as specified in Article 107 of these specifications. The Contractor shall also furnish, install and maintain additional traffic control devices as specified in the special provisions of the contract or as directed by the Engineer in order to control and divert traffic to the proper travel lanes of the street being worked on.

The Contractor shall provide a pickup, a stake truck, or a similar vehicle designated for the sole purpose of transporting traffic control devices. One person, or more as needed, on each work crew, including subcontractors, shall be designated to properly set up traffic control devices, to maintain and move them as needed, and to pick up the traffic control devices at the end of the work day or when the work is completed. This designated person can also function as a flag

~~person as needed provided the traffic control devices are in position. The said person designated for traffic control shall be familiar with the work.~~

~~Electric lighting (Type A flashers) shall be used for lighting of all work areas. Type II barricades shall be used for all work in the street, sidewalk, drive apron, including castings and curb and gutter area.~~ The Contractor shall protect all work as required until after the installation of approved wedging. The Contractor shall be responsible for and shall furnish wedging to protect the adjusted castings until the roadway is paved. Wedging shall consist of cleaning the surface area around the casting, tacking the entire surface area to be wedged, and placing hot mix asphalt mixture compacted to a depth within one-quarter (1/4) inch of the top of the adjusted casting and to a minimum radius width of one (1) foot for each one-half (1/2) inch of adjusted vertical height, or as directed by the Engineer. All costs for protecting and wedging castings shall be incidental to the contract unless specified.

All cost pertaining to the above Traffic Control work shall be paid under **BID ITEM 10701 - TRAFFIC CONTROL.**

The time of completion of the work shall be in work days. A work day shall be any calendar day during which weather and other conditions not under the control of the Contractor will permit construction operations to proceed for at least six (6) hours of the day with the normal working force engaged in performing the work in progress at this time. Days when less than six (6) hours of work is performed shall be considered 1/2 work days in the time of completion. It shall be considered a work day whether any single operation is being performed such as casting adjustments, or whether multiple concurrent operations are being performed. Only when approved by the Engineer in writing in advance shall contract time not be assessed during complete suspension of operations. If operations are suspended with approval of the Engineer, the Engineer shall also state in writing to the Contractor the date that operations shall resume. Work days from this date on shall be included in the time of completion.

~~The Contractor shall limit his work day to 7:00 P.M. unless otherwise approved by the Engineer in writing. All rolling of new pavements, brooming and cleaning up of debris, and removing the traffic control devices shall be completed by this time, or as designated by the Engineer. No Sunday or legal holiday work will be allowed and no contract time will be assessed for Sundays and legal holidays not worked.~~

~~The Contractor shall contact any railroad involved at least seventy-two (72) hours before starting work in a railroad track area. The Contractor shall request the railroad to furnish a flag person for the railroad crossing work.~~ As directed by the Engineer, the Contractor shall excavate between the rails to the ties, remove and salvage any existing mud rails to the railroad, and backfill with asphalt paving materials. No crushed stone will be allowed on the railroad ties. The patch area, including between the rails, shall be measured and paid for as asphalt base patch. Removing rails and ties completely shall be considered extra work. No work days will be charged for any railroad work that extends beyond the completion of all other work included with this contract.

Replacement castings for storm and sanitary sewers and steel adjusting rings shall be picked from the casting storage at the Engineering Service Building, ~~1602~~ 1600 Emil Street. The Contractor shall notify the Engineering Service Building at telephone number 266-4430 at least one day in advance when new castings are required. Replacement castings for Water Utility

valve access structures shall be picked up from the casting storage at the Water Utility Operations Center, 110 South Paterson Street. The Contractor shall notify the Water Utility Operations Center at telephone number 266-4661 at least one day in advance when new castings are required. Replacement castings for Traffic Engineering electrical utility access structures shall be picked up from the casting storage at the Traffic Engineering Shop, 1120 Sayle Street. The Contractor shall notify the Traffic Engineering Shop at telephone number 266-4767 at least one day in advance when new castings are required. The castings which are replaced shall be the property of the City. The Contractor shall haul such replaced castings to the Engineering Service Building storage area at ~~1602~~ 1600 Emil Street and deposit the castings as directed by the person in charge of the storage area.

All work done in the vicinity of any tree located in the terrace shall be completed in accordance with section 107.13 Tree Protection Specification.

403.5 Asphalt Tack Coat.

Asphalt Tack Coat shall consist of furnishing and placing asphalt pavement in accordance with Article 402.

~~The Contractor shall apply asphaltic tack coat to streets prior to placing asphalt pavement as directed by the Engineer. No tack coat shall be placed on the base course unless directed by the Engineer. In accordance with Section 402.4, the Contractor shall apply an asphaltic tack coat to all butt joints and all longitudinal joints meeting both existing pavements and new pavements on successive paving passes. All costs for furnishing and applying tack coat to butt joints and longitudinal joints as specified above shall be considered incidental to the bid item for asphalt tack coat.~~

403.6 Asphalt Lower Layer.

Asphalt lower layers shall consist of furnishing and placing asphalt pavement in accordance with Article 402.

~~The Contractor shall be responsible for the preparation of the street surface to be paved. Preparation shall include the removal of all asphalt patches, asphalt crack filler, vegetation along gutter edges, leaves, dirt, debris, etc. It shall be the Contractor's responsibility to assure proper cleaning of the street surface before tacking and paving. On all streets, the Contractor shall tack and fill any existing large voids with hot mix asphalt and compact the filler material before paving. All costs for filling large voids in existing pavement shall be incidental to asphalt lower layer. Where designated by the Engineer, the Contractor shall wedge low areas of the existing pavement with hot mix asphalt. Wedging shall be completed prior to paving. The cost for wedging shall be paid for at the unit price for asphalt lower layer. Material used for wedging shall not be included in the quantity for computing yield.~~

~~Yield requirements shall be adhered to.~~

403.7 Asphalt Upper Layer.

Asphalt upper layer shall consist of furnishing and placing asphalt pavement in accordance with Article 402.

~~Yield requirements shall be adhered to.~~

403.8 Asphalt Base Patching.

403.8(a) Description.

Asphalt base patching for the removal of pavement failures includes pavements on concrete base course and on crushed stone base course. The Contractor shall verify as to whether the proposed streets listed have existing concrete or crushed stone base course. When specified in the contract, the Contractor shall perform base patching by grinding with the removal of existing pavement failures in accordance with Section 403.2. All other base patching shall be excavated by backhoe or other approved equipment so as to minimize disturbing the existing subbase.

