2005 Specification Revisions Description

PART I		
102.5	Bid Deposit	Added language for annual bid deposit
104.7	Extra Work	Mark up on change order is limited to 5% by General Contractor
107.1	Public Convenience and Safety	Assistance from contractor with refuse collection
108.2	Permits and Licensing	Revised
110.1	Measurements and Quantities	Truck tickets require driver information
110.2	Partial Payments	Revised amount of retainage to 5% to match statute
PART II		
201.2(d)	Finish Grading	Added new section
201.5	Method of Measurement	Added language for 201.2(d)
202.3(e)	Heavy Rip Rap	Revised
203.2(a)	Removing Structures	Revised pipe plugs
203.2(c)	Abandoning Structures & Pipe	Revised pipe plugs
203.2(d)	Disposing of Materials	Corrected the section number
203.2)e)	Backfilling	Corrected the section number
203.3	Method of Measurement	Revised pipe plugs
203.4	Basis of Payment	Revised pipe plugs
210.1	Description	Add language to erosion control about topsoil thickness in greenways
PART III		
301.1	General	Contractor provides mix designs
303.2(n)	Truncated Domes	New Specification (includes sections 303.3(a), (b)
PART IV		
402.2(e)	Density	Added table from State DOT
402.6(a)	Asphalt Pavement Mixtures	Revised
403.2(a)	Description	Patches shall be done same day as removal
403.7	Asphalt Upper Layer	Revised
403.8	Asphalt Base Patch	Patches shall be done same day as removal
403.21	Remove.....C&G	Revised
403.22	Remove....Sidewalk	Revised
403.25	Remove Concrete Utility Patch	New Specification
PART V		
503.2(a)	Solid-Wall.....PVC	Added SRD-26
507.2(d)	Inlets	Deleted R-3067 ER, Revised number designation of R-3067 EL to Neenah number R-3067-7004
507.3	Precast Requirements	Revised language about steps

STANDARD DETAILS

2.07 WETLAND PLANTING PODS TYPE #1
Description: New Detail

2.08 WETLAND PLANTING PODS TYPE #2
Description: New Detail

3.03 STANDARD CURB RAMPS TYPES 1 AND 2
Description: Added language for 10’ and 12’ wide opening ramps and specification for paint

3.04 CURB RAMPS GENERAL AND CURB RAMP TYPE 2-A
Description: Added language for 10’ and 12’wide opening ramps and specification for paint

4.01 TYPICAL SECTION 32’ STREET
Description: Added language for nominal aggregate size of lower and upper layers

4.02 TYPICAL SECTION VARIOUS WIDTH STREETS
Description: Added language for nominal aggregate size of lower and upper layers

4.03 TYPICAL SECTION BOULEVARD STREET
Description: Added language for nominal aggregate size of lower and upper layers

5.4.11 TYPICAL GREENWAY SECTION (GRASSED-FLOWLNE)
Description: Revised

5.4.12 TYPICAL GREENWAY SECTION (STABILIZED-FLOWLNE)
Description: Revised

5.7.12 TERRACE INLET TYPE 1
Description: Revised

5.7.12A TERRACE INLET TYPE 2
Description: New Detail

5.7.12B TERRACE INLET TYPE 3
Description: New Detail

5.7.12C TERRACE INLET TYPE 4
Description: New Detail

5.7.23 R-3067 ER CURB BOX
Description: Delete Detail

5.7.33 H INLET ALLEY CURB
Description: New Detail

6.30 SUPPLEMENTAL TRAFFIC CONTROLS FOR BIKEWAY CLOSURES
Description: New Detail

6.31 BARRICADES AND SIGNS FOR MAINLINE CLOSURES
Description: New Detail

6.32 BARRICADES AND SIGNS FOR SIDEROAD CLOSURES
Description: New Detail

6.33 TRAFFIC CONTROL, SINGLE LANE CLOSURE NON-FREEWAY/EXPRESSWAY
Description: New Detail

6.34 TRAFFIC CONTROL, INTERECTION WITHIN SINGLE LANE CLOSURE
Description: New Detail

6.35 TRAFFIC CONTROL, FOR LANE CLOSURE (SUITABLE FOR MOVING OPERATIONS)
Description: New Detail

6.36 TRAFFIC CONTROL, SIDEWALK CLOSURE
Description: New Detail

6.37 PAVEMENT MARKING DETAILS, PAGE 1
Description: New Detail

6.38 PAVEMENT MARKING DETAILS, PAGE 2
Description: New Detail

6.39 PAVEMENT MARKING DETAILS, PAGE 3
Description: New Detail

6.40 PAVEMENT MARKING DETAILS, PAGE 4
Description: New Detail

6.41 PIPE INSERT IN CONCRETE FOR SIGNING
Description: New Detail

6.42 PRECAST SIGN POST BASE DETAILS
Description: New Detail

6.43 SIGN POST DETAIL
Description: New Detail

BID NUMBERS

20334 Abandon Sanitary Sewer Pipe with Plugs
Description: Deleted

20335 Abandon Sewer Pipe with Slurry
Description: Deleted reference to sanitary pipe

20336 Pipe Plug
Description: Changed number from 20334 to 20336

20337 Pipe Plug Storm
Description: Deleted item

21013 Clear Stone Berm for Erosion Control
Description: Changed unit from CY to EACH

30141 Type A Slurry
Description: New Bid Item UNIT: C.Y.

30142 Type B Slurry
Description: New Bid Item UNIT: C.Y.

30312 Concrete Mountable Median
Description: Typo

30313 Concrete Steps
Description: New Bid Item UNIT: S.F.

40231 Asphalt Drive & Terrace
Description: Change units from S.F. to S.Y.

40235 Asphalt Drive & Terrace
Description: Change units from S.F. to S.Y.

50498 Joint Ties
Description: New Bid Item UNIT: EACH

50499 Concrete Collar
Description: New Bid Item UNIT: EACH

60502 Install City Furnish Street Light, Twin Arms
Description: Typo

60503 Install City-Furnished Concrete Pole Street Light Unit
Description: Deleted

60504 Install City-Furnished Pedestrian Street Light Unit
Description: New Bid Item UNIT: EACH

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.

102.5 Bid Deposit.

No proposal shall be considered unless either (i) it is accompanied by a Bid Deposit of the character and amount described in the Advertisement for Bids or (ii) an annual bid bond in an amount and form acceptable to the City of Madison has been previously submitted.

Bid Deposits of unsuccessful bidders shall be returned following the award of the contract by the Common Council. Bid Deposit of the successful bidder shall be returned within forty-eight (48) hours following execution of the contract and bond as required.

102.6 Rejection of Proposals.

Proposals may be rejected if they show any alterations of form, additions or amendments not called for, conditional or alternate bids unless called for, incomplete bids, erasures, or irregularities of any kind. Proposals in which the unit prices for some items are out of proportion to the prices for other items, or proposals in which unit prices are not submitted for each item of work listed may be rejected.

The Board of Public Works reserves the right to reject any and all bids and to reject the bid of any person or firm who, in its opinion, has not had sufficient experience in the type of construction on which they are bidding, or who is not provided with the necessary capital, materials, machinery and supervisory personnel to execute the work to be contracted for to the satisfaction of the said Board.

The City reserves the right to waive minor irregularities, and to proceed to do the work otherwise, if in the judgment of the Board of Public Works the best interest of the City will be served thereby.

102.7 Withdrawal of Proposals.

All proposals filed with the City will be kept secure and unopened and will not be allowed to pass out of the custody of a representative of the City, except on written request of the bidder or the bidder's authorized representative made prior to expiration of the time set for receipt of proposals, and if such withdrawal is made, such prospective bidder shall not be entitled to bid on the contract at hand unless the same is readvertised and proposals are again requested upon such advertisement.

102.8 Examination of Plans, Specifications, Special Provisions and Site of Work.

The bidder is required to examine carefully the work site, the proposal form, plans, Specifications, Supplemental Specifications, special provisions and contract forms for the work contemplated. It will be assumed that the bidder has investigated and is satisfied as to the conditions to be encountered for performing the work as scheduled, and as to the character, quality and quantities of work to be performed and materials to be furnished, and as to the requirements of the plans, Specifications, Supplemental Specifications, special provisions and contract. The submission of a proposal shall be considered conclusive evidence that the bidder has made such examination and is satisfied as to all the conditions and contingencies.

104.4 Increased or Decreased Quantities.

It is agreed and understood that the quantities of any items of work shown on the plans or in the proposal are subject to increase or decrease during the progress of the work. The Engineer reserves the right to increase or decrease the quantities of any items of work, including increase or decrease of quantities by alteration of plans, as may be considered necessary or desirable during the progress of the work to satisfactorily complete the construction. Such increases or decreases in quantities shall not be considered as a waiver of any conditions of the contract nor invalidate any of the provisions thereof.

104.5 Increased Items.

Unless otherwise designated in the proposal, any increase of the contract shall be limited to fifteen (15) percent of the lump sum contract price submitted by the Contractor. 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.

104.6 Decreased and Deleted Items.

Unless otherwise designated in the proposal, the quantity of any item may be decreased, and the actual quantity installed and accepted will be paid for at the contract unit price. Such decrease shall not constitute the basis for a claim for damages for anticipated profits for the work dispensed with. When the reduction in amount is a material part of the work contemplated for the project, the Contractor shall be entitled to compensation as determined by the Engineer for overhead and equipment charges incurred in expectation of the quantity of work originally estimated, unless specifically provided herein.

The right is reserved to delete from the work any item or portion thereof found unnecessary to the improvement. Such deletion shall not constitute the basis for a claim for damages for anticipated profits for the work dispensed with. The Contractor will be paid for all work done toward the completion of the item or portion thereof prior to such deletion a fair and equitable amount covering all items of cost incurred prior to the date of deletion of the work by order of the Engineer. Acceptable materials ordered by the Contractor, and not canceled prior to the date of deletion of the work, and which are delivered on the work, will be paid for at the actual cost to the Contractor, and shall become the property of the City. The Contractor shall be reimbursed for any money expended in preparation for work on any deleted item or portion thereof when such preparation has no value to the remaining items of the contract, or for a proportionate amount based on the total contract price over which such preparation would ordinarily be distributed when other items are included in such preparation.

104.7 Extra Work.

In connection with the work covered by the contract, the Engineer may, at any time during its progress, order other work or materials incidental thereto. All such work and materials that do not

appear in the proposal or contract as a specific item accompanied by a unit price, and which are not included under the price bid for other items in the contract, shall be designated as Extra Work. Extra Work may also consist of additions to or changes in design in contract items or portions thereof, when such additions are wholly disassociated from or outside the scope of the work as evidenced by the plans, special provisions and Specifications, and when the work caused by such additions or changes in design must be performed under conditions or in a manner that is materially and inherently different from the conditions and manner existent for such contract items as contemplated in the original scope of the work. The Contractor hereby agrees to perform Extra Work whenever it is deemed necessary or desirable by the Engineer to complete the project as originally contemplated, or as subsequently altered, and it shall be done in accordance with the requirements herein set forth.

Extra Work shall be done under the supervision of the Engineer, and the Engineer's decision shall be final and binding. The plan of the work to be followed, the equipment to be used, and the amount and character of labor to be employed shall meet with the approval of the Engineer.

The Contractor shall not perform any Extra Work until a contract change order has been authorized. Claims for compensation for Extra Work performed which has not been authorized and not covered by contract change order may be rejected.

The contract change order for Extra Work may provide for payment in an agreed lump sum for the Extra Work performed, on an agreed unit price basis for the units of such Extra Work performed. Where agreement cannot be reached to pay for Extra Work on either the lump sum basis or the unit price basis, the Engineer may direct that payment for Extra Work be determined on a force account basis.

Prices for Extra Work to be completed by subcontractors shall be the subcontractor's actual prices submitted for the work contemplated to which the general contractor may add an amount equal to, but not to exceed, five (5) percent thereof.

For Extra Work to be paid for on a force account basis, the actual cost computed in accordance with the terms of the contract change order shall include such costs and allowances and subject to such limitations as hereinafter provided:

1. For all labor and supervisors in direct charge of the specific work, the Contractor shall receive the rate of wage agreed upon in writing before beginning work, for each and every hour that said labor and supervisors are actually engaged in such work.

   The Contractor shall receive the actual costs paid to, or in behalf of, laborers by reason of health and welfare benefits, pension fund benefits or other benefits required to be paid.

   An amount equal to thirty-five (35) percent of the above items will be added to the cost of such items.

2. For property damage, liability, and worker's compensation insurance premiums, unemployment insurance contributions and social security taxes on the force account work, the Contractor shall receive the actual cost, to which cost shall be added an amount equal to fifteen (15) percent of the sum thereof. The Contractor shall furnish satisfactory evidence of the rate or rates paid.

ARTICLE 107 - PROTECTION OF PUBLIC AND UTILITY INTERESTS

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 on normal work days, Saturdays, Sundays and holidays, 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.

107.2 Protection and Restoration of Property and Property Monuments.

The Contractor shall use every reasonable precaution to prevent the damage or destruction of corporate, government or private property such as poles, trees, shrubbery, crops and fences adjacent to or interfering with the work; all overhead structures such as wires, cables, etc.; within or outside of the right-of-way.

The Contractor shall notify the owners of all corporate, government or private property which interferes with the work advising them of the nature of the interference, and shall arrange with them for the disposition of such property. The Contractor shall furnish the Engineer upon request with copies of all such notification and final agreements.

ARTICLE 108 - LEGAL RELATIONS

108.1 Laws to be Observed.

The Contractor shall at all times observe and comply with all Federal and State laws and administrative rules, local laws, ordinances, and regulations which in any manner affect the conduct of the work, and all orders or decrees, as exist at the present or which may be enacted later, of bodies or tribunals having jurisdiction or authority over the work. No plea of misunderstanding or ignorance thereof will be considered. The Contractor shall indemnify, defend and save harmless the City and all of its officers, officials, agents, employees and servants against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order or decree, whether by the Contractor or the Contractor's employees, subcontractors or agents.

The movement of vehicles or equipment over any public highway to the project, necessary for the prosecution of the work shall be regulated in accordance with the provisions of the Wisconsin Statutes and the Madison General Ordinances.

108.2 Permits and Licensing.

The City of Madison will submit a DNR Notice of Intent (NOI) to obtain coverage under the Construction Site General Permit No. WI-S067831-2 for construction site erosion control on City of Madison Public Works contracts with one acre or greater of land disturbing activity. The Contractor shall meet the conditions of the permit by properly installing and maintaining the erosion control measures shown on the plans, specified in the Special Provisions, or as directed by the Engineer. This work will be paid for under the appropriate contract bid items in accordance with Article 210 EROSION CONTROL. A copy of the permit will be available at the City of Madison, Engineering Division office.

This list is not intended to be an exhaustive list of all permits that may be required to be obtained by the Contractor for construction. It shall be the responsibility of the Contractor to identify and obtain all other permits and licenses, pay all charges and fees, and give all notices necessary and incident to the due and lawful prosecution of the work.

108.3 Patented Devices, Materials and Processes.

Unless otherwise specified, contract prices are to include all royalties and costs arising from patents, trademarks, and copyrights in any way involved in the work. It is the intent that whenever the Contractor is required or desires to use any design, device, material or process covered by letters patent or copyright, the right for such use shall be provided for by suitable legal agreement with the patentee or owners and a copy of this agreement shall be filed with the Engineer; however, whether or not such agreement is made or filed as noted, the Contractor and the surety in all cases shall indemnify and save harmless the City from any and all claims for infringement by reason of the use of any such patented design, device, material or process to be involved under the contract, and shall indemnify the City for any costs, expenses, and damages which it may be obliged to pay, by reason of any such infringement, at any time during the prosecution or after the completion of the work.

108.4 Safety, Health and Sanitation.

The Contractor shall comply with all Federal, State and local laws governing safety, health and sanitation. The Contractor shall also provide all safeguards, safety devices and protective equipment,

ARTICLE 110 - MEASUREMENT AND PAYMENT

110.1 Measurement of Quantities.

The Contractor will be paid for the actual amount of work performed in accordance with the contract, as shown by the final measurements or on the basis of plan quantities.

All work completed under the contract will be measured for payment by the Engineer according to United States standard measure units. The method of measurement and computations to be used in the determination of quantities of material furnished and of work performed under the contract will be those specified for the various items elsewhere in these Specifications or generally recognized as conforming to good engineering practice.

The completed work will be measured for final payment by the Engineer, as to determine the quantities of such items of work performed, except when contract change orders have been executed providing for other methods of measurement.

All materials shall be delivered in vehicles bearing plainly legible identification marks and numbers. The Engineer reserves the right to measure truck bodies to check the volumes marked on tickets for materials paid for on a volume basis.

Each load of material shall be accompanied by a ticket which shall show the type of material, the volume or weights (gross, tare and net), the vehicle identification marks and numbers, the date, and the source of the material. Material tickets for pay items received on the project shall be presented to the City Inspector within twenty-four (24) hours after delivery. Tickets presented after this time may be rejected due to the inability of the City to substantiate the basis of material delivered to the project.

Individual loads of material which are specified for measurement by the cubic yard shall be measured to the nearest cubic yard except where such materials are weighed for measurement. Material specified to be measured by the cubic yard may be weighed and the weights will be converted to cubic yards for payment purposes. Select Fill materials will be considered to have a unit weight of 2,835 pounds per cubic yard. Factors for conversion from weight measurements to volume measurements for other materials will be determined by the Engineer before such method of measurement of pay quantities is used.

Material specified to be measured by the ton (2,000 pounds) shall be weighed on platform scales or other approved scales, furnished by and at the expense of the Contractor. Said scales shall be satisfactory to the Engineer and they shall be tested by the Engineer or by authorized testing firms or agencies as often as the Engineer may deem necessary to insure the accuracy of the scales.

The term “gage”, when used in connection with the measurement of plates, will mean the U. S. Standard Gage, except that when reference is made to the measurement of metal sheets used in the manufacture of corrugated metal pipe, metal plate pipe culverts and arches, and metal cribbing, then the term “gage” will mean that specified in AASHTO Designation: M 36 or M 167 for galvanized steel sheets and will mean that specified in AASHTO Designation: M 196 or M 197 for aluminum alloy sheets.

When the term “gage” refers to the measurement of wire, it will mean the wire gage specified in AASHTO Designation: M 32.

When standard manufactured items are specified such as fence, wire, plates, rolled shapes, pipe, conduit, etc., and these items are identified by gage, unit weight, section, dimensions, etc., such identification will be considered to be nominal weights or dimensions. Unless more stringently controlled by tolerances in cited Specifications, manufacturing tolerances established by the industries involved will be accepted.

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.

Once 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.

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.

excavation methods chosen and employed by the Contractor leave undrained pockets in the rock surface, the Contractor shall, at no expense to the City, properly drain such depressions or, when permitted by the Engineer, fill the depressions with approved impermeable material. Excavation of rock cuts shall be performed by such methods and with such equipment that the resulting backslopes conform to the slopes shown on the plans or to the slopes designated by the stakes set for excavation, without creating depressions in or substantial displacement of material outside the lines, limits or slope planes defined by the stakes. The backslopes in rock cut shall be "scaled" to dislodge loose rock, and material so removed shall be disposed of in the manner prescribed for other excavation. The slopes of rock cuts when designated to receive topsoil shall be undercut the necessary depth to provide for placing the specified amount of topsoil and finished to the required section.

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

All test rolling shall be on subgrade, unless test rolling on base course is authorized by the Engineer as provided herein.

The truck shall test roll the section in the presence of the Engineer. Test rolling shall be accomplished in a series of traverses parallel to the centerline of the street. The truck shall traverse in the general location of each lane of the street, but at least two traverses shall be performed in the roadway. (Streets measuring thirty-two (32) feet from face of curb to face of curb shall be considered as having three lanes.)

Additional passes along the traverse, as directed by the Engineer, shall be performed to fix the location of soft or yielding areas. Soft or yielding areas, rolling or wave action of the subgrade, depressions, transverse cracking and/or alligator cracking resulting from the test roll shall be indicative of an unsatisfactory subgrade. Such areas shall be repaired, consolidated, and retested as determined by the Engineer.

Unsatisfactory areas in fill sections shall be repaired at the expense of the Contractor. Unsatisfactory areas in cut sections shall be paid for at the contract unit price for excavation undercut.

On private contracts the Developer and the Developer's consulting Professional Engineer may jointly request the Engineer to permit test rolling on the installed base course rather than the subgrade. On City of Madison contracts the decision to test roll on the installed base course or the subgrade will be made by the Engineer. The construction methods for test rolling of the installed base course shall be the same as those methods prescribed for testing on the subgrade, except that the perceptible displacement or yielding of base course shall be considered indicative of an unsatisfactory subgrade.

201.2(d) Finish Grading.

Work under this item shall include final grading of the entire site to the finish grades as shown on the plan set or as directed in the field, preparing the site for seeding, matting and mulching. The seed bed and finish grades shall be set and approved by the field engineer or his designee prior to seeding the site.

Test	Method	Minimum Value
Tensile Strength (lbs)	ASTM D-4632	200
Puncture Strength (lbs)	ASTM-4833	95
Apparent Opening Size (U.S. Standard Sieve)	ASTM D-4751	70
Permittivity (Gal/min/ft2) at 50 mm	ASTM-4491	25

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

The Contractor shall furnish a fully loaded tri-axle dump truck for test rolling. The truck shall be equipped with tires used for highway use (non-floatation) with 100 psi or greater inflation pressure. Test rolling shall be conducted with the "pusher axle(s)" wheels off the roadway. The Contractor shall provide a ticket to document the gross weight of the truck.

201.5 Method of Measurement.

The quantity to be paid for as Unclassified Excavation shall be set forth in the contract plans without measurement thereof. Any modifications to the contract quantity caused by corrections or revisions of the original contract plan, which have been approved by the Engineer, shall be measured in accordance with the applicable section of the Standard Specifications and the contract quantity shall be adjusted accordingly to determine the final pay quantity.

Excavation Cut shall be measured in cubic yards in its original position, computed by the method of average end areas, with no correction for curvature.

Additional excavation, including undercut, shall be measured in the field and the volume in cubic yards shall be computed from those measurements.

Rock Excavation shall be measured in the field, the vertical measurements for determining end areas extending from the surface of the rock to a depth of six (6) inches below the subgrade. Where Rock Excavation is encountered in an area previously included as Excavation Cut, the volume of Excavation Cut shall be reduced by the volume of Rock Excavation.

Boulders and surface stone of one (1) cubic yard or more in volume will be measured individually and the volume computed from average dimensions taken in three directions.

The installation of Under Drain, 6 Inch, Wrapped as described above shall be measured by the lineal foot of completed and accepted work.

Geotextile Fabric, Type SAS (Non-Woven) shall be measured by the square yard of surface area upon which the fabric has been placed and accepted.

Test rolling shall be measured for payment by stations (100 feet) of roadway test rolled.

Finish Grading shall be measured as a lump sum item.

In the event the material in the density sample differs in percentage of aggregate retained on a No. 4 sieve from that in the sample upon which maximum density was determined, the maximum density shall be adjusted in accordance with approved procedure.

The foregoing density requirements will not apply to portions of embankments constructed of materials which, because of numerous large stones or high percentages of material retained on the No. 4 sieve, cannot in the determination of the Engineer be accurately tested in accordance with the above procedures for determining maximum or in place dry density.

202.3(d) Subgrade Compaction in Cuts.

The finished earth subgrade in cut sections for a width equal to the width of the proposed construction shall be compacted as provided for Standard Compaction, unless Special Compaction is called for in the Contract.

On grading projects where Special Compaction is required, the finished earth subgrade in cut sections to the width above described and to a depth of at least six (6) inches shall be compacted to at least ninety-five (95%) percent of maximum density. Determination of maximum density and attained density in the earth subgrade shall be in accordance with the methods prescribed for Special Compaction.

202.3(e) Heavy Riprap.

Stone shall be laid with close, broken joints and shall be firmly bedded in the slope and against the adjoining stones. The stones shall be laid perpendicular to the slopes with ends in contact. The riprap shall be thoroughly compacted as construction progresses and the finished surface shall present an even, tight surface. The larger stone shall be placed in lower course. Interstices between stones shall be chinked with spalls firmly rammed into places. The riprap bed shall be at least 18 inches thick, measured perpendicular to the slope. All riprap shall be laid on filter fabric and shall be compensated for under that item

202.3(f) Heavy Riprap Filter Fabric.

The geotextile fabric shall be installed per the construction plan set or as directed by the Engineer in the field.

202.4 Method of Measurement.

Fill shall be measured in cubic yards computed by the method of average end areas with no correction for curvature.

Select Fill shall be measured in cubic yards or tons, as designated in the Contract, based on tickets received by the Engineer for each load of Select Fill. Payment for Select Fill will not be made for any amount of Select Fill not substantiated by a ticket received by the Engineer.

Topsoil shall be measured in square yards of actual area which has been topsoiled in the limits of construction or as designated by the Engineer.

Heavy Riprap shall be measured by the cubic yards or ton in place as specified in the contract. Heavy Riprap Filter Fabric shall be measured by the square yard in place.

ARTICLE 203 - REMOVAL OF MISCELLANEOUS STRUCTURES

203.1 Description.

This work shall consist of removing, wholly or in part, pavements, surface and base courses, curb and gutter, sidewalks, crosswalks, driveways, steps, masonry, surface drains, guard rail, fences, poles, buildings, access structures, catchbasins, inlets, storm and sanitary sewer pipes occurring within the right-of-way, whether specified or subsequently found necessary and required. This work shall also consist of salvaging and disposing of the resulting materials and backfilling the resulting trenches and pits; or, when specified, the abandoning of sewer access points, catchbasins, or inlets by closing, filling or sealing as hereinafter provided.

Removing Pavement shall consist of the removal of Portland cement concrete pavement or base (reinforced and non-reinforced) including all surface or other pavements superimposed thereon.

Removing Concrete Sidewalk shall consist of the removal of concrete sidewalk, crosswalks, and driveways, reinforced and non-reinforced.

Sawing Asphalt Pavement, Full Depth and Sawing Concrete Pavement, Full Depth shall consist of full depth sawing of old, existing, concrete or asphaltic pavement and curb and gutter. Sawcutting concrete sidewalks and driveways shall be incidental to Remove Concrete Sidewalk and Drive. Full depth sawcuts of concrete pavement shall be made with diamond blades.

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. 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 paid for separately under the bid item pipe plug. 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 Emil Street.

Sewer pipe designated for salvage shall be removed, stored, transported and handled in a manner that will preclude damage to the pipes.

When a portion of the existing structure is to be retained, care shall be taken during construction operations so as not to impair the value of the retained portion. Reinforcing bars which are to be left in place so as to project into new work as dowels or ties shall not be injured during removal of the concrete.

In removing pavement, curb, gutter, sidewalk, crosswalks, driveways, steps and similar structures, where portions of the existing structure is to be left in the surface of the finished work, the structure shall be removed to an existing joint, or saw cut and chipped to a true line with a face perpendicular to the surface of the existing structure. Sufficient removal shall be made to provide for proper grades and connections to the new work.

In removing sewer pipe, the work shall include removing the pipe as called out on the plan set. Pipe to be removed that is in the same trench as a new pipe shall not be compensated as remove pipe and shall be considered to be part of the new pipe installation.

If the pipe to be removed ends along a pipe run, as opposed to ending at a structure, the Contractor shall end the removal with a saw cut of the existing pipe and plug the remaining end as directed by the Engineer. Plugging the structure or pipe to which the pipe being removed was connected shall be compensated for under a separate bid item (pipe plug). If the Contractor, for his convenience, decides to remove a section of pipe to a full section, the additional removal shall not be given consideration for additional compensation.

Where existing culverts, sewer access points, catchbasins and similar structures are to be extended or otherwise incorporated in the new work, only such part or parts of the existing structure shall be removed as are necessary to provide a proper connection to the new work. The connecting edges shall be cut, chipped and trimmed to the required lines and grades without weakening or damaging the part of the structure to be retained.

Buildings to be removed shall be razed, all material and debris resulting therefrom disposed of, and any resulting openings backfilled. The building or buildings to be removed will be designated in the contract by a general description and with reference to a survey station. All buildings to be removed and all materials resulting from the razing of buildings shall become the property of the Contractor unless otherwise provided in the contract. The City assumes no responsibility for the condition of any building at any time, and no guarantee is made or implied that any building will remain in the condition the bidder finds it when the building is examined incident to preparing the proposal. The Contractor shall procure all permits necessary for razing and removing buildings, including those necessary where streets or alleys are obstructed by the work. The razing of buildings and the removal of the materials thereof shall be performed in a safe manner and in compliance with the requirements of the Wisconsin Department of Industry, Labor and Human Relations and any applicable City ordinances. Where hazardous conditions are created incidental to the contract operations, the Contractor shall furnish, erect and maintain suitable barricades to protect and safeguard the public. The Contractor shall notify public utility companies and the City Engineer serving the building in sufficient time, prior to razing operations, to permit them to disconnect, plug, and/or remove such of their facilities as may be in the building. Municipal water service lines shall be shut off at the curb boxes and sewer connections shall be tightly plugged or sealed. Unless otherwise provided, the removal of a building shall include the removal of foundation walls to the elevation of the basement floor or two (2) feet below the original ground, or two (2) feet below the proposed earth subgrade, whichever is lower. Before backfilling, all debris shall be removed. Holes shall be broken in basement floors to permit drainage.

203.2(b) Sawing Asphalt Pavement, Full Depth and Sawing Concrete Pavement, Full Depth.

The sawing operation shall be performed so that the surface to remain is generally vertical for its full depth.

Sawcuts shall not exceed into concrete pavement placed in the work under contract and shall not exceed into existing pavements more than six (6) inches beyond the limits designed by the Engineer.

The sludge from sawing shall be removed from the pavement upon completion of each sawcut by methods which minimize the amount of sludge flowing onto or being deposited on the pavement of any live traffic lane.

The Contractor shall note that it is unlawful to discharge sawcut sludge into lakes, streams, and storm sewer without a DNR permit. Illegal discharge into the storm sewer will not be permitted by the City and is subject to fines imposed by the Wisconsin DNR.

All traffic control devices shall be clean of any sludge deposits by darkness of the day in which the deposition occurs.

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 paid for separately under the bid item pipe plug. 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 sewer pipe with slurry shall include plugging one end of the pipe paid separately under the bid item pipe plug, and 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 Slurry Mix as specified in Section 301.9 of these specifications.

Sewer pipe shall be abandoned by plugging the end(s) of the pipe and shall be compensated for as pipe plug(s).

Service shall be maintained in existing sewers until the replacement sewers or appropriate bypasses approved by the Engineer have been installed, at such time bulkheads or plugs may be placed.

Contractor shall contact and coordinate with other utilities so that they may plug their own facilities.

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 Emil Street.

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

3. All City owned pipe shall be hauled to the Engineering Service Building storage area at 1602 Emil Street.

4. All concrete, stone, brick and other materials shall be disposed of by the Contractor at a site to be furnished by the Contractor at no cost to the City.

203.2(e) Backfilling.

All trenches, holes and pits resulting from the removal or abandoning of miscellaneous structures shall be filled with satisfactory soil or select fill, placed in layers not more than twelve (12) inches in thickness. Select backfill shall be required for any structure or pipe within the roadway that will not be filled with another structure or pipe. All fill material required shall be considered incidental to the removal or abandonment. Each layer shall be thoroughly compacted by means of approved tampers, rollers or vibrators. Water shall not be used to expedite settlement of backfill except with the approval of the Engineer; this provision shall not be construed to require an excavation to be dewatered before placing backfill, if backfilling can be performed in such manner as to displace the water or prevent its entrapment in the backfill.

Unless otherwise provided in the contract, backfilling shall be made to the elevation of the natural ground, the proposed finished earth subgrade or finished slopes, as may be necessary due to the location of the removed structure.

203.3 Method of Measurement.

Unless otherwise provided, this work will be measured in the original position of the structures to be removed, as follows:

1. Removing concrete pavement will be measured by area in square yards irrespective of the depth or number of courses encountered. Where removing concrete pavement consists of a rigid base having an asphalt surface extending beyond the lateral limits of the rigid base, such as a widened pavement, only the area occupied by the rigid base will be measured as removing concrete pavement, and that portion of the asphalt surface beyond the rigid base shall be removed and will be measured as Excavation Cut.

2. The removal of flexible bases or portions thereof will be measured as Excavation Cut.

3. Removing curb and gutter will be measured by length in linear feet, taken along the flow line of gutter for gutter or curb and gutter, and along face of curb for curb.

4. Removing sidewalk, crosswalks and driveways will be measured by area in square feet.

5. Removing steps shall be measured as the summation of the areas of the treads, computed by multiplying the width of the tread by the length of the tread out to out of integral wall, if any.

6. Removing guard rail will be measured by length in linear feet and including end sections or anchorages.

7. Removing surface drains will be measured as units.

8. Removing fence will be measured by length in linear feet.

9. Removing utility poles, pole stubs, access structures, catchbasins and inlets will be measured as units, including all attached parts and connections.

10. Removing building will be measured as a unit for each specified building removed.

11. Removing sewer pipes shall be measured by length in feet.

12. Abandoning access structures, catchbasins, or inlets will be measured by units.

13. Sawcutting will be measured in linear feet.

14. Abandon sanitary sewer pipe with slurry shall be measured by the cy of slurry required to completely fill the void.

15. Pipe plug shall be measured as a complete unit for every pipe opening plugged.

16. Sawing asphalt pavement full depth and sawing concrete pavement, full depth, shall each be measured by the lineal foot of completed and accepted work. Overcuts beyond the limits shown on the plans or directed by the Engineer will not be measured for payment.

203.4 Basis of Payment.

The contract price for removing or abandoning miscellaneous structures, as the case may be, shall be payment in full for trimming and chipping; for breaking down, removing, or sealing; for cutting, protecting or removing reinforcing steel, if any, as required; for procurement of any required work permits; for disposal of materials; for backfilling; for furnishing any required concrete masonry; and for furnishing all labor, tools, equipment and incidentals necessary to complete the item of work in accordance with the requirements of the contract.

Select Fill when required for backfilling of openings caused by removal or abandoning of miscellaneous structures, shall be paid for at the contract unit price per cubic yard, which price shall be full compensation for such backfill complete in place as herein specified.

If the contract does not include a separate item for removal of sewer pipes, the removal of existing sewer pipes shall be considered incidental to other items of work and there shall be no payment for their removal.

Sawcutting, measured as provided above, shall be paid for at the contract unit price bid for sawcutting, which price shall be payment in full for acquiring all permits, furnishing all labor, tools, equipment and incidentals necessary to complete the item of work in accordance with the requirements of the contract.

The contract price for pipe plug shall include all labor, materials and incidentals to install a twelve (12) inch thick minimum bulkhead that covers the entire opening. The pipe plug shall consist of either mortared concrete brick or block; concrete of the class and grade specified for structures; or as specified on the plans. The Engineer may require pipes larger than thirty (30) inch diameter to be

abandoned with concrete and reinforced bars. The method of construction shall be approved by the Engineer.

ARTICLE 210 - EROSION CONTROL

210.1 Description.

The Contractor shall take all necessary precautions to prevent pollution of streams, lakes, reservoirs and other areas with fuels, oils, bitumen, calcium chloride, or other harmful materials. The Contractor shall conduct and schedule the operations so as to avoid or minimize siltation of streams, lakes, reservoirs and other areas.

The Contractor shall comply with all provisions of the City of Madison Ordinance, Chapter 37, "The Public Stormwater System Including Erosion Control."

Excavated materials and imported backfill materials stored at the project site shall be kept to a minimum and shall be used or removed from the site as soon as practical. Such materials shall be stored in such a manner that will not result in runoff of stockpiled materials into streets or drainage facilities in the event of rain. Excavated materials and imported backfill materials stored on street pavements shall be removed from the street pavements by the end of the work period, not to exceed one work day. Backfilled trenches and other areas shall be left to the level of the adjacent area or slightly below until restored to reduce the potential for erosion. All excess excavated materials and all excess imported backfill materials shall be promptly removed from the site and disposed of.

The Contractor shall monitor each location where water may run off the site and shall provide measures to guard against sediments leaving the site. The Contractor shall have adequate silt fence and/or clear stone for berms and/or bales of hay and/or erosion matting and means of anchoring the same in place available for erosion control as per the plans, special provisions and Standard Detail Drawings or as determined necessary by the Engineer. The type and amount of materials required will be determined by the type and amount of open excavation. The Contractor shall schedule the work so that the amount of open excavation and the stockpiling of construction materials on the job site is minimized for erosion control. Diversion berms or sediment filtration berms shall be constructed and maintained as determined necessary by the Engineer. Clear Stone Berm for Erosion Control shall include the installation, maintenance and removal of a clear stone berm for erosion control in accordance with Standard Detail Drawing 1.05 or as directed in the field by the Engineer. Replacement of preexisting erosion control measures which are disturbed in the course of the work shall be completed promptly following completion of the work on the project causing such disturbance.

When required, the Construction Entrance shall include the installation and maintenance of a clear stone pad with the following characteristics:

1. Minimum forty (40) feet in length;

2. Width as required by equipment (eight (8) feet minimum);

3. Six (6) inches minimum depth;

4. Consist of three (3) inches clear stone;

5. Prevention or clearing of tracking onto roadways;

6. Restoration or repair of any disturbed or damaged area within the immediate limits of the construction entrance including the curb and gutter, sidewalk and pavement.

Tracking of foreign materials (mud, etc.) on street surfaces shall be controlled during the working day as necessary, but no later than the end of the working day, by one or more of the following methods as required:

1. Hand shoveling material off street pavement.

2. Machine removal (such as with endloader or grader), provided that the results are equal to that of hand shoveling.

3. Sweeping material off street pavement.

Terrace Restoration shall include the provision, placement and finish grading of a minimum thickness of 4" of topsoil and the restoration with Shade or Sun Terrace Mix as directed in the field. The seeding work shall conform to the specifications in Article 207 - Seeding.

In greenways and detention basin areas, a minimum thickness of six inches (6") of topsoil shall be required.

210.2 Materials.

Erosion Matting provided shall be of the Class and Type specified. The Class and Type requirements listed below match those of the Wisconsin Department of Transportation nomenclature. Products currently listed in the Wisconsin Department of Transportation's Product Acceptability List (PAL) for the Class and Type specified shall be considered to meet the City of Madison's Specifications for these products.

CLASS I Class I erosion mats shall be a light-duty, organic erosion control revegetation mat (ECRM). Non-organic netting is allow for some Class I matting. Class I mat shall have an expected working duration of a minimum of six (6) months. There are three Types of Class I erosion mat.

TYPE URBAN & TYPE A shall have a minimum Permissible Shear Stress of 1.0 lbs/ft^2 (50 Pa).

TYPE B shall have a minimum Permissible Shear Stress of 1.5 lbs/ft^2 (70) Pa.

CLASS II Class II erosion mats shall be long lasting, organic ECRM mats. Class II mat shall have an expected working duration of a minimum of three (3) years. There are three Types of Class II erosion mats.

TYPE A is a jute fiber mat. This type of matting shall only be used to reinforce sod and shall conform with Section 628.2.1 of the Wisconsin Department of Transportation Standard Specifications.

TYPE B shall have a Minimum Permissible Shear Stress of 2.0 lbs/ft^2 (95 Pa). Type B mat may utilize plastic netting in its construction.

ARTICLE 301 - CONCRETE AND CONCRETE MATERIALS

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 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. Between May 15th and September 15th, the contractor may substitute fly ash for cement in accordance with the specifications for concrete masonry in the latest edition of State of Wisconsin, Department of Transportation Standard Specifications for Road and Bridge Construction and supplements thereto. If the contractor desires to extend the above dates from April 15th through October 15th, he/she shall request permission in writing from the City Engineer. The fly ash shall be class "C" as identified in the ASTM C-618 specification. The maximum allowable fly ash used in the mix shall be twenty (20) percent.

5. 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.

6. 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.

303.2(i) Concrete Sidewalks.

Concrete sidewalks and sidewalk ramps shall be five (5) inches in thickness, five (5) feet in width, constructed of nonreinforced concrete, with a transverse slope of one-fourth (1/4) inch per foot, unless otherwise noted on the plans or in the special provisions of the contract, or unless otherwise directed by the Engineer.

Where directed by the Engineer, all existing sidewalk in the terrace between the curb and public sidewalk that is removed during the construction of new curb and gutter, shall be replaced in the same location and to the same dimensions as was true of original terrace walks.

303.2(j) Concrete Aprons.

Concrete aprons shall be seven (7) inches in thickness and constructed of nonreinforced concrete unless otherwise noted on the plans or in the Special Provisions of the contract. Expansion joints shall conform to the requirements of Subsection 303.2(d). Contraction joint shall conform to the requirements of Subsection 303.2(d), except that the Contractor may cut diagonal joints in order to control the cracking of the concrete in the curved areas of commercial drives.

303.2(k) Concrete Traffic Islands.

Traffic islands shall be constructed at the locations and in accordance with the design, dimensions and details shown on the plans.

303.2(l) Steps of Concrete Masonry.

When construction of steps is included in the contract, they shall be built at the locations and in accordance with the design, dimensions and details shown on the plans. The work shall include reinforcement and necessary excavation, backfilling, and disposal of excess material from excavation.

303.2(m) Profile Sawcuts.

Where directed by the Engineer, the Contractor shall construct curb cuts in existing curb and gutter, using a "profile curb cut" with the curb head removed by using a machine type concrete saw specifically designed for this type of work.

303.2(n) Curb Ramp Detectable Warning Field.

Description

This special provision describes placing detectable warning fields in curb ramps in accordance with the requirements of the standard specifications and as hereinafter provided.

Materials

Furnish curb ramp detectable warning field material and devices as approved by the Engineer. Paint color shall be safety yellow. Only epoxy products approved by the State of Wisconsin Bureau of Highway Operations may be used. Type 2 glass pavement marking beads shall be applied to the paint

as approved by the Standard Specifications for Highway and Structure Construction of the State of Wisconsin Department of Transportation.

MANUFACTURER	PRODUCT NAME/BRAND
Poly-Carb, Inc.	Slow set Mark-55A, B (slow set)
Innovative Performance Systems (IPS)	Slow set HPS-2 (non-lead)
Epoplex	Slow set LS60 (non-lead)
Sherwin Williams	Lead free-slow cure BP 16429

Construction

Place curb ramp detectable warning field as shown and detailed in the standard specifications, detail 3.03 and 3.04.

303.3 Measurement and Payment.

303.3(a) Method of Measurement.

Sidewalks, sidewalk ramps, traffic islands, driveways and steps shall be measured by area in square feet. The measured areas of crosswalks shall be included with the measured areas of sidewalks.

Curb Ramp Detectable Warning Field shall be measured in place by the square feet of surface area.

When required, the "Profile Sawcut" shall be measured by length in linear along the flow line of the curb.

In the case of integral curb and walk, the width of the walk shall extend to a point six (6) inches behind the face of curb. The curb shall be paid for separately as Curb and Gutter.

In the case of steps, the area measured for payment shall be the summation of the areas of the treads, computed by multiplying the width of the tread by the length of the tread out to out of integral wall, if any.

Reinforcing steel for concrete sidewalk installed in accordance with the terms of the contract will be measured by length in linear feet.

303.3(b) Basis of Payment.

The area, measured as provided above, shall be paid for at the contract unit price per square foot for the items of concrete sidewalk, concrete driveways, concrete traffic islands, and concrete steps, which price shall be full compensation for furnishing all materials, including concrete masonry and expansion joints; for excavations and preparation of subgrade including subbase, backfilling, and disposal of surplus material; for forming; for placing, finishing, protecting and curing of the concrete; and for all labor, tools, equipment and incidentals necessary to complete the work and restore the site of the work. The price paid to the Contractor for sidewalk ramps shall be the same as for sidewalk.

Payment for Curb Ramp Detectable Warning Field is full compensation for providing all materials, including detectable warning field, select backfill, concrete, reinforcement and expansion joints; for excavating and preparing foundation; placing and compacting select backfill; backfilling; disposing of surplus material; for placing, finishing, protecting, and curing concrete; and restoring the work

site; and for all labor, tools, equipment and incidentals required to complete the work and restore the site. Payment for any concrete sidewalk bid items directly below detectable warning field is included in payment for Curb Ramp Detectable Warning Field in curb ramp.

The footage for profile sawcut, measured as provided above, shall be paid for at the contract unit price per linear foot, which price shall be full compensation for excavating; for all labor, tools, materials, and equipment necessary to complete the work, including crushed stone made necessary by excessive excavation behind the curb; and for disposal of the concrete.

The contract price for reinforcing steel for concrete sidewalk shall include furnishing the specified materials and all labor, tools, equipment and incidentals necessary to complete the work.

Where reinforcing steel for concrete sidewalk is not listed as an item on which to submit unit prices, it shall be understood and agreed that the Contractor shall be paid seventy-five ($0.75) cents per linear foot of uncoated reinforcing steel, and one ($1.00) dollar per linear foot of epoxy-coated reinforcing steel furnished and placed in accordance with these Specifications.

rollers, at any time during the paving operation. Under no circumstances shall the workers, or others, be allowed to walk across recently laid asphalt mixture behind the paving machine and ahead of the roller.

402.2(c) Equipment.

A mechanical vibratory plate compactor shall be available on the job site at all times during asphalt pavement placement and shall be used for compaction around access structures, catchbasins, water valves and other castings which appear in the paved areas. The mechanical vibratory plate compactor shall be equipped with a working water reservoir and shall be of sufficient size and capability to attain the compaction requirements of these specifications.

402.2(d) Spreading and Finishing.

Pave at a constant speed, according to the paver specifications and mixture, for uniform spreading and strike-off with a smooth, dense texture and no tearing or segregation.

In any event, the speed of placing asphalt mixtures shall not exceed that which coincides with the average rate of delivery to the paver, so as to provide as nearly as possible continuous operation of the paver.

The roller shall pass over an unprotected end of freshly laid mixture only when the laying of the course is to be discontinued long enough to permit the mixture to become cooled. In the event of such discontinuance, the end of the course shall be treated as a transverse construction joint as specified below.

402.2(e) Compaction.

Where the edges are not supported by a curb and gutter or similar structure, the outside edges of the lower and upper layers shall be sloped and pressed in place by means of a self adjusting constant pressure edge plate held in proper position on the finishing machine. A string line shall be used as a guide for the finishing machine in order to maintain a uniform edge alignment. If any other method is used, it shall meet the approval of the Engineer. The edge of the pavement shall be sloped approximately one (1) inch from the vertical and no material shall extend beyond the limits of the base. Irregularities in alignment along the outside edges and along the longitudinal joints shall be corrected by adding or removing paving mixtures before the edges are rolled.

The mixture shall be spread sufficiently so that after compaction the finished surface shall be one-eighth (1/8) to one-fourth (1/4) inch above the edges of curbs, gutters, access structures and similar structures.

Each roller, while the paving is under way, shall be kept as nearly as practicable in continuous operation and the speed shall at all times be slow enough to avoid undue displacement of the mixture. When pneumatic-tired rollers are used, they shall be operated continuously at a rate of speed which will not cause damage to the mat and which will provide the maximum number of coverages possible while the temperature of the mat is conducive to densification and surface sealing. Rollers shall be operated with the drive roll or wheels nearest the paver.

MINIMUM REQUIRED DENSITY*			
Location	Layer	Percent of Target Maximum Density	
		Mixture Type	
		E-0.3, E-1, E-3	E-10
Traffic Lanes	Lower**	91.5	92.0
Traffic Lanes	Upper	91.5	92.0

*The table values are for average lot density. If any individual density test result falls below 87% of the target density, the engineer may investigate the acceptability of that material.
**Minimum reduced by 2% for < 3 million ESALs and 1% for > 3 million ESALs, for that lower layer constructed directly on crushed aggregate or recycled base courses.

402.2(f) Joints.

Joints for lower and upper layers constructed after September 1st, except in the case of "hot" joints produced by concurrent paving of adjacent lanes, shall be treated to insure a tightly bonded and sealed joint. Such treatment shall consist of painting with hot asphalt cement, cutback or emulsified asphalt.

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 mixture with 9.5mm nominal aggregate size shall be used.

The composition for the various asphalt mixtures shall conform to the limits specified in Part 4 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.

The mixture shall be laid and compacted so that the average yields in pounds per square yard shall conform to the following charts showing the various thicknesses of installation:

Unless otherwise specified in the contract, or directed by the Engineer, the upper layer mixtures shall be installed in one course of one and one-half (1-1/2) inches in depth.

UPPER & LOWER LAYER(S) YIELD - #/S.Y.		
Thickness	Min.	Max.
1.5"	180	192
1.75"	210	225
2"	240	256
2.5"	300	320
3"	355	370
4"	470	500
5"	585	640

For installations of the upper layer which are specified to be other than one and one-half (1-1/2) inches in depth, the allowable yields for such installations shall be in proportion to the allowable yields specified above.

Whenever the yields fall below the minimum allowable yields specified above, the Engineer shall determine the corrective action to be taken. The corrective action may include removal and replacement of the area of deficient thickness, an overlay with approved material of the area of deficient thickness, or such other action as the Engineer shall determine including a reduction in payment up to 50% of the unit price for the deficient amount. The area of deficient thickness shall be determined on the basis of street area, project area, or area covered in one day's operation, whichever is less. The Engineer's determination will be based on the circumstances of the area involved, and will include a determination of the distribution of costs of the corrective work required.

402.4 Asphalt Tack Coat.

Unless otherwise specified in the contract, or directed by the Engineer, the types and grades of asphalt materials and rates of applications in gallons per square yard shall conform to the following requirements:

1. The tack coat material shall be type MS-2, SS-1, SS-1h, CSS-1, or an approved modified emulsified asphalt.

2. For existing concrete or asphalt pavements, the rate of application shall be between 0.05 and 0.10 gallons per square yard.

402.5 Recycled Asphalt Pavement.

This work shall consist of the construction of a plant mixed recycled asphalt mixture furnished and placed all in accordance with Article 460 of the latest edition of the Standard Specifications for Highway and Structure Construction of the State of Wisconsin, Department of Transportation, except as listed below.

The City of Madison shall approve the sources of recycled asphalt material.

402.6 Measurement and Payment.

402.6(a) Asphalt Pavement Mixtures.

Asphalt mixtures of the type or types included in the contract, shall be measured by the ton of mixed aggregate and asphalt material, or by the square yard of area paved. The quantity measured for payment shall be the amount of material furnished, delivered to and incorporated in the accepted work, or the area paved, including cleaning and maintenance, and for all labor, tools, equipment, and incidentals necessary to complete the work contemplated by the contract. Deductions shall be made for any quantities which are wasted, which are not actually incorporated in the work in accordance with the contract, and for those materials which do not conform to the requirements of these specifications.

Asphalt mixtures intended for use on City projects will be tested by the City in order to determine aggregate gradations, asphalt content, air voids and VMA. Asphalt mixtures shall be tested per section 460.2.8 of the latest edition of the Standard Specifications for Highway and Structure Construction of the State of Wisconsin, Department of Transportation.

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 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 Emil Street and deposit the castings as directed by the person in charge of the storage area.

403.2 Grinding.

403.2(a) Description.

Grinding shall consist of “milling”, or “cold planning” the existing pavement surface to establish a new surface profile and cross section in preparation for an asphalt overlay. The surface after grinding shall have a grooved or ridged finish, uniform and resistant to raveling or traffic displacement. This textured surface shall have grooves of one-fourth (1/4) inch (+1/8”). The existing surface to be

ground shall include asphalt pavement, concrete utility patches and small amounts of concrete pavement.

The grinding machine shall be a power operated, self-propelled machine, having a cutting drum with lacing patterns that will attain a grooved surface and produce grinding chips of less than two (2) inch in size. The grinding machine shall be equipped with a pressurized watering system for dust control. The equipment shall be of the type that has successfully performed similar work.

The Contractor shall use only approved grinders or milling machines for removing existing pavement failures so as not to disturb the existing subbase.

The cleaning equipment shall be of the type to efficiently remove all loosened material and load into trucks for hauling and spreading. Because of the nature of the streets to be ground and the traffic restrictions, a belt loader followed by a power sweeper and manual sweeping is most desirable. Flushing into the City's storm sewer system as a means of cleanup will not be allowed.

The Contractor shall haul the grindings from the milling operation to the Badger Road and Sycamore Avenue Street Division facilities, or where directed by the Engineer. The grindings shall be stockpiled or tailgate spread as directed. When specified in the contract or directed by the Engineer, the Contractor shall dispose of any undesirable or excess grinding material. The Contractor shall furnish the Engineer a daily load count for the removed material.

Wedge cut grinding shall consist of grinding the existing pavement surface a minimum of four (4) feet wide at the existing concrete gutter. The edge of gutter end of the finished wedge cut shall match the depth of the new asphalt overlay with a minimum one and one-half (1-1/2) inches below the edge of existing concrete gutter. The center-line-of-street edge of the wedge cut shall be cut one-eighth (1/8) inch. This item shall also include scoring the existing pavement surface at locations specified by the Engineer. Ramping utility castings shall be paid for under with **BID ITEM 40308 - RAMPING SAS.**

Full width grinding shall consist of grinding the existing pavement surface from edge to edge of gutter a minimum of one and three quarter (1.75) inch or as directed by the Engineer. Ramping utility castings shall be paid for under with **BID ITEM 40308 - RAMPING SAS.**

Base Patch grinding may be specified as the acceptable method to remove existing pavement and base failures as part of the work for base patch grinding. The Contractor shall grind patches to the width and length as marked in the field by the Engineer and recorded on the standard walk sheets. The minimum width of patches for removal by grinding shall be six (6) feet. There will be no minimum length. Fill shall be an approved asphalt material. Any additional width or depth, unless approved by the Engineer, shall be at the Contractor's expense and restored to the designated width and depth of patch with asphalt lower layer material at no cost to the City. There will be three (3) approved methods. Method #1 shall consist of 5" Base Patch Grinding, Method #2 shall consist of 5" Grinding with 3-1/2" Asphalt Lower Layer material and 1-1/2 "Asphalt Upper Layer material", Method #3 shall consist of 2" Grinding filled with 2" Asphalt Upper Layer material. Patches shall be started and completed in the same day.

Pavement joint grinding shall consist of grinding or saw cutting and removing the existing asphalt overlay to expose the base course joint as directed by the Engineer. The Contractor shall remove and dispose of all loose and deleterious material including broken concrete. The joint exposure shall be a minimum of eighteen (18) inches wide. Small or "mini" grinders are preferred for this work. The

403.7 Asphalt Upper Layer.

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

The Contractor may choose to utilize either one hundred (100%) percent virgin material or twenty (20%) percent recycled with eighty (80%) percent virgin material for plant hot-mix asphalt lower layer. The City of Madison shall approve the sources of recycled asphalt material.

The Contractor shall provide and use a minimum of two (2) vibratory rollers and one (1) static roller, unless otherwise approved by the Engineer prior to starting the work. If the Engineer determines that only two (2) rollers are required on a particular street, the third roller will be available for the next street to be paved.

The Contractor shall place an approved steel plate over all open grates inlets when paving over or near them to prevent the asphalt materials from falling into the inlet. The Contractor shall clean the inlets, gutters, and terraces of any excess material or debris by the end of the day following paving of that street or the contract operations shall be halted until the cleanup is complete and current.

Yield requirements shall be adhered to.

403.8 Asphalt Base Patching.

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 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 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 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, 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 (3) 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.

The Contractor shall mechanically compact the existing base course and tack the vertical edges of the patch for dust control. All costs for mechanical compaction and tack coat shall be considered incidental to the asphalt base patch. On all patches outside of the limits for resurfacing, the patch material shall be upper layer material with the last lift placed by a paving machine and considered incidental to the bid item for asphalt base patch.

Patches shall be started and completed in the same day.

Asphalt base patching shall be paid for at the contract unit price per square yard based on the depth of patch, which price shall be full compensation for excavation and disposal of the excavated material, preparation of the subgrade, and backfilling with hot mix asphalt for maintenance and protection of the work and for all materials, labor, tools, equipment and incidentals necessary to complete the work.

403.9 Asphalt Drive And Terrace - Resurfacing.

403.9(a) Description.

Asphalt pavement for driveways and terrace paving shall comply with Section 402.3 of the Standard Specifications.

The removals of concrete or asphalt material shall include excavation and saw cutting of the concrete and asphalt material. All material shall be hauled from the site. At no time shall any material be deposited on private property or terrace areas.

After the new asphalt pavement has been placed the excavated areas adjacent to the new pavement shall be back filled immediately with the appropriate material: topsoil, seed and mulch.

403.9(b) Method of Measurement.

Asphalt drive and terrace shall be measured by the area in square yards.

entire opening in the pavement around the access structure or catchbasin top shall be backfilled with slurry.

The mix design for the slurry shall be as follows (rates are per cubic yard of slurry mix):

Water	25 gallons
Torpedo Sand	1350 pounds
3/4 Max. Aggregate	2050 pounds
Cement	50 pounds
Fly Ash (Type C)	100 pounds

The structure shall be protected from traffic for a minimum of three (3) days after pouring. No disturbed or excavated material shall be used as backfill. The Contractor shall furnish any precast sections used to rebuild access structure or catchbasin tops. New castings, if needed, will be furnished by the City the same as above.

403.20(b) Method of Measurement.

Rebuild sewer access structure top shall be measured as units of each.

403.20(c) Basis of Payment.

Rebuild sewer access structure top, measured as provided above shall be paid for at the contract price per each, which price shall be full compensation for sawcutting, removing the existing top, including casting; for installing new pre-cast or poured in place top; for adjusting existing or city furnished casting; for backfilling with slurry; for disposal of material; for furnishing all material; for placing, finishing and protecting; and for all labor, tools, equipment and incidentals necessary to complete the work

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

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.

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 saw cuts at curb and gutter joints shall be placed where directed by the Engineer.

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 to an elevation of five inches (5") below the bottom of the concrete curb and gutter. Cutting shall not be closer than two feet (2'), from the trunk of the tree.

Tree roots ends one-half inch (1/2") and up which are severed shall be cut with an axe, lopping shears or other means which will produce a clean cut on the same day of excavation. The tree root ends shall be back filled with soil or other suitable means immediately following the cutting.

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 except that the lineal foot measurement of the curb and gutter shall exclude the distance through the inlets.

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, gravel, fill, topsoil, seed and mulch. Curb & Gutter placed with a slip form paver shall be paid under **BID ITEM 40381 – REMOVE EXISTING CONCRETE CURB & GUTTER AND CONSTRUCT CONCRETE CURB & GUTTER, MACHINE PLACED - RESURFACING**. Curb & Gutter placed by hand shall be paid under **BID ITEM 40382 – REMOVE EXISTING CONCRETE**

CURB & GUTTER AND CONSTRUCT CONCRETE CURB & GUTTER, HAND PLACED - RESURFACING.

403.22 Remove and Replace 5" Thick Concrete Sidewalk – Resurfacing; Remove and Replace 7" Thick Concrete Sidewalk and Driveway-Resurfacing.

403.22(a) Description.

Concrete walk and drive apron shall consist of removing and replacing existing concrete walk and drive apron where designated by the Engineer in accordance with Section 303.3 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 saw cuts at sidewalk joints shall be placed where directed by the Engineer.

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 to an elevation of five inches (5") below the bottom of the concrete sidewalk or driveways. Cutting shall not be closer than two feet (2'), from the trunk of the tree.

Tree roots ends one-half inch (1/2") and up which are severed shall be cut with an axe, lopping shears or other means which will produce a clean cut on the same day of excavation. 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; fill; gravel, topsoil; seed and mulch.

403.23 Crushed Stone - Resurfacing.

Crushed stone shall consist of furnishing and placing crushed stone base course according to Article 401 of these Specifications. Where designated by the Engineer, the Contractor shall undercut the base patch area and backfill to the depth of the asphalt base patch with crushed stone. All costs for undercutting and furnishing, placing and compacting the crushed stone shall be considered incidental to crushed stone.

403.24 Remove Asphalt Surface - Resurfacing.

Remove asphalt surface shall consist of removing existing asphalt pavement from a concrete base by any means including, but not limited to, grinders, air compressors, hand picks, motor blades, end loaders, back hoes, etc.

403.25 Remove Concrete Utility Patch

403.21(a) Description.

The contractor shall remove concrete utility patches in accordance with Section 203.2 of The City of Madison Standard Specifications. This item is intended for the removal of concrete utility patches in excess of sixty (60) continuous lineal feet on streets scheduled for pulverizing. Concrete utility patches less than sixty (60) continuous lineal shall be considered incidental to **BID ITEM 40311 - PULVERIZE AND SHAPE.**

403.22(b) Method of Measurment

Remove concrete utility patch shall be measured by the unit of lineal feet along the centerline of the utility patch.

403.22(c) Basis of Payment

Remove concrete utility patch measured as provided above shall be paid for at the contract unit price per lineal foot in accordance with Section 203.4 of City of Madison Standard Specifications.

ARTICLE 503 - SANITARY SEWER PIPES AND LATERALS

503.1 Description.

Unless otherwise shown on the plans or specified in the contract, the materials furnished and installed in the work shall conform to the requirements specified herein for the type and class of material named.

Unless otherwise directed by the Engineer, all pipe and accessories shall be unloaded at the point of delivery, and hauled to and distributed at the site of the work by the Contractor. The materials shall at all times be handled with care to avoid damage. The material shall not be dropped or bumped against the ground, other pipe and accessories already on the ground, or any other object on the ground.

The Contractor shall furnish random lengths of pipe for each contract as may be required for the proper placement of fittings or structures. The costs of random lengths of pipe shall be included in the contract unit prices for the respective sizes and types of pipe.

Unless otherwise specified, references to various standard specifications and test methods shall be understood to mean the specification or test method which is current on the date of advertisement for bids.

503.2 Materials.

When plastic pipe of any type is used, the plastic pipe manufacturer shall be one whose pipe and joint have been accepted for use in Wisconsin by the Municipal Wastewater Section of the Department of Natural Resources. All pipe and fittings used on a project shall be supplied by the same manufacturer and shall be of the same type.

503.2 (a) Solid-Wall Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

Solid-Wall Poly (Vinyl Chloride) (PVC) sewer pipe and fittings, labeled as “PVC” on the plans, shall conform to the requirements of the Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings, ASTM D 3034, SDR-35 or SDSR-26. Joints shall be elastomeric or solvent cement and shall be made as recommended by the manufacturer.

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 solvent cement and two stainless steel bands.

503.2 (c) Poly (Vinyl Chloride) Pressure Pipe.

Pressure pipe and fittings, labeled as “PVC PRESSURE” on the plans, shall conform to the requirements of AWWA Standard for Poly (Vinyl Chloride) (PVC) Pressure Pipe and Fabricated Fittings, four (4) inches through twelve (12) inches, for Water Distribution, Pressure Class 150 (DR 18), AWWA C900. The joints shall be integral bell with elastomeric gaskets, or couplings with elastomeric gaskets.

507.2 (d) Inlets.

The following lists of Neenah Foundry castings are acceptable for City construction and are further detailed in the Standard Detail Drawings. Substitutions shall be approved by the Engineer prior to delivery to the job site.

1.	R-3067	Heavy-duty curb inlet frame, curb box with two (2) inch radius, and diagonal openings grate (Neenah Foundry Type R Inlet Grate). May be used with vane grate (Neenah Foundry Type V Inlet Grate) denoted with a **-V**. For use with Type "H" Inlets in Type 'A', Type 'B' or Type 'H' Concrete Curb and Gutter.
2.	R-3067 -7004	Heavy-duty curb inlet frame, curb box with two (2) inch radius and "Dump No Waste - Drains to Lake" logo, and diagonal openings grate (Neenah Foundry Type R Inlet Grate). May be used with vane grate (Neenah Foundry Type V Inlet Grate) denoted with a **–V**. For use with Type "H" Inlets in Type 'A', Type 'B' or Type 'H' Concrete Curb and Gutter.
3.	R-3067 -CDS	Heavy-duty curb inlet frame, slanted curb box with openings, and diagonal openings grate (Neenah Foundry Type R Inlet Grate). May be used with staggered longitudinal vane grate (Neenah Foundry Type L Inlet Grate) denoted with a **–L**. For use with Type "H" Inlets in Type 'A' Mountable Concrete Curb and Gutter.
4.	R-3290 -A	Heavy-duty curb inlet frame and custom grate. No curb box required. For use with Type "H" Inlets in Driveway Section Type 'A' Concrete Curb and Gutter.
5.	R-1878 -B7G	Heavy-duty frame and flat open grate for use with Type "H" Inlets and in grassed areas. No curb box required.
6.	R-1878 -B7L	Heavy-duty frame and flat closed cover for use with Type "H" Inlets. No curb box required.
7.	R-3281	Heavy-duty curb inlet frame, curb box with two (2) inch radius. May be used with diagonal openings grate denoted with **–AL** (left) or **–AR** (right) or with staggered longitudinal vane grate denoted with a **-B**. For use with Type "S" Inlets in Type 'G' Concrete Curb and Gutter.

507.3 Construction Methods.

507.3 (a) General.

The construction of concrete sewer access structures, catchbasins, and inlets shall conform to the pertinent portions of Part 3, Concrete and Concrete Structures of these Specifications, and the applicable Standard Detail Drawings for the structure involved. Sewer access structures, catchbasins and inlets shall be of a size and type specified in the contract, and shall be constructed at the location and to the elevation shown on the plans, or as directed by the Engineer.

Unless otherwise specified, all sanitary sewer access structures shall be constructed of precast units of reinforced concrete provided they meet all the precast requirements. Sewer access structures and inlets for storm sewers may be either cast-in-place or precast concrete structures. If the plans specifically require a field poured structure, then the structure shall be cast-in-place with no exception. If the structure is not specifically required to be field poured, a precast structure may be substituted for a cast-in-place structure provided they meet all the precast requirements and approval is granted by the Engineer.

Cast-in-place structures shall be constructed as detailed in the Standard Detail Drawings. The bases of all structures which are cast-in-place shall be poured prior to pouring the walls of the structures, unless otherwise ordered or allowed by the Engineer.

Various layout requirements for storm sewer inlets are included in the Standard Detail Drawings.

507.3 (b) Precast Requirements.

Precast Sewer Access Structures (SAS) and inlets, generally referred to as precast structures, shall be of reinforced concrete and shall conform to the specifications of Precast Reinforced Concrete Manhole Sections, ASTM C 478. Joints shall meet the requirements for circular reinforced concrete pipe as specified in these Specifications.

Precast structures for storm sewer may be furnished with steps. Precast structures for sanitary may be furnished with steps in the barrel sections only. If steps are used in the cone sections to facilitate construction, they shall be removed prior to acceptance.

Precast structures of reinforced concrete may be substituted for cast-in-place structures provided they can meet all of the following criteria and the conditions of the contract and approval is granted from the Engineer. No precast structures shall be brought to the job site until approval is granted from the Engineer. Any precast structure not meeting these criteria shall be replaced by a cast-in-place structure or a precast structure satisfying these criteria at the Contractor's expense.

The following procedure shall be followed prior to approval of precast structures:

1. The Contractor shall complete all required utility line openings as detailed in Subsection 508.1(a), Utility Line Opening,

2. The Engineer will review the data provided and make any necessary design changes,

3. Upon completion of any redesign the Contractor shall make a request and submit shop drawings of any precast structures to the Engineer,

4. The Engineer shall have two (2) days to review the request and provide a decision to the Contractor.