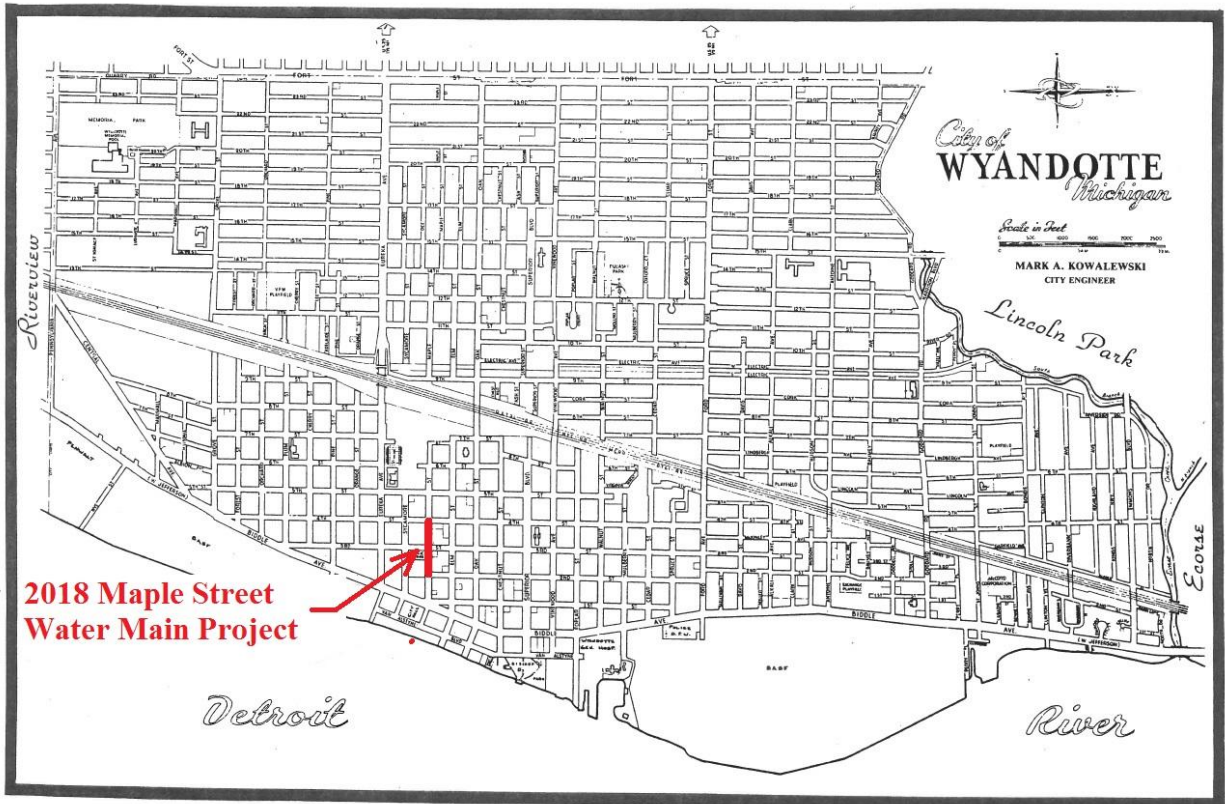


REQUEST FOR PROPOSAL

CITY OF WYANDOTTE

2018 MAPLE STREET WATER MAIN PROJECT



City of Wyandotte
Engineering Department

Mark A. Kowalewski
City Engineer

October 2018

2018 MAPLE STREET WATER MAIN PROJECT

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INSTRUCTIONS TO BIDDERS

The City of Wyandotte will receive sealed bids at 3200 Biddle Avenue, Wyandotte, Michigan, for the “FILE #4742 – 2018 Maple Street Water Main Project” at 2:00 p.m., Local Standard Time, Friday, November 19th, 2018, at which time said bids will be publicly opened and read aloud.

Specifications, including blank proposal, contract and bond forms are only available from the Michigan Inter-governmental Trade Network (MITN) website at www.mitn.info.

Bids shall state price for all items as specified, which price shall be in full for all labor and materials for the complete execution of the work. Proposals may not be honored unless made on the forms furnished for this purpose and with all blanks properly filled out. All prices must be written in both words and numerals. The City reserves the right to reject any or all bids and also the right to waive any formal defects in bids when deemed in the best interest of the City. Contract may be let in its entirety only or portions of bid.

The bidder must accompany his bid with a bidder’s bond, certified check, or cashier’s check payable to the City of Wyandotte for the sum of not less than 5% of the amount bid. If the bidder does not submit said bidder’s bond, certified check, or cashier’s check, then the City will not consider your bid. In the event the successful bidder fails or neglects to enter into contract with the City, and furnish the necessary bonds all within twenty (20) days of the date of the award, the bidders bond or certified or cashier’s check shall be forfeited to the City of Wyandotte as liquidated damages.

The City of Wyandotte, in accordance with Title VI of the Civil rights Act of 1964, 78 Stat, 252, 42 U.S.C. 2000d to 2000d-4 and Title 49, Code of Federal Regulations, Department of Transportation, SubTitle A, Office the Secretary, Part 21, Nondiscrimination in Federally assisted programs of the Department of Transportation issued pursuant to such Act, hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this advertisement, minority business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award. (See Appendix A)

All proposals with bidder’s bond, certified check, or cashier’s check shall be delivered to the City Clerk at the City Hall, 3200 Biddle Avenue, Wyandotte, Michigan, on or before 2:00 p.m., Local Standard Time, Monday, November 19th, 2018, and the sealed envelope shall be titled “FILE # 4742 – 2018 Maple Street Water Main Project”.