The depths of removal by backhoe of the pavement failures as determined by the Engineer and indicated on the standard walk sheets shall be three and one-half (3-1/2) inches, five (5) inches, eight (8) inches, and ten (10) inches. The removal by backhoe of pavement failures to a depth of five (5) inches is intended to include existing asphalt pavements on crushed stone base course. If concrete base course is encountered when removing the asphalt pavement failures on crushed stone base course, the Contractor shall notify the Engineer before removing the existing concrete material for the Engineer to change the classification to eight (8) inch patching or the base patch will be paid for at the depth and area listed on the standard walk sheet.

The removal by backhoe of pavement failures to a depth of eight (8) inches is intended to include existing asphalt pavements with concrete base course, and concrete pavements on crushed stone base course. If steel reinforcement is encountered, the Contractor shall cut all reinforcing steel flush to the patch limits. When the depth of removal necessary to remove the concrete base course or concrete pavement is greater than ten (10) inches, the Contractor shall notify the Engineer before removing the existing concrete material for the Engineer to change the classification to ten (10) inch patching or the base patch will be paid for at the depth and area listed on the standard walk sheet.

The Contractor may use crushed stone base course material to construct the subgrade to the bottom of the three and one-half (3-1/2) inches, five (5), eight (8) and ten (10) inch patches. The cost of furnishing, installing, and compacting the crushed stone base course material shall be considered as incidental to the items of three and one-half (3-1/2) inches, five (5), eight (8) and ten (10) inch patches.

The limits of the area to be patched shall be sawcut or milled vertically as directed by the Engineer. No concrete base course shall be removed prior to the removal of the asphalt pavement superimposed thereon without prior approval of the Engineer. All base patch limits in concrete base course shall be saw cut full depth before the concrete is broken and removed. All costs for cutting shall be considered incidental to asphalt base patching.

Hot mix asphalt, 3 MT 58-28 S or 4 MT 58-28 S ~~mixture type E-1 or E-3 with nominal aggregate size of 19.0 mm or 25.0 mm~~, shall be placed and compacted in lifts not to exceed three and one-half (3-1/2) inches, in thickness. The Contractor shall supplement vibratory plate compaction equipment with a vibratory steel-wheeled roller utilized for compaction of the asphalt lower layer mixture in the vibrating mode. The compaction equipment shall be equipped with working

water reservoirs. Recycled asphalt material may be used as patch material if the mix design is performed in accordance with Section 402.4 and the stockpile of salvaged material for recycling is approved in advance by the Engineer. The Contractor is encouraged to use approved recycled material. Only material approved in advance shall be allowed for patch material.

403.11 SAS Adjusting Ring.

403.11(a) Description.

The Contractor shall install City furnished steel access structure adjusting rings, height shall be as directed by the Engineer, on those access structures indicated on the walk sheets or as directed by the Engineer. Each ring shall be secured with an adhesive approved by the Engineer.

403.16(a) Description.

The Contractor shall adjust water or gas valve castings to final grade by the following three methods as directed by the Engineer:

The Contractor shall furnish and install new screw type adjusting valve castings at (top section risers with lids and, as needed, middle section extensions) at all existing water valve locations within the project limits. Refer to Articles 702, 703 and 704 for applicable material and construction requirements for valve castings. In the event any existing base section/bonnet castings are determined to be damaged or in need of replacement, Madison Water Utility will furnish the casting for that section only.

403.21 Remove and Replace Concrete Curb & Gutter, Machine Placed - Resurfacing; Remove and Replace Concrete Curb & Gutter, Hand Placed – Resurfacing; Remove and Replace Concrete Curb & Gutter, Special – Resurfacing.

403.21(a) Description.

Concrete curb and gutter shall consist of removing and replacing existing concrete curb and gutter where designated by the Engineer in accordance with The City of Madison Standard Specifications Section 302 except as modified herein.

When a portion of curb and gutter to be replaced contains an inlet, the cost of adjusting the inlet, if for the convenience of the contractor, in its same location shall be included in the unit price bid of remove and replace concrete curb and gutter.

Removal and replacement of concrete curb and gutter shall include excavating, replacement of disturbed sub-base material with four (4”) of 3/4” crushed stone or crushed concrete, grade preparation, tree root removal, expansion joints and disposal. If directed by the Engineer, “Type X” curb will be required at various locations at no additional cost. All work done in the vicinity of any tree located in the terrace shall be completed in accordance with section 107.13 Tree Protection Specification.

The Contractor shall place all curb & gutter with the use of a slip form paver as directed by the Engineer except where obstructions prevent the uses of a machine. Obstructions shall include but not be limited to: inlets; sidewalk; castings and trees.

Removal of concrete curb and gutter shall include excavation of existing material including asphalt material, up to one (1) foot on each side of the curb and gutter, as the case may be. All material shall be hauled from the site. At no time shall any material be deposited on private property or terrace areas. ~~All work done in the vicinity of any tree located in the terrace shall be completed in accordance with section 107.13 Tree Protection Specification.~~

Existing concrete, asphalt mixes or other types of material used to shim raised curb & gutter shall be removed from adjacent curb & gutter stones prior to placing new curb & gutter.

~~After the new curb and gutter has been constructed and the forms removed, the excavated areas adjacent to the curb and gutter shall be back filled immediately with the appropriate material; topsoil, crushed stone, concrete or asphalt mix.~~

All debris shall be removed from the excavated areas prior to placement of the topsoil.

~~Transverse full depth saw cuts shall be placed where directed by the Engineer.~~

~~Transverse full depth sawcuts shall be incidental.~~

The Contractor shall construct the curb cuts using a “profile curb cut” with the curb head removed by using a machine type concrete saw specifically designed for this type of work. The curb shall be cut off flush with the flow line through the ramp. Profile curb cut shall be paid under **BID ITEM 30330 - PROFILE CURB CUT.**

~~The Contractor shall take precautions during construction operations not to disfigure, scar, or impair the health of any tree on public or private property.~~

~~The Contractor shall remove tree roots from existing live trees in accordance with section 107.13 Tree Protection Specification.~~

~~Tree roots ends one half inch (1/2”) and up which are severed shall be cut in accordance with section 107.13 Tree Protection Specification. The tree root ends shall be back filled with soil or other suitable means immediately following the cutting.~~

A special provision shall be written to explain ‘Special Curb & Gutter.’

403.21(b) Method of Measurement.

Concrete Curb and Gutter shall be measured by length in lineal feet in accordance with Subsection 302.3(a) of The City of Madison Standard Specifications.

403.21(c) Basis of Payment.

The contract unit price shall be paid as per Subsection 302.2(b) of The City of Madison Standard Specifications except that the unit price shall include removal for curb and gutter, excavating,

sawcut, gravel, fill, topsoil, seed and matting. Curb & Gutter placed with a slip form paver shall be paid under **BID ITEM 40381 – REMOVE AND REPLACE CONCRETE CURB & GUTTER, MACHINE PLACED – RESURFACING;** Curb & Gutter placed by hand shall be paid under **BID ITEM 40382 – REMOVE AND REPLACE CONCRETE CURB & GUTTER, HAND PLACED – RESURFACING.** Special Curb & Gutter shall be paid under **BID ITEM 40383 - REMOVE AND REPLACE CONCRETE CURB & GUTTER, SPECIAL - RESURFACING.**

403.22 Remove and Replace 5 Inch Concrete Sidewalk – Resurfacing; Remove and Replace 7 Inch Concrete Sidewalk and Drive – Resurfacing.

403.22(a) Description.

Concrete walk and drive apron shall consist of removing and replacing existing walk and drive apron where designated by the Engineer in accordance with Section 303 of The City of Madison Standard Specifications except as modified herein.

Removal and replacement of sidewalk an drive aprons shall include all costs for excavating, replacement of disturbed sub-base material with four (4”) of 3/4” crushed stone or crushed concrete, grade preparation, tree root removal, expansion joints and disposal

Removal of sidewalks and drive aprons shall include excavation of existing material including asphalt material, up to one (1) foot on each side of the sidewalk or drive aprons, as the case may be. All material shall be hauled from the site. At no time shall any material be deposited on private property or terrace areas.

Existing concrete, asphalt mixes or other types of material used to shim raised sidewalks shall be removed from adjacent sidewalk stones prior to placing new sidewalk.

After the new sidewalks have been constructed and the forms removed, the excavated areas adjacent to the sidewalk shall be back filled immediately with the appropriate material; topsoil, crushed stone, concrete or asphalt mix.

All debris shall be removed from the excavated areas prior to placement of the topsoil.

~~Transverse full depth saw cuts shall be placed where directed by the Engineer.~~

~~Transverse full depth sawcuts shall be incidental.~~

The Contractor shall take precautions during construction operations not to disfigure, scar, or impair the health of any tree on public or private property.

The Contractor shall remove tree roots from existing live trees in accordance with section 107.13 Tree Protection Specification.

Tree roots ends one-half inch (1/2”) and up which are severed shall be cut in accordance with section 107.13 Tree Protection Specification. The tree root ends shall be back filled with soil or other suitable means immediately following the cutting.

403.22(b) Method of Measurement.

Concrete sidewalk shall be measured by the Square Foot.

403.22(c) Basis of Payment.

The contract unit price shall be paid as per Subsection 303.3(b) of The City of Madison Standard Specifications except that the unit price shall include: removal of sidewalk or drive apron; excavating; fill; gravel, topsoil; seed and matting.

404.1 General.

404.1(a) General

The installation of concrete pavement, including materials, equipment, foundation, construction methods, method of measurement, and basis of payment shall be in accordance with ~~Article~~ Part 415 and 416~~, “Concrete Pavement”~~ and 501 of the latest edition of the Standard Specifications for Highway and Structure Construction of the State of Wisconsin, Department of Transportation, except as modified herein The City of Madison Standard Specifications or the Special Provisions of the contract.

1. Aggregate shall be from a Wisconsin Department of Transportation approved source as specified under 106.3.4.2.

2. The percent wear shall not exceed 40, the weighted soundness loss shall not exceed 9 percent, and the weighted freeze-thaw average loss shall not exceed 12 percent.

3. Use clean, hard, durable, crushed gravel or crushed limestone free of an excess of thin or elongated pieces, frozen lumps, vegetation, deleterious substances, or adherent coatings considered injurious.

4. Use virgin aggregates only.

5. The maximum limit of light chert[1] (specific gravity of 2.40 or less) allowed in coarse aggregate shall be two (2) ~~three (3)~~ percent by weight.

[1]Material classified lithologically as chert and having a bulk specific gravity (saturated surface-dry basis) of less than 2.45. Determine the percentage of chert by dividing the weight of chert in the sample retained on a 3/8-inch sieve by the weight of the total sample.

404.1(b) Concrete Tests

Conform to standard specification 701, 710 and 715 for QMP Concrete Pavement and Structures in the latest edition of the Standard Specifications for Highway and Structure Construction of the State of Wisconsin, Department of Transportation except as modified herein

1. Remove section 715.3.2 and all of sub sections 715.3.2.

2. Remove section 715.4.

3. Replace section 715.5 and all subsections of 715.5 with the following:

> Costs for sampling, testing and documentation under part 7 are all incidental to the work. If the contractor fails to perform work required under the contract QMP provisions, the City may reduce the contractor's pay. The City will administer pay reductions under the Non-performance of QMP administrative item.

404.3 Concrete Pavement Joint Sealing ~~Steel Pins.~~

~~The Contractor shall furnish steel pins to use in setting grades for concrete pavement.~~

GENERAL

Concrete Pavement Joint Sealing shall consist of cleaning the joint in preparation for sealing and sealing all contraction and expansion joints in the concrete pavement with a hot applied joint sealing material. The work shall conform to the plan details as follows.

MATERIALS

All joints shall be sealed with a hot applied joint sealant conforming to the Specification for Joint and Crack Sealants, Hot-Applied, for Concrete and Asphalt Pavements, ASTM Designation D6690, type II. A Certification of Compliance shall be furnished to the engineer prior to application.

CONSTRUCTION

All contraction and expansion joints in concrete pavement, all sawed longitudinal joints and the joint between pavement and curb edge shall be sealed with a hot poured sealer.

The operation of sealing shall be performed as soon as practical upon elapse of the curing period and in any event prior to the time traffic of any kind uses the pavement.

Joints shall not be sealed until they have been inspected and approved by the engineer.

Application of the joint sealer shall be made when the joint surfaces are clean and dry.

Immediately before sealing the joint thoroughly clean the joints of all laitance, curing compound and other foreign material. Exposed joint faces shall be cleaned by sandblasting, or by water blasting with sufficient pressure to thoroughly and completely clean the joint. A multiple-pass technique shall be used until the surfaces are free of material that might prevent bonding. For

final cleaning immediately prior to installation of the sealer, the joints shall be blown clean with oil-free compressed air. The joint faces must be surface dry when sealant is applied.

The sealing compound shall be heated to the pouring temperature recommended by the manufacturer in an approved kettle or tank, constructed as a double boiler, with the space between the inner and outer shells filled with oil or other satisfactory heat transfer medium. The heating kettle shall be equipped with a mechanical agitator, positive temperature control and an approved dial thermometer for checking temperatures of the compound. The heating kettle, if and when operated on concrete, shall be properly insulated against the radiation of heat to the concrete surface.

The sealing compound shall not be heated above the maximum safe heating temperature. The maximum safe heating temperature shall be determined from tests made on samples from each lot or shipment of the material delivered to the project. When so approved by the engineer, the manufacturer's recommended maximum safe heating temperature may be used in lieu of test determinations where relatively small quantities of sealer are used. Any material heated above the maximum safe heating temperature shall be discarded.

Pouring of joints shall be made when the sealing material is at the required temperature and, insofar as practicable, the sealing compound shall be maintained at a uniform temperature during pouring operations. Pouring shall not be permitted when the temperature of the sealing compound in the applicator, as it is applied to the joint, is more than 10 degrees Fahrenheit below the recommended pouring temperature. Pouring of the molten sealer in the joint opening shall be done with such equipment that the sealer completely fills the joint opening without overflowing on the adjoining surface and when finished, after shrinkage, the sealer is approximately flush with the adjoining surfaces. In the event satisfactory sealing of a joint is not accomplished in a single pouring, the sealing compound shall be placed in two pourings.

At least one-half of the required amount shall be placed in the first pouring, and the second pouring shall follow the first as soon as practicable after the first pouring has attained maximum shrinkage but not later than one hour after the first pouring.

After final pouring, Contractor shall remove all excess material or spillage from the pavement surface.

METHOD OF MEASUREMENT

Concrete Pavement Joint Sealing will be measured in linear feet along the joint in place, complete and accepted.

BASIS OF PAYMENT

Concrete Pavement Joint Sealing, measured as provided above, will be paid at the contract unit price per linear foot. Payment is full compensation for cleaning the joint, for furnishing and applying the joint sealant, and for all labor, tools, equipment and incidentals required to complete the work.

404.5(b) Placement of Concrete Pavement.

Joints in the replaced section of concrete shall be doweled in accordance with the details on Standard Plate 3.11. Epoxy coated tie bars shall be installed to a tight driven fit and secured with an approved epoxy grout. The fee end of the Epoxy coated dowel bars shall be coated with an approved bond breaker.

Concrete patches shall be installed per Standard Detail Drawing 5.2.4

When only one lane is to be patched, a bond breaker consisting of 1/8" thick felt shall be installed along the longitudinal joint of the patch between adjacent lanes of concrete in lieu of the #4 tie bars.

The concrete design mix shall be such that the concrete achieves a strength of at least 3,000 psi in forty-eight (48) hours. The concrete design mix shall be submitted to the Engineer for approval prior to pouring of concrete.

The opening of patches to traffic shall be controlled by cylinder tests, and shall be no earlier than forty-eight (48) hours.

The strike-off and consolidation shall conform to Section ~~416.3.9.4~~ 415 of the latest edition of the Standard Specifications for Highway and Structure Construction of the State of Wisconsin, Department of Transportation. The concrete shall be consolidated in place by use of an immersion type vibrator or vibratory screed. The screed or template used for the surface strike-off shall be of an approved design constructed of metal, or with a metal edge, and sufficiently rigid to retain its shape.

405.3 Materials.

New asphalt concrete material for patching shall be equal to the City of Madison Standard Specification for HMA ~~type E-1~~ 3 MT 58-28 S, 12.5 mm mix design.

ARTICLE 408 - PAVEMENT CHIP SEAL

~~408.1 Materials For Pavement Chip Sealing.~~

~~The aggregate for the Chip Seal shall consist of hard and durable Black Boiler Slag (by-product of coal). The gradation for the material shall conform to the following requirements:~~

~~SIEVE SIZE~~	~~PERCENT PASSING BY WEIGHT~~
~~3/8 inch~~	~~100~~
~~No. 4~~	~~90-100~~
~~No. 8~~	~~45-75~~
~~No. 40~~	~~0-8~~
~~No. 200~~	~~0-3~~

Chip Sealing and Seal Coat are considered to be one and the same for these special provisions. The Chip Seal shall conform to Section 475 "Seal Coat" of the currrent "Standard Specifications for Highway and Structure Construction" 2003 Edition prepared by the State of Wisconsin Department of Transportation and these special provisions herein set forth shall govern this construction.

The asphaltic material for the Chip Seal shall be CRS-2P, Polymer modified, and be applied at a rate of 0.28 gallons per square yard. This asphaltic material shall be rapid set emulsion that has elastic properties and shall comply with AASHTO M316.

The temperature of the Asphaltic Emulsion at the time of application shall not be less that 150 degrees Fahrenheit nor more than 180 degrees Fahrenheit.

The aggregate for the Chip Seal shall consist of hard and durable particles of Black Boiler Slag (by-product of coal). The Gradation for the material shall conform to the following requirements:

The Contractor will be required to supply a sample to the Engineer prior to the start of work. The Contractor shall also submit written verification from their Supplier that the asphalt emulsion and aggregate properly bond. Should there be any discrepancies in the field, the Contractor shall be responsible for all costs associated with repairs. The application rates for the screenings and Asphaltic Emulsion shall be within the range specified in the following table.

SCREENINGS	**LB/S.Y.**	**ASPHALTIC EMULSION (GAL. /S.Y.)**
Single Chip Seal	18 TO 22	0.28-0.32

408.2 Personnel

The Contractor's personnel shall be experienced in Chip Sealing work and shall be knowledgeable regarding the material and equipment to be used for Chip Sealing.

408.3 Equipment

The Contractor shall furnish all equipment necessary, but not be limited to the equipment specified in Section 475.3.2 of the WISDOT Standard Specifications.

The second paragraph of the WISDOT Standard Specifications, Section 475.3.5 "Applying and Rolling Seal Coat Aggregate" is amended to read as follows:

The Contractor shall furnish a minimum of two (2) pneumatic-tired rollers.

The initial rolling shall consist of one (1) complete coverage performed with a pneumatic-tired roller and shall begin immediately behind the spreader. Binder and screenings shall not be spread more than 500 feet ahead of completion of the initial rolling operations. Secondary rolling shall begin immediately after completion of the initial rolling. The amount of secondary rolling shall be sufficient to adequately seat the screenings and in no case shall be less than two (2) complete coverages.

~~The Contractor shall sweep the completed Chip Sealed streets within FORTY-EIGHT (48) hours after the second rolling or after the Chip Sealing is set whichever is sooner. The Contractor shall be required to sweep the streets to remove ALL loose aggregate left from the Chip Sealing application. This may require more than one sweeping.~~

~~408.4 Preparation of the Surface and Protection~~

~~Immediately before applying the Asphaltic Emulsion, the Contractor shall be responsible for removing all loose material, silt, clay, vegetation in the street and edge of gutter and other objectionable materials from the street with a power broom, street sweeper, edger or other approved method.~~

~~Prior to Chip Sealing the Contractor shall protect all inlets contained within the Chip Sealing area and downstream inlets in accordance with standard Detail Drawing 1.04 in the City of Madison's Standard Specifications.~~

~~It shall be the Contractors responsibility to locate and protect all utility castings including but not limited to sewer access structures, water valves, inlets, and catch basins within the street or streets to be chip sealed prior to starting work and protect these castings so that **ABSOLUTELY NO ASPHALTIC EMULSION** will be applied. If castings are covered by chip sealing the Contractor will be responsible to clean and or replace the all the castings at their own expense, as required by the City Engineer. No work shall begin until all utility castings are protected. No work shall begin until all Traffic Control is in place as required in Section 107.7.~~

~~**All inlet protection shall remain in place until the streets are swept to the satisfaction of the Engineer. Please note that BID ITEM 21041 INLET PROTECTION TYPE D – COMPLETE is undistributed and may or may not be used. All other inlet protection is considered incidental to lump sum bid of chip sealing.**~~

~~408.5 Method of Measurement~~

~~The Contractor shall bid each Street segment in the contract individually; based on the price to properly Chip Seal the street segment according to the conditions provided in this contract. Each segment will be bid as a "lump sum" price. It is the Contractors responsibility to review each street segment and verify the area to be chip sealed.~~

~~408.6 Basis of Payment~~

~~Chip Sealing will be paid for at the Contractors bid price per street segment. Which price shall be full compensation for furnishing; heating, unloading, hauling, and for applying the Chip Sealing material; for the cleaning of the streets, applying the Asphalt Emulsion and Chips, Rolling, street sweeping; for locating stockpile locations and disposal of all waste material, for the protection of inlets and utility casting; and for all labor, tools, equipment, and incidental necessary to complete the work as provided in the contract.~~

SECTION 408.1 MATERIALS FOR PAVEMENT CHIP SEALING

The aggregate for the Chip Seal shall be Class A, Granite, and shall be grey in color or an approved equivalent. The gradation for the material shall conform to the following requirements:

SIEVE SIZE	PERCENT(%) PASSING BY WEIGHT	TOLERANCE %
1/2 inch(12.5 mm)	100	----
3/8 inch(9.5 mm)	100	± 5
1/4 inch(6.3 mm)	100	± 7
No. 4(4.75 mm)	0 - 100	± 7
No. 8(2.36 mm)	0 - 40	± 4
No.16(1.18 mm)	0 - 10	± 4
No. 50(300 µm)	0 - 5	± 4
No. 100(150 µm)	----	± 4
No. 200(75 µm)	0.0 – 1.0	----

Chip Sealing and Seal Coat are considered to be one and the same for these special provisions. The Chip Seal shall conform to Section 475 "Seal Coat" of the "Standard Specifications for Highway and Structure Construction" prepared by the State of Wisconsin Department of Transportation and these special provisions herein set forth shall govern this construction.

The asphaltic material for the Chip Seal shall be CRS-2P; Polymer modified, and be applied at a rate of 0.30-0.32 gallons per square yard. This asphaltic material shall be rapid set emulsion that has elastic properties and shall comply with AASHTO M316.

The temperature of the Asphaltic Emulsion at the time of application shall not be less that 150 degrees Fahrenheit or more than 180 degrees Fahrenheit.

The aggregate for the Chip Seal shall be Class A, Granite, and shall be grey in color or an approved equivalent. The Gradation for the material shall conform to the following requirements:

The Contractor will be required to supply a sample to the Engineer prior to the start of work. The Contractor shall also submit written verification from their Supplier that the asphalt emulsion and aggregate properly bond. Should there be any discrepancies in the field; the Contractor shall be responsible for all costs associated with repairs. The application rates for the screenings and Asphaltic Emulsion shall be within the range specified in the following table.

	SCREENING (LB/S.Y.)	ASPHALTIC EMULSION (GAL. /S.Y.)
Single Chip Seal	20 TO 22	0.30-0.32

SECTION 408.2 PERSONNEL

The Contractor's personnel shall be experienced in Chip Sealing work and shall be knowledgeable regarding the material and equipment to be used for Chip Sealing.

SECTION 408.3 EQUIPMENT

The Contractor shall furnish all equipment necessary, but not be limited to the equipment specified in Section 475.3.2 of the WISDOT Standard Specifications.

The second paragraph of the WISDOT Standard Specifications, Section 475.3.5 "Applying and Rolling Seal Coat Aggregate" is amended to read as follows:

The Contractor shall furnish a minimum of two (2) pneumatic-tired rollers.

The initial rolling shall consist of one (1) complete coverage performed with a pneumatic-tired roller and shall begin immediately behind the spreader. Binder and screenings shall not be spread more

than 500 feet ahead of completion of the initial rolling operations. Secondary rolling shall begin immediately after completion of the initial rolling. The amount of secondary rolling shall be sufficient to adequately seat the screenings and in no case shall be less than two (2) complete coverages.

The Contractor shall sweep the completed Chip Sealed streets within FORTY-EIGHT (48) hours after the second rolling or after the Chip Sealing is set whichever is sooner.

SECTION 408.4 PREPARATION OF THE SURFACE AND PROTECTION

Immediately before applying the Asphaltic Emulsion, the Contractor shall be responsible for removing all loose material, silt, clay, vegetation in the street and edge of gutter and other objectionable materials from the street with a power broom, street sweeper, edger or other approved method. **The Contractor shall install reflective tabs on the streets that have pavement marking prior to sealing streets. The tabs shall be installed on the existing pavement marking to notify the traffic of the lane delineations after the street has been sealed.**

Prior to Chip Sealing the Contractor shall protect all inlets contained within the Chip Sealing area and downstream inlets in accordance with Article 210 – EROSION CONTROL of the City of Madison's Standard Specifications and the WDNR Conservation Practice Standards, or as determined necessary by the Construction Engineer. WDNR Conservation Practice Standards referenced in these Standard Specifications are available on-line at http://dnr.wi.gov/topic/stormwater/standards/const_standards.html. Inlet protection shall be installed per WDNR Conservation Practice 1060 - Storm Drain Inlet Protection TYPE C for Construction Sites available on-line at http://dnr.wi.gov/topic/stormWater/documents/StormDrainInletProtectionConstructionSites_1060.pdf

It shall be the Contractors responsibility to locate and protect all utility castings including but not limited to sewer access structures, water valves, inlets, and catchbasins within the street or streets to be chip sealed prior to starting work and protect these castings so that **ABSOLUTELY NO ASPHALTIC EMULSION** will be applied. If castings are covered by chip sealing the Contractor will be responsible to clean and or replace the all the castings at their own expense, as required by the City Engineer. No work shall begin until all utility castings are protected. No work shall begin until all Traffic Control is in place as required in Section 107.7.

All inlet protection shall remain in place until the streets are swept to the satisfaction of the Engineer. Please note that BID ITEM 21041 INLET PROTECTION, TYPE D - COMPLETE is undistributed and may or may not be used. All other inlet protection is considered incidental to lump sum bid of chip sealing.

408.5 Method of Measurement

The Contractor shall bid each Street segment in the contract individually; based on the price to properly Chip Seal the street segment according to the conditions provided in this contract. Each segment will be bid as a "lump sum" price. It is the Contractors responsibility to review each street segment and verify the area to be chip sealed.

408.6 Basis of Payment

Chip Sealing will be paid for at the Contractors bid price per street segment. Which price shall be full compensation for furnishing; heating, unloading, hauling, and for applying the Chip Sealing material; for the cleaning of the streets, installing reflective tabs, applying the Asphalt Emulsion and Chips, Rolling, street sweeping; for locating stockpile locations and disposal of all waste material, for the protection of inlets and utility casting; and for all labor, tools, equipment, and incidental necessary to complete the work as provided in the contract.

ARTICLE 409 - MILL & OVERLAY/PATCHING CRITERIA

401.1 General

The City of Madison has adopted the following criteria for patching roadways as a result damage to the pavement such as open cuts by utilities. The purpose of this criteria is to preserve the life of the pavement and maintain an adequate quality of ride.
Criteria use on:

Streets with pavement rating > 6
Arterial Streets

1. Length of Patch

    a. Minimum 50 feet long
    b. Minimum of 15 feet beyond the excavation.
    c. Where multiple patches are created and the separation between them is less than 100 feet, the patches shall be combined into a single patch.
    d. The patches shall be adjusted in the field to meet special conditions such as previous paving, patching limits, and/or existing cracks/joints.

2. Width of Patch (all dimensions are curb face to curb face)
    a. All Streets Except Divided or one way roadways

        i. Street Width 0 to 24 feet wide – Patch entire street width
        ii. Street Width 25 to 37 feet wide – Patch one half the street width (curb to centerline of roadway). Note – Utility Engineer may adjust paving limit to correspond with a painted centerline in situations where the painted centerline is not in the center of the street.
        iii. Street Width 38 feet and up - Patch width of entire lane for each lane which was disturbed by the excavation and/or base patch.
            1. If the lane is adjacent to a bike lane, include the bike lane. (except when there is a parking lane between the bike lane and the curb)
            2. If the lane is a bike lane and adjacent to a parking lane, include the parking lane.
            3. If the lane is a bike lane and not adjacent to a parking lane, include the adjacent travel lane.

    b. Divided Roadways and One Way Streets
        i. Street 0 to 19 feet wide – Patch entire street width
        ii. Street Width 20 feet and up – Patch width of entire lane for each lane which was disturbed by the excavation and/or base patch.
            1. If the lane is adjacent to a bike lane, include the bike lane. (except when there is a parking lane between the bike lane and the curb)
            2. If the lane is a bike lane and adjacent to a parking lane, include the parking lane.
            3. If the lane is a bike lane and not adjacent to a parking lane, include the adjacent travel lane.
    c. The patches shall be adjusted in the field to meet special conditions such as previous paving, patching limits, and/or existing cracks/joints.

3. Base Patches
    a. Minimum 1 foot outside excavation point.

b. The patches shall be adjusted in the field to meet special conditions such as previous paving, patching limits, and/or existing cracks/joints.
c. Depth – Minimum depth of existing asphalt.

502.1(b) Rock Excavation.

Rock excavation shall include all hard, solid rock in ledges, bedded deposits and unstratified masses and all conglomerate deposits or any other material so firmly cemented as to present all the characteristics of solid rock; which material is so hard or so firmly cemented that, as determined by the Engineer, it is not practical to excavate and remove same with a ~~powershovel~~ backhoe except after thorough and continuous drilling and blasting or the use of hydraulic breakers or grinders (trenchers). The use of a ripper is not considered rock excavation. ~~Power shovels~~ Bachhoes as referred to above shall be taken to apply to a modern ~~power shovel or~~ 225-net flywheel horsepower backhoe ~~of not less than three-quarters cubic yard manufacturer's rated capacity~~, having adequate power and being in good running condition in the hands of an experienced operator. Rock excavation shall also include all rock boulders necessary to be removed having a volume of one (1) cubic yard (~~9~~ 27 cubic feet) or more. Rock excavation shall not apply to plain or asphaltic bound bases or surface courses of macadam, gravel, or broken stone.

Rock excavation shall be carried to a depth of six (6) inches below the outside of the sewer, and to a width limited to the outside diameter of the pipe plus two (2) feet. Rock excavation shall be carried to a depth of eight (8) inches below the outside of the sewer for sewer access structures up to ten (10) feet deep and twelve (12) inches below the outside of the sewer for sewer access structures over ten (10) feet deep. The horizontal limit for rock excavation shall be the outside dimensions of the sewer access structure plus two (2) feet.

502.1(d) Bedding of Sewer Pipes.

The bedding, or foundation, for sewer pipes shall be constructed to prevent settlement of the pipes and to avert excessive pressure on the pipes in order to avoid rupture, leakage or deformation of the pipes. Unless otherwise specified in the Special Provisions of the contract, all sanitary and storm sewer pipes, including sanitary sewer laterals and storm sewer leads, shall be constructed with the type of bedding that is specified for the type of pipe installed, as shown on the Standard Detail Drawings 5.2.1 and 5.2.1a, Storm and Sanitary Sewer Beddings.

~~The trench width and bedding~~ Compaction shall be in accord with SDD 5.2.2.

503.2(b) Corrugated-Wall Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

Corrugated-Wall Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings, labeled as "CW PVC" on the plans, shall conform to the requirements of the Specification for Poly (Vinyl Chloride) (PVC) Corrugated Sewer Pipe with a Smooth Interior and Fittings, ASTM F 949. Joints shall be elastomeric or solvent cement and shall be made as recommended by the manufacturer. Each saddle (or wye) shall be attached to the sewer main with a rubber gasket, solvent cement and two stainless steel bands.

503.2(f) Sanitary Lateral Electronic Markers.

Effective Dec. 31, 2006, Act 425, Chapter 182.0175 (2r) of the Wisconsin State Statutes requires that all non-metallic building sewers (including sanitary laterals, private sanitary sewers and storm sewer laterals) installed within the City Right of Way, shall be accompanied by a means of locating the newly installed underground pipe. Sewer mains that have manhole or inlet structures on both ends within the City Right of Way are considered exempt from this legislation.

The City of Madison has selected a marker system that includes the installation of extended range ball markers over the sanitary sewer facilities, which after construction provide a signal that can be located by the city's utility locator after construction is complete.

The 3M ScotchMark Electronic Ball Marker System Extended Range Marker (model #1404-XR) http://solutions.3m.com/wps/portal/3M/en_US/Locating-Marking-NA/Home/Product-Catalog/~/3M-EMS-4-Extended-Range-5-Ball-Marker-Wastewater-1404-XR?N=3293951336+4294891068&rt=d shall be considered an acceptable marker device for this specification. If an alternate equivalent marker is selected, contractor shall provide specifications and data sheets of the selected device to City Engineering prior construction in order for the City to confirm that the proposed marker device is compatible with the City's marking equipment.

Markers shall be installed per manufacturer's written instruction. Electronic marker balls shall be installed in the trench directly above the sewer pipe. The key constraint is the maximum depth of the marker. The signal range of the 3M™ Electronic Marker System (EMS) 4" EXTENDED RANGE 5' BALL MARKER - WASTEWATER (MODEL 1404-XR) is 5 feet. However, electronic marker balls shall be installed at 4 feet from finished grade.

The City shall provide the Contractor with the required number of electronic markers for City bid public works contracts. The Contractor shall be responsible for picking up the markers at the Engineering Service Building, ~~1602~~ 1600 Emil Street in Madison, Wisconsin.

503.3(c) Sanitary Sewer Laterals.

1. General.

Installation of sanitary sewer laterals shall comply with all the requirements set forth herein for the installation of the sewer main, including excavation, backfilling, bedding, laying and jointing pipe. Sanitary sewer laterals shall be laid with a maximum grade of one-half (1/2) inch per foot and a minimum grade of one-fourth (1/4) inch per foot. Unless otherwise specified, sanitary sewer laterals shall be of the same material as the sewer main pipe. Where laterals are to be connected to risers the Contractor shall furnish and install the required fittings.

The typical locations of sanitary sewer laterals to be installed in new developments are detailed in Standard Detail Drawing 5.3.2, Location of Sanitary Laterals. A separate sanitary sewer lateral shall be installed between the public sewer main and the property line to each unit of a split two-family dwelling (i.e., duplex unit).

For reconstruction of existing sanitary sewer, the connection of a lateral to a new structure shall be completed under Sanitary Tap and to a new main under Reconnect. For those laterals to be

reconnected to a main, the first five (5) feet of the lateral and backfill from the main shall be included in the Reconnect and shall not be included in this item. The trench shall be backfilled with select backfill and shall be completed under Select Backfill for Sewers.

For laterals that are in close proximity to terrace trees (as determined by the Engineer), the situation shall be reviewed on a case by case basis by the Engineer and the City Forester. The Contractor shall use construction methods and equipment to minimize tree damage as directed by the Engineer and in accordance with section 107.13 Tree Protection Specification. In extreme cases the Engineer may elect to terminate lateral installation prior to conflict with the tree.

The estimated location of the laterals will be marked by the City of Madison on the sidewalk; however, Contractors are encouraged to start at the sanitary main. If the Contractor elects to start at the property line, it shall be at their own risk. No Utility Line Openings will be granted for the inability to locate the lateral at the property line.

Prior to the abandonment of any lateral, the Contractor shall definitively prove to the satisfaction of the Construction Engineer that the lateral is not currently in use and has no potential future use. The state of the lateral shall be determined by dye testing, the use of a push camera, the use of Sonde equipment, or other equipment that will determine where the lateral terminates. Lamping the lateral will only be an acceptable method if a cap or plug is visible.

2. Size.

When the lateral size is not specified, the following guidelines shall be used:

- For the installation of new lateral in the public right-of-way, unless otherwise specified in the plans or directed by the Engineer, the size of a newly constructed sanitary sewer lateral to be installed between the public sanitary sewer main and the property line shall be four (4) inches in diameter. The Engineer may require the size of the lateral to be six (6) inches or greater depending on the lot size or proposed land use.

- For the reconstruction, repair or replacement of sanitary sewer laterals in the public right-of-way, unless otherwise specified in the plans, when a portion of a sanitary sewer lateral in the public right-of-way is to reconstructed, repaired or replaced, the inside diameter of the new lateral to be installed shall match that of the lateral which is being replaced. For purposes of this requirement, all five (5) inch laterals shall be considered to be six (6) inches in diameter. It shall not be permissible, in any event, to decrease the diameter of a sanitary sewer lateral in the direction of flow.

3. Alignment.

Where a sanitary sewer lateral is being relaid in the public right-of-way and bends are required to reconnect the new lateral to the ends of the existing lateral or sewer main, the Contractor may use standard Poly (Vinyl Chloride) (PVC) bends that provide a change in the direction of flow of 22.5 degrees or less. Bends placed in a lateral shall be separated by straight pieces of pipe such that any two bends are separated by a distance of two (2) feet or more, measured from the center of each bend. The use of 45 degree bends shall be allowed only in connecting to a 45 degree wye at the sewer main in order to orient the lateral perpendicular to the sewer main.

4. Couplings.

Where a lateral is being relaid in the public right-of-way and connected to pipes of differing materials and/or sizes, couplings (SDD 5.3.3) shall be used. The couplings to be used shall provide for a tight fit around the outside diameter of each pipe and shall be securely fastened with two stainless steel clamps at each pipe end. Couplings which reduce the pipe cross sectional area in the direction of the flow shall not be allowed.

5. Reconnect.

Reconnect shall include reconstructing sanitary sewer lateral connections that shall be reconnected to the sanitary sewer main. This item shall include necessary ~~wyes or~~ fittings and PVC pipe, 4" or larger, for the connection of the lateral and shall not exceed a length of five (5) feet. All new laterals shall be a minimum of four (4) inches in diameter. Under no circumstances shall the new lateral be smaller than the existing. Plugging the existing lateral, select backfill and bedding required for the reconnection are included in this item. Sewer laterals that are to be reconnected to new sewer access structures shall be completed as a Sanitary Tap as specified in Subsection 507.3(d) – Sewer Connections. The Contractor shall be responsible for maintaining the normal flow of wastewater during reconnection of the laterals.

The first 5 feet of pipe shall be included with this bid item regardless of pipe type or fittings used (SDR 35, Ductile Iron or AWWA C900 Class 150 DR 18). Beyond 5 feet shall be paid for separately (Bid Item 50353 SANITARY SEWER LATERAL or Bid Item 90070 SANITARY SEWER LATERAL (PRESSURE)).
The first 5 feet of sewer lateral pipe/ fittings measured from the sewer main shall be considered the reconnect for all sewer lateral reconnections. Lateral connections connecting to sewer access structures shall be paid for separately as a sanitary tap. 5' of lateral pipe is not considered incidental to the sanitarytap connection.

Short body ductile iron mechanical fittings are acceptable fittings for AWWA C900 main installation.

AWWA C900 (plastic) fittings will not be accepted.

503.3(d) Sanitary Sewer Wyes.

Unless otherwise specified, the openings in the wyes for lateral connections and riser pipes shall be of the same size as the sanitary sewer lateral to be installed. In the event that a sanitary sewer lateral is not being installed coincident with the wye, the size of the wye shall meet the sizing requirements set forth for sanitary sewer laterals in Subsection 503.3(c) - Sanitary Sewer Laterals of these Specifications.

All wyes shall be of the same material as the sewer main unless pressure sewer main (AWWA C900 Class 150 DR 18) is being installed with less than 8 feet of horizontal separation from water main shall require Ductile Iron wye fittings. When the sewer main is constructed of Poly (Vinyl Chloride) (PVC) sewer pipe, the wyes shall be injection molded Poly (Vinyl Chloride) (PVC) wyes installed along with the sewer main construction. At the discretion of the Engineer, the use of saddle type wyes installed along with the sewer lateral construction may be permitted when the sewer main is constructed of Poly (Vinyl Chloride) (PVC) sewer pipe. All saddle type wyes for Poly (Vinyl Chloride) (PVC) sewer pipe installations shall be manufacturer's approved

and shall be attached to the sewer main with a rubber gasket, solvent cement and two stainless steel clamps.

503.4(b) Sanitary Sewer Laterals.

1. Laterals.

Sanitary sewer laterals shall be measured by length in feet of each of the various types, classes and sizes of pipe installed, measured along the centerline of the pipe from the wye opening to the end of the lateral pipe, or from the top of the riser to the end of the lateral pipe, whichever the case may be.

The contract price shall include furnishing all materials, including required fittings where laterals are connected to risers, necessary to perform the work; excavation of the trench; installation and removal of sheeting and bracing; backfilling the trench; and compaction of the backfill material; bedding the pipe; laying the pipe and installing the fittings; jointing and sealing of joints in pipe and fittings; encasement, where specified; cleaning out the lateral; restoring the site; and all other work incidental to the installation of sanitary sewer laterals.

Where the water service is installed in the same trench as the sanitary sewer lateral, the Contractor shall backfill the sanitary sewer lateral trench to the proper elevation for the installation of the water service; after installation of the water service, the Contractor shall complete the backfilling of the trench, all at no extra cost to the City. The labor, materials and tools necessary to make the taps, lay the water services and set the valve boxes shall be furnished by either the Water Utility or the Contractor, as specified in the contract.

2. Reconnect.

Reconnect shall be measured and paid as each reconstruction is completed and accepted and shall include necessary fittings and PVC pipe, 4” or larger, for the connection of the lateral and shall not exceed a length of five (5) feet. If the lateral replacement exceeds a length of five (5) feet, the quantity of pipe in excess of five (5) feet shall be paid for under the corresponding sanitary sewer lateral bid item.

3. Sanitary Lateral Electronic Markers.

Sanitary Lateral Electronic Markers shall be measured by each properly installed and functioning marker. No additional compensation will be provided for additional markers installed at the same location. The contract price shall be full payment for all work, materials (except electronic markers supplied by the City of Madison) and incidentals required to complete the work in accordance with the description. The Contractor shall be responsible for picking up the markers at the Engineering Service Building, ~~1602~~ 1600 Emil Street in Madison, Wisconsin.

4. Sanitary Sewer Lateral - Resurfacing.

Sanitary sewer laterals shall be measured and paid for as described above in section 503.4(b)(1) except that restoration (topsoil, seed and matting) shall be included in the contract price Bid Item 50354 Sanitary Sewer Lateral - Resurfacing.

5. Sanitary Sewer Lateral – Pressure Pipe

Sanitary sewer laterals shall be measured and paid for as described above in section 503.4(b)(1) except that the material shall conform to AWWA C900 Class 150 DR 18 pipe and shall be included in the contract price Bid Item 50355 Sanitary Sewer Lateral – Pressure Pipe.

504.2(f) Poly (Vinyl Chloride) Pressure Pipe.

Pressure Pipe shall conform to the requirements of American Water Works Association (AWWA) C905 Standard for Poly (Vinyl Chloride) (PVC) Pressure Pipe and Fabricated Fittings, four (4) inches through twelve (12) inches, for Water Distribution, Pressure Class 150 (DR18), AWWA C900. The joints shall be integral bell with elastomeric gaskets, or couplings with elastomeric gaskets. The fittings for PVC pressure pipe shall conform to the requirements of American National Standard for Ductile-Iron and Gray-Iron Fittings, three (3) inch through forty-eight (48) inch, for Water and Other Liquids, ASA A21.10 (AWWA C110). Both long body and short body wye ductile iron fittings are acceptable for Poly (Vinyl Chloride) Pressure Pipe installations where there is less than 8 feet of horizontal separation from water main measured from the center of each pipe. AWWA C900 fittings are acceptable if the horizontal separation between sewer and water is over eight (8) ft. The entire sewer main (SAS to SAS) shall have the same type of wye fitting.

504.2(p) Corrugated Metal Pipe.

~~The pipe, fittings and accessories shall be of corrugated metal and shall conform to the requirements of the Specification for Corrugated Metal Culvert Pipe, AASHTO M 36.~~
~~Where corrugated metal pipe is installed on railroad property which is occupied by tracks, or which may be occupied by tracks at any time in the future, it shall conform to AREA "Specifications for Corrugated Metal Culverts". Where asphaltic coating or paving is specified, the materials shall conform to the requirements of the Specification for Asphalt Coated Corrugated Metal Culvert Pipe and Pipe-Arches, AASHTO M 190.~~

The pipe, fittings and accessories shall be of corrugated metal and shall conform to the requirements of the Specification for Corrugated Metal Culvert Pipe, AASHTO M 36.

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