All questions or concerns shall be directed to Jesus Plasencia, City of Wyandotte Engineering and Building Department, via email at:

jplasencia@wyandottemi.gov

2018 MAPLE STREET WATER MAIN PROJECT

_____, 2018
The Honorable Mayor and City Council
City Hall
Wyandotte, Michigan

Dear Mayor and City Council:

The undersigned has made himself familiar with the locations of the proposed project and the conditions under which it is to be performed by examination of the locations, specifications, bonds and contract, all of which he understands and accepts as being sufficient for the purpose. The undersigned proposes to contract with the City of Wyandotte for the furnishing of all labor, material, and equipment as specified and will accept in payment thereof the following sums, it being further understood that the quantities are approximate, the totals will be used for comparison of bids only, and the payments will be based on unit prices given in the proposal.

If this proposal is accepted, the undersigned further agrees to furnish the bonds and evidence of insurance and enter into contract with the City of Wyandotte within twenty (20) days after said acceptance, and shall perform the work according to a mutually agreed upon construction sequence to be determined at a pre-construction meeting held after all contracts and bonds have been submitted, and to complete all work on or before February 1st, 2019, unless shortage of material or other causes beyond the Contractor's control prohibit him from doing so.

BASE BID

Item #1: 85 SYD Remove Concrete Pavement with HMA Overlay
@ _____ DOLLARS (\$ _____)/SYD \$ _____

Item #2: 200 SFT Remove 4-inch Concrete
@ _____ DOLLARS (\$ _____)/SFT \$ _____

Item #3: 15 TON 21A Stone Base
@ _____ DOLLARS (\$ _____)/TON \$ _____

Item #4: 85 SYD 8-inch Concrete Base Course
@ _____ DOLLARS (\$ _____)/SYD \$ _____

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Item #5: 10 TON HMA Wearing Course – 13A
@ _____ DOLLARS (\$_____/TON) \$ _____

Item #6: 200 SFT 4-inch Concrete ADA Sidewalk
@ _____ DOLLARS (\$_____/SFT) \$ _____

Item #7: 5 LFT ADA Detectable Warning Surface (Yellow)
@ _____ DOLLARS (\$_____/LFT) \$ _____

Item #8: 75 SYD Re-Grade and Sod
@ _____ DOLLARS (\$_____/SYD) \$ _____

Item #9: 405 LFT 12-inch HDPE Water Main (Directionally Bored)
@ _____ DOLLARS (\$_____/LFT) \$ _____

Item #10: 14 LFT 8-inch Ductile Iron Water Main
@ _____ DOLLARS (\$_____/LFT) \$ _____

Item #11: 13 LFT 6-inch Ductile Iron Water Main
@ _____ DOLLARS (\$_____/LFT) \$ _____

Item #12: 14 LFT 4-inch Ductile Iron Water Main
@ _____ DOLLARS (\$_____/LFT) \$ _____

Item #13: 2 EA Gate Valve, 12-inch
@ _____ DOLLARS (\$_____/EA) \$ _____

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Item #14: 1 EA Live Tap, 12-inch x 12-inch
@ _____ DOLLARS (\$_____/EA) \$ _____

Item #15: 1 EA Cut and Cap 2-inch Water Service
@ _____ DOLLARS (\$_____/EA) \$ _____

Item #16: 1 LS Traffic Maintenance and Control
@ _____ DOLLARS (\$_____/LS) \$ _____

Item #17: 1 LS Clean Up
@ _____ DOLLARS (\$_____/LS) \$ _____

TOTAL BASE BID: \$ _____

ADDITIONAL UNIT RATES FOR CONTINGENT ITEMS – items not planned for use, but that may be encountered during course of the project.

Item #18: SYD 8-inch Finished Concrete
@ _____ DOLLARS (\$_____/SYD) \$ _____

Item #19: SFT 4-inch Concrete Sidewalk
@ _____ DOLLARS (\$_____/SFT) \$ _____

Item #20: SYD Re-Grade and Hydroseed
@ _____ DOLLARS (\$_____/SYD) \$ _____

Item #21: TON Asphalt Cold Patch, Installed and Removed
@ _____ DOLLARS (\$_____/SYD) \$ _____

ADDENDA

If any addenda are issued for this job, bidder shall note receipt in column below and include each addendum with the proposal.

Addendum No.	Date Received	Received By
_____	_____	_____
_____	_____	_____

CONTRACTOR: _____

SIGNED: _____

PRINTED NAME & TITLE: _____

ADDRESS: _____

PHONE NO: _____

EMAIL: _____

CONTRACT

ARTICLES OF AGREEMENT, made and entered into this _____ day of _____ 20____, by and between the CITY OF WYANDOTTE, party of the first part, and

of the City of _____ County of _____ and State of _____, party of the second part, to-wit:

- 1. That all proposals, specifications, plans, bonds, etc., hereto attached or herein referred to, shall be and are hereby made a part of this agreement and contract.
2. That the party of the second part, under penalty of bond attached, shall furnish all labor, materials and appliances necessary, and do all the work as set forth in the proposal for the

according to the specifications, plans, etc., which have been made a part of this contract, in a manner, time and place, all and singular, as therein set forth.

IN CONSIDERATION WHEREOF, said party of the first part, for it and its successors, promises and agrees to pay to said party of the second part, the sum provided in the attached proposal,

according to the specifications, etc., all in the time and manner therein provided.

For the faithful performance of all and singular of the stipulations, terms and conditions of this agreement, said parties respectfully bind themselves, their successors, heirs, executors, administrators and assigns.

IN WITNESS WHEREOF, said parties have hereunto set their hands and seals, in duplicate, the day and year first above written.

CITY OF WYANDOTTE,
Party of the first part

BY _____
Mayor

City Clerk

WITNESS:

Party of the second part

BY _____

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: That we (1) _____
_____ a (2) _____
hereinafter called "Principal" and (3) _____
of _____, State of _____
hereinafter called the "Surety", are held and firmly bound unto (4) _____
_____ of
_____ hereinafter called "Owner", in the penal sum of
_____ Dollars
(\$ _____) in lawful money of the
United States, for the payment of which sum well and truly to be made, we bind ourselves, our
heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THE OBLIGATION is such that Whereas, the Principal entered
into a certain contract with the Owner, dated the _____ day of _____, 20____, a
copy of which is hereto attached and made a part hereof for the construction of:

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms,
subcontractors, and corporations furnishing materials for or performing labor, or both, in the
prosecution of the work provided for in such contract, or used or reasonably required for use in
the performance of such contract, and any authorized extension or modification thereof,
including, but not limited to, all amounts due for materials, lubricants, oil, gasoline, coal and
coke, repairs on machinery, equipment and tools, water, gas, power, light, heat, telephone service
or rental equipment directly applicable to the contract, or consumed or used in connection with
the construction of such work, and all insurance premiums on said work, and for all labor,
performed in such work whether by subcontractor or otherwise, then this obligation shall be
void; otherwise, to remain in full force and effect.

PROVIDED FURTHER, that the said Surety, for value received hereby stipulates and
agrees that no change, extension of time, alteration or addition to the terms of the contract or to
the work to be performed thereunder or the specifications accompanying the same shall in any
wise affect its obligation on this bond, and it does hereby waive notice of any such change,
extension of time, alteration or addition to the terms of the contract or to the work or to the
specifications.

PROVIDED, FURTHER, that no final settlement between the Owner and the Contractor
shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in
_____ counterparts, each one of which shall be deemed an original,
this the ____ day of _____, 20_____.

Principal

ATTEST:

(Principal) Secretary

BY _____(S)(SEAL)

(Address)

Witness as to Principal

(Address)

Surety

ATTEST:

(Surety) (Secretary)
(Attorney-in-Fact)

(SEAL)

BY _____
Attorney-in-Fact

Witness as to Surety

(Address)

(Address)

NOTE: Date of Bond must be prior to date of Contract.

- (1) Correct name of Contractor
- (2) A Corporation, a Partnership, or an Individual, as case may be
- (3) Correct name of Surety
- (4) Correct name of Owner (City of Wyandotte, a Michigan Municipal Corporation
OR Wyandotte Building Authority, a Public Corporation)
- (5) If Contractor is Partnership, all partners should execute bond

NOTE: Bond shall be executed by a surety company authorized to do business in the State of Michigan. Bond shall be filed in the office of the government unit awarding the contract.

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: That we (1) _____

_____ a (2) _____

hereinafter called "Principal" and (3) _____

of _____, State of _____

hereinafter called the "Surety", are held and firmly bound unto (4) _____

_____ of

_____ hereinafter called "Owner", in the penal sum of

_____ Dollars

(\$ _____) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THE OBLIGATION is such that Whereas, the Principal entered into a certain contract with the Owner, dated the _____ day of _____, 20____, a copy of which is hereto attached and made a part hereof for the construction of:

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertaking, covenants, terms, conditions and agreements of said contract in accordance with the plans, specifications and terms thereof during the original term thereof, and any extensions thereof which may be granted by the Owner, with or without notice to the Surety, and if he shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the Owner from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the Owner all outlay and expense which the Owner may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED FURTHER, that the said Surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder or the specifications accompanying the same shall in any wise affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the work or to the specifications.

PROVIDED, FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in _____ counterparts, each one of which shall be deemed an original, this the ____ day of _____, 20____.

Principal

ATTEST:

(Principal) Secretary
(SEAL)

(Address)

Witness as to Principal

(Address)

Surety

ATTEST:

(Surety) (Secretary)
(Attorney-in-Fact)
(SEAL)

BY _____
Attorney-in-Fact

Witness as to Surety

(Address)

(Address)

NOTE: Date of Bond must be prior to date of Contract.

- (1) Correct name of Contractor
- (2) A Corporation, a Partnership, or an Individual, as case may be
- (3) Correct name of Surety
- (4) Correct name of Owner (City of Wyandotte, a Michigan Municipal Corporation OR Wyandotte Building Authority, a Public Corporation)
- (5) If Contractor is Partnership, all partners should execute bond

NOTE: Bond shall be executed by a surety company authorized to do business in the State of Michigan. Bond shall be filed in the office of the government unit awarding the contract.

GENERAL CONDITIONS

SECTION 1.01 DEFINITION OF TERMS

1.01.01 Abbreviations

Whenever the following abbreviations are used in these specifications or on the plans, they are to be construed the same as the respective expressions represented:

AAN	American Association of Nurserymen, Inc.
AASHTO	American Association of State Highway and Transportation Officials.
ACI	American Concrete Institute.
AGC	Associated General Contractors of America, Inc.
ANSI	American National Standards Institute.
ASME	American Society of Mechanical Engineers.
ASTM	American Society for Testing Materials.
AWS	American Welding Society.
AWWA	American Water Works Association.
CRSI	Concrete Reinforcing Steel Institute.
FS	Federal Specifications.
MDOT	Michigan Department of Transportation.
MiOSHA	Michigan Occupational Safety and Health Administration.
MMUTCD	Michigan Manual of Uniform Traffic Control Devices (Current Edition).
NCPI	National Clay Pipe Institute.
NEMA	National Electrical Manufacturers Association.
OSHA	Occupational Safety and Health Administration.
PCI	Prestressed Concrete Institute.
SAE	Society of Automotive Engineers.
SSPC	Steel Structures Painting Council.

1.01.02 Definitions

Contract and Included Documents: The written agreement covering performance of the work, as provided in the specifications. The Contract shall include the proposal performance bond, payment bond, all general conditions or special provisions pertaining to the work or materials therefore, all supplemental agreements entered into, all general and detail plans, and shall be in force until the work is completed or the Contract terminated, it being mutually understood and agreed that when taken together the plans and specifications shall be cooperative and shall describe and provide for a complete piece of work. In the event that any provision to this agreement is deemed invalid, the remainder of this agreement shall not be affected thereby.

City: The City of Wyandotte, Michigan, or its authorized representatives as the party of the first part of this contract.

Contractor: The individual, partnership, or corporation or a combination of any or all jointly, undertaking the execution of the work under the terms of the contract and acting directly or through agents or employees, as the party of the second part of this contract.

Engineer: The City Engineer of the City of Wyandotte, Michigan.

Inspector: A designated representative of the Engineer assigned to make any or all necessary inspections of the work performed and materials furnished by the Contractor.

Plans: Approved drawings or reproductions of drawings pertaining to the construction or details of the work included in the contract and forming a part thereof.

Special Provisions: The specific clauses setting forth conditions or requirements peculiar to the project under consideration, covering work and materials involved in the proposal. An addendum is a special provision.

Specifications: The General Conditions, Special Provisions, and all written or printed instructions pertaining to the method and manner of performing the work, or to the quantities, or the qualities of the materials to be furnished under the contract.

Subcontract: An agreement between the Contractor and any party or parties to execute a part of the contract work.

Subcontractor: The individual, partnership, or corporation who, by terms of an agreement with the Contractor, undertakes the execution of any part of the work.

Work: The term “work” shall mean all labor, materials, equipment, transportation, or other facilities necessary to be performed or furnished, by or on the part of the Contractor, to complete the contract.

Working Day: Any day when, as determined by the Engineer, it is possible for the Contractor to effectively carry out work on the controlling operation.

Wyandotte Based Business: A business that has its offices or business, or substantial portion of its equipment physically located in the City of Wyandotte and which pays real property taxes and/or personal property taxes in the City of Wyandotte.

SECTION 1.02 PROPOSAL REQUIREMENTS AND CONDITIONS

1.02.01 Preparation of Proposal

The proposal shall be legibly prepared, with ink, printed or typewritten, on the form provided by the City. All blank spaces in the proposal forms must be correctly filled in where indicated for each and every item for which a quantity is given.

Where a lump sum bid is called for, it shall be entered only in the "Amounts" column of the itemized bid sheet. If a unit price or a lump sum bid already entered by the bidder on the proposal form is to be altered, it shall be crossed out with ink and the new unit price or lump sum bid entered above or below it and initialed by the Bidder with ink. The proposals received will be compared on the basis of the summation of the lump sum amounts bid, and the products of the quantities of items listed at the unit prices bid. In case of discrepancy between the total shown in the proposal and the unit prices, the unit prices as stated in the proposal shall govern; and any errors found in said products, and in the addition, will be corrected.

The proposal must be properly signed in ink and the address of the Bidder given.

1.02.02 Estimated Quantities

The quantities of the various classes of work to be done and materials to be furnished under this contract, which have been estimated as stated elsewhere herein, are approximate and only for the purpose of comparing, on a uniform basis, the bids offered for the work under this contract, and neither the party of the first part, or its agents, is to be held responsible should any of the said estimated quantities be found incorrect during the construction of the work, and the Contractor shall make no claim for anticipated profit, nor for loss of profit because of a difference between the quantities of the various classes or work actually done or materials delivered, and the estimated quantities as herein stated.

1.02.03 Examination of Plans, Specifications and Site of Work

Bidders shall carefully examine the proposal forms, plans and specifications and shall inspect the site of the proposed work in order to satisfy themselves, by examination, as to all local conditions affecting the contract and as to the detailed construction requirements. The submission of a bid shall be considered prima facie evidence that the Bidder has made such examination and is satisfied as to the conditions to be encountered in performing the work and as to the requirements of the plans, specifications, general conditions, special conditions, and contract.

Where data respecting existing conditions is provided or mentioned in the Contract Documents, such data is provided for the convenience of the Bidder and not as a guarantee of conditions. The Bidder shall satisfy himself as to the sufficiency and correctness of such data, and shall make all investigations necessary so that his bid shall be based upon his own knowledge and estimation of conditions to be met.

The location of all public or private utilities as shown on the plans is taken from the best available data. The City of Wyandotte will not be responsible for any omissions or for variations from the locations shown. The Contractor shall contact all utility owners regarding the location

of their facilities, including service connections, prior to starting the work. Utility service connections are not shown on the plans and are not the responsibility of the City. Any damage to utilities caused by the Contractors operations shall be the sole responsibility of the Contractor.

The Contractor shall make his own determination as to soil conditions and shall assume all risk and responsibility with respect thereto and shall complete the work in whatever manner and under whatever conditions he may encounter or create, without extra cost to the Owner.

1.02.04 Laws and Regulations

The Contractor shall keep himself duly informed of all laws and municipal ordinances and regulations in any manner affecting those engaged or employed in the work, or the materials used in the work, and all orders and decrees of bodies or tribunals having any jurisdiction or authority over the same. He shall at all times himself observe and comply with all such existing and future laws, ordinances, regulations, orders and decrees, and shall protect and indemnify the party of the first part and its officers and agents against any claim or liability arising from or based on the violations of any such law, ordinance, regulation, order or decree, whether by himself or his employee.

1.02.05 Rejection of Proposals

Proposals may be rejected if they show any alterations (except as provided for in Section 1.02.01), additions or conditions not called for, conditional or alternate bids unless called for, or incomplete bids. Proposals in which the unit prices are obviously unbalanced may also be rejected.

SECTION 1.03 AWARD AND EXECUTION OF THE CONTRACT

1.03.01 Consideration of Proposals

The City reserves the right to reject any and all bids, the right to waive any formal defect or technicality in any proposal, and any determination of the lowest responsible bidder is based solely upon the City's exercise of its discretion when it is deemed to be for the best interests of the City.

The opening and reading of the proposal shall not be construed as an acceptance of the Bidder as a responsible Bidder. The City reserves the right to determine the responsibility of the Bidder from its knowledge of the Bidders qualifications or from other sources.

1.03.01a Equalization Factor

Any Wyandotte based firm shall be deemed a better bid than the bid of any competing firm which is not Wyandotte based, whenever the bid of such competing firm shall be equal to or higher than the bid of the Wyandotte based firm after the appropriate equalization percentage credit has been applied to the bid of the Wyandotte based firm. The equalization percentage credit shall be that percentage or credit which the competing firm has applied for similar or equivalent bids in the city where such competing firm is located. If the competing firm has no equalization percentage credit applied to bids in the city they are located, then no credit shall be applied to the Wyandotte based bid.

1.03.01b Determining the Lowest Responsible Bidder

When sealed bids are received by the City for purchases, supplies and construction contracts, the following shall apply:

- (a) The person or business submitting the lowest responsible bid shall be deemed the lowest bidder. If, however, the lowest bidder is not a Wyandotte-based business, any Wyandotte-based business with a bid within a specified percentage (two (2%) percent) of the lowest bid that has been deemed responsive and responsible by the City may be deemed the lowest bidder if it agrees to reduce its bid to match the bid of the lowest bidder within five (5) days of request by the City. (Except for bids under Paragraph 89 of Charter)
- (b) If a Wyandotte-based business refuses to reduce its bid to match the lowest bid, then the next lowest responsible Wyandotte-based business with a bid within the established percentage of the lowest bid shall be given the opportunity to reduce its bid to match the bid of the lowest bidder. If the Wyandotte-based bidder agrees to reduce its bid to match the bid of the lowest non-Wyandotte bidder, it may be deemed the lowest bidder and awarded the contract.
- (c) If no responsive and responsible Wyandotte-based business within the established percentage of the lowest bid agrees to reduce its bid to that of the lowest bidder, then the contract shall be awarded to the person or business with the lowest responsible bid.

(d) Except for construction contracts, no contract awarded pursuant to this Section shall be sublet in any manner that permits any of the contract to be performed by a subcontractor or subcontractors who do not meet the definition of Wyandotte-based.

(e) Before any Wyandotte-based business awarded a contract pursuant to this Section, it shall agree to make available to the City all records necessary to establish its eligibility and compliance with all City, State and local laws, including verification that said business is current in payment of all taxes and obligations due to the City and is in compliance with all Code requirements of the City and is not in violation of any City Ordinance, County ordinance and State law.

(f) This Section is designed to advance the best interest of the City of Wyandotte in its sole discretion and is not intended to provide any unsuccessful bidder with a basis for commencing litigation against the City to seek award of a contract by judicial action. The City of Wyandotte reserves the right to reject any and all bids and the right in its sole discretion to determine if a Wyandotte-based business is eligible to match the low bid.

(g) The criteria for awarding bids shall be as follows:

1. Previous work performance;
2. Reliability, skill, qualifications and integrity of bidder;
3. Bid price;
4. Cleanliness;
5. Sufficiency of equipment, fitness and responsibility or capacity to perform the work or furnish the supplies at the bid price;
6. Insurance and licenses when required by law in a form and amount satisfactory to the City;
7. References and experience of the bidder;
8. Good communication and compliance with bid requirements set forth in the specifications;
9. Wyandotte-Based Business;
10. Any other criteria of the City, in its sole discretion, feels is necessary for the particular bid.

1.03.02 Competency of the Bidder

If requested by the City, the low Bidder, in order to determine whether he is a responsible Bidder, shall be required to furnish to the City the following information sworn to under oath by him or by a proper authorized representative of the Bidder.

- a. The address of the Bidders place of business.
- b. Articles of co-partnership or incorporation or license to do business under an assumed name.

- c. Itemized list of equipment available for use on the project.
- d. A list of supervisory personnel.
- e. A certified or authorized financial statement, dated within sixty days prior to the opening of bids. The City may require that any of such statements be further verified.
- f. A list of present contracts including dollar value, percentage of completion and Owners involved.
- g. A list of recent projects including dollar value and Owners involved.
- h. Such additional information as may be required that will satisfy the City that the Bidder is adequately prepared, in technical experience, or otherwise to fulfill the Contract. The Contractor shall provide the requested information to the City within fourteen days of receipt of such written request.

1.03.03 Disqualification of Bidders

Any one or more of the following causes may be considered sufficient for the disqualification of a bidder and the rejection of his bid or bids:

- a. Evidence of collusion among Bidders.
- b. Lack of competency as revealed by either financial, experience, or plant equipment statements submitted.
- c. Lack of responsibility as shown by past work, judged from the standpoint of workmanship and progress.
- d. Uncompleted work under other contracts which, in the judgment of the City, might hinder or prevent the prompt completion of additional work if awarded.

1.03.04 Award of Contract

The Contract will be awarded, or all bids rejected, by the City within thirty (30) days after the opening of proposals unless otherwise provided. The notice of the award will be mailed to the address given by the Bidder on his proposal.

1.03.05 Execution of the Contract

The Contract and bond forms will be furnished by the City. The Contract must be executed by the successful Bidder and, together with satisfactory bonds, evidence of insurance and endorsement as required, be delivered to the City within twenty (20) days of the date of award.

1.03.06 Bonds Required

The successful Bidder shall furnish satisfactory performance and payment bonds executed by a surety acceptable to the City which is licensed to do business in the State of Michigan, upon forms furnished by the City, each in the amount of the following:

- a. Performance Bond with limits of amount of contract amount.
- b. Labor and material bond with limits of amount of contract amount.

1.03.07 Insurance Requirements

During the term of this contract, contractors shall maintain insurance in the kinds and in the amounts specified below with insurers of recognized responsibility, licensed to do business in the state (where the work is being performed) and having either an AM Best rating of “A X”, Standard & Poore’s Rating of “AA”, or Moody’s rating of “Aa2”. If any work provided for or to be performed under this agreement is subcontracted, contractor shall require the consultants or subcontractor(s) to maintain and furnish the contractor with insurance equivalent to that which is required of the contractor.

In accordance with the above, the following insurance coverages and limits shall be maintained by the contractor at all times during the term of this contract, and for a minimum of 5 years after completion of the project. Such insurance will protect contractor, the owner, the engineer and the City of Wyandotte from claims demands and law suits arising out of the work described in this contract and performed by the contractor and/or subcontractor(s). The following coverages and limits are minimum requirements, but nothing contained in these insurance requirements is to be construed as limiting the extent of the contractor’s responsibility for payment of damages resulting from their operations under this contract. The contractor shall advise all insurance companies to familiarize themselves with the conditions and provisions of this contract.

Comprehensive Commercial General Liability Insurance:

General Aggregate:	\$2,000,000
Products – Completed Operations Aggregate:	\$2,000,000
Personal Injury & Advertising Injury - Each Occurrence:	\$1,000,000
Each Occurrence:	\$1,000,000
Fire Damage – (Any one fire):	\$50,000
Medical Expense - (Any one person):	\$5,000

Automobile Liability Insurance Coverage

*Coverage is for all Owned, Leased, Hired and/or Non-Owned Motor Vehicles.

- 1. Bodily Injury and Property Damage with a
Minimum Combined Single Limit: \$1,000,000
- 2. All Statutory No-Fault Coverages

Umbrella Insurance Coverage with the following minimum limits:

Each occurrence:	\$5,000,000
Aggregate:	\$5,000,000

Workers Compensation Coverage: Statutory Limit

Employers Liability Coverage:

Each Accident:	\$1,000,000
Disease: Policy Limit:	\$1,000,000
Disease: Each Employee:	\$1,000,000

Workers Compensation & Employers Liability Coverage to protect all employees of contractor, the managing agent, any other contractors or subcontractors, agents, servants, or invitees of contractor.

Employee Benefit Liability Coverage with a minimum policy limit of \$1,000,000.

Contractor shall maintenance at all times during the term of this agreement all-risk property insurance in a minimum amount equal to the replacement cost of any and all equipment owned, leased or borrowed while in Contractor's or subcontractor's care, custody or control including while in transport at the direction of Contractor or subcontractor.

Contractor shall also maintain at all times, in accordance with the provision of this agreement, an all- risk builders' risk policy, including boiler and machinery including miscellaneous electrical apparatus (mea), covering all materials, equipment, machinery and supplies of any nature whatsoever, to be used in, or incidental to, the fabrication, erection, reconstruction, and completion of the project in an amount not less than 100% of the cost of the project. **(NOT IN CONTRACT)**

All insurance policies and certificates must include an endorsement providing thirty (30) days prior written notice to the City of Wyandotte of cancellation or reduction of coverage. The Contractor shall cease all operations on the occurrence of any such cancellation or reduction and shall not resume any operations until new insurance is in force.

A certificate of said insurance covering Workman's Compensation and Employer's Liability Insurance, Bodily Injury Liability and Property Damage Liability other than Automobile, and Bodily Injury Liability, Automobile and Property Damage Liability Automobile, showing thereon the policy number, policy, the aforesaid thirty (30) days notice provisions and the limits of liability are to be presented by the Contractor to the City of Wyandotte prior to the signing of this contract and it shall become a part thereof. All insurance certificates shall specifically name the City of Wyandotte, its officers, officials, employees, volunteers and others, as an additional insured party.

Environmental Impairment Liability: **(NOT IN CONTRACT)**

For agreements involving any work of any environmental nature such as waste disposal, battery recycling, asbestos abatement, lead, etc.

An environmental Impairment Liability policy with a per project limit of \$5,000,000 shall be maintained during the term of this agreement and for a period of three years after the work has been performed.

Professional Liability Insurance: **(NOT IN CONTRACT)**

Professional liability insurance covering the effects of errors and omissions in the performance of professional duties with a minimum limit of \$1,000,000 each claim and aggregate (if applicable), associated with work performed under this agreement.

Contractor's insurance shall be considered primary and not excess or contributing with any other applicable insurance. **ANY DEVIATIONS FROM THIS LANGUAGE SHOULD BE DISCUSSED WITH RISK MANAGEMENT AND OFFICE OF GENERAL COUNSEL OR ENVIRONMENTAL HEALTH AND SAFETY GROUP.**

Contractor and all subcontractors shall comply with the terms of the Occupational Safety and Health Administration (OSHA) and all locations' and jurisdictions' safety and health regulations during the full term of this agreement.

Insurance - Other Requirements

Damage Claims - Acknowledgment and Reports: The Contractor shall furnish to the Owner an acknowledgment receipt from the Insurance Carrier for each damage claim against the project. The receipt shall include the Insurance Carrier's assigned claim number.

Upon request, the Contractor or his Insurance Carrier shall also furnish to the Owner a status report on all damage claims. This report shall include inspections made, the disposition of claims, and what action has been taken towards settlement of each claim.

Failure of the Contractor to comply with this section of the specifications may result in the amount of such damage claims being withheld from the Contractor's estimate. Such withholding shall be reimbursed in the monthly estimate following compliance.

1.03.08 Indemnification

The Contractor shall indemnify, hold harmless and defend the City of Wyandotte and Wayne County, its agents, employees, elected officers, against any and all claims, expenses (including attorney's fees) demands, payments, suits, actions, recoveries, and judgments of every name and description, brought or recovered against them or either or any of them for or on account of loss of life, any personal injury, or damages to property received or sustained by any person or persons whomsoever by reason of any act or omission of the said Contractor, his agents,

servants, or subcontractors in the performance of said work, or by or in consequence of any negligence or carelessness in connection with the same or on account of the death of or injuries to persons who shall be engaged in or about the work to be performed under the Contract; and on account of liability or obligation imposed directly or indirectly upon the City of Wyandotte by reason of any law of the State of Michigan or the United States, now existing or which shall hereafter be enacted imposing any liability or obligation, or providing for compensation to any person or persons on account of or arising from the date hereof, for injuries to employees or others. Said Contractor shall pay, settle, compromise, and procure the discharge of any and all such claims and all such losses, damages, expenses, liabilities, and obligations, and shall defend at his own cost and expense any and all claims, demands, suits, and actions made or brought against the City of Wyandotte for or upon any such claim. In case the said Contractor shall fail, neglect, or refuse to comply with any of the provisions of this paragraph, said City of Wyandotte may, in order to protect itself from liability, defend any such claim, demand, suits, or action and pay, settle, compromise, and procure the discharge thereof, in which case the said Contractor shall repay to the City of Wyandotte any and all such loss, damage, and expense, including attorney's fees paid, suffered, or incurred by said City of Wyandotte in so doing.

So much of the monies due, or to become due, to said Contractor under this agreement as shall be deemed necessary by the Engineer shall or may be retained by the City until every and all such claims, demands, suits, actions, recoveries, judgments, liabilities, and obligations have been settled and discharged and evidence to that effect furnished to said City of Wyandotte, or said City may collect the same in whole or in part in any other lawful manner from said Contractor.

Contractor shall defend, hold harmless and indemnify City of Wyandotte against any and all claims, expense (including attorney's fees), loss or liability for injury to or death of any persons (including employees or agents), and loss of or damage to any property (including property owned, leased or borrowed by City of Wyandotte) incurred during the performance of work associated with and under this agreement, unless any of the above stated claims, expenses, loss, liability or obligation is caused solely by the negligence of the City of Wyandotte.

1.03.08a Waiver of Subrogation

The Contractor shall waive any rights of subrogation for personal injury or property damage against the City of Wyandotte and Wayne County, its employees and agents, arising from this contract.

In the event of any payment by any insurer of the Contractor under any policy of insurance, the insurer of the Contractor shall not be subrogated to any of the Contractor's rights of recovery therefore against the City of Wyandotte, its employees and agents; and the Contractor shall neither execute nor deliver instruments and papers nor do anything whatever to secure any such rights for the insurer of the Contractor. The Contractor shall do nothing after loss to secure such rights for the benefit of the insurer against the City of Wyandotte, its employees and agents. The Contractor waives any and all rights of recovery against the City of Wyandotte, its employees and agents for insured losses occurring to any property insured by the Contractor arising from this Contract. The City of Wyandotte shall not, under any circumstances, be liable to the Contractor or any person for any personal injury or property damage occasioned by any defect or malfunction of equipment or property, or from the escape of steam or water, or for any damage

or injury occasioned by water or ice being on the premises or work site or coming from any source. The Contractor shall be solely responsible for providing all services and products arising from this Contract in a safe and proper fashion. Contractor agrees to obtain any endorsement that may be necessary to affect this waiver of subrogation, but this provision applies regardless of whether or not the City or County has received a waiver of subrogation endorsement from the insurer.

The Contractor will be solely and completely responsible for conditions of the job site, including safety of all persons and property during the performance of the work. This requirement will apply continuously and not be limited to normal working hours.

The Contractor shall furnish such watchmen, guards, fences, warning signs, lights and walkways, and shall take all other precautions as shall be necessary to prevent damage to persons or property. All structures and improvements in the vicinity of the work shall be protected by the Contractor, and if such property is damaged, injured or destroyed by the Contractor, his employees, subcontractors, or agents, it shall be restored to a condition as good as when he entered upon the work.

If the Contractor shall fail to reasonably protect the work and persons against damage, the Engineer may provide for such protection and the costs of the same shall be charged against the Contractor and deducted from the payments due him for completed work. The mention of any specific duty or liability of the Contractor in any part of the specifications shall not be construed as a limitation or restriction upon any general liability or duty imposed upon the Contractor by the specifications.

The safety provisions of applicable laws, including but not limited to building and construction codes, shall be observed. Machinery, equipment, and all hazards shall be guarded (or hazards eliminated).

The duty of the Engineer to conduct construction inspections of the Contractor's performance is not intended to include review of the adequacy of the Contractor's safety measures in, on or near the construction site or sites.

1.03.09 Contract Extension

The City of Wyandotte reserves the right to extend all provisions of this contract, including, but not limited to, the accepted unit rates as bid, to perform similar work in other areas according to these specifications for an additional period of two (2) consecutive years. This Contract extension will only be authorized when initiated by the City, approved by the Wyandotte City Council and agreed to by the Contractor. At the time of the agreement, the Contractor shall furnish updated insurance documents and bonds.

1.03.10 Subcontracting of Contract Work

The Contractor shall not subcontract any portion of the contract or of the work provided therein, except the furnishing of necessary materials, without the written consent of the City of

Wyandotte through its Engineer. Such consent shall not in any way relieve the Contractor of full responsibility for the performance of the Contract. The Contractor shall not sell, transfer or assign any portion of the Contract without the written consent of the City and the Surety.

Approval of the subcontracting of any portion of the work will not be given unless and until it is determined that the Subcontractor is qualified to perform work of the type, magnitude, and scope proposed. The City reserves the right to require Subcontractors to provide information in accordance with Section 1.03.02. The Subcontractor shall not begin work until he has been approved by the Engineer and has had his subcontract with the Prime Contractor executed in a form acceptable to the City.

If the amount of the subcontract or the nature of the work to be performed there under warrants, the City may require the Subcontractor to furnish, for the benefit of the Contractor, bonds in an amount proportioned to the amount of his subcontract, and for the same purpose and under the same specifications as those of the General Contract. The Surety on the General Contract shall not be eligible to furnish subcontract bonds.

The City of Wyandotte reserves the right to remove forthwith from the job any Subcontractor or his equipment operating in violation of these requirements, and any costs or damages thereby incurred are assumed by the Contractor. It is further understood that the Contractor's responsibilities in the performance of his Contract, in case of an approved subcontracting, are the same as if he had handled the work directly.

Assignment or subletting the whole or any portion of this contract shall not operate to release the Contractor or his bondsmen hereunder from any of the contract obligations.

1.03.11 Failure to Execute Contract

If the successful Bidder fails to deliver an executed contract or to fulfill any of the other requirements relating to the award of a contract, as herein specified, it shall be deemed just cause for the annulment of the award. In the event of such annulment of the award, the amount of the proposal guaranty shall become the property of the City of Wyandotte, not as penalty but as liquidated damages. The award may then be made to the next best qualified Bidder, or the work re- advertised or processed as the City may elect.

SECTION 1.04 SCOPE OF THE WORK

1.04.01 Intent of the Plans, Specifications and Contract

The intent of the plans, specifications and contract is to provide for the completion of the work in substantial compliance with the details as shown thereon and as described herein. The Contractor shall furnish all labor, materials, equipment, tools, transportation and necessary supplies, unless otherwise mentioned and shall perform all operations required to complete the work in accordance with the specifications and plans; but in no case will any work in excess of such requirements be paid for unless otherwise ordered in writing by the Engineer.

1.04.02 Increased or Decreased Quantities

The Engineer reserves and shall have the right under the Contract to make such changes, from time to time, in the plans and in the quantities of the work, as may be necessary or desirable to insure the completion of the work in the most satisfactory manner in accordance with the specifications.

All items of work will be paid for at the contract unit price for the quantity required to complete the work regardless of any increased or decreased quantities.

1.04.03 Physical Conditions

If this Contract exceeds \$75,000.00, and when different or unknown physical conditions are found at the work site, the following shall apply:

- a. If the Contractor discovers one or both of the following physical conditions of the surface or subsurface at the improvement site, before disturbing the physical condition, the Contractor shall promptly notify the City Engineer or his representative of the physical condition in writing.
 - i. A subsurface or a latent physical condition at the site is differing materially from those indicated in this Contract.
 - ii. An unknown physical condition at the site is of an unusual nature differing materially from those ordinarily encountered and generally recognized as inhering in work of the character provided for in this Contract.
- b. If the City Engineer or his representative receives a written notice under subdivision a. above, the City Engineer or his representative shall promptly investigate the physical condition.
- c. If the City Engineer or his representative determines that the physical conditions do materially differ and will cause an increase or decrease in costs or additional time needed to perform the Contract, the City Engineer's or his representative's determination shall be made in writing and equitable adjustment shall be made and the Contract modified in writing accordingly.
- d. The Contractor cannot make a claim for additional costs or time because of a physical condition unless the Contractor has complied with the notice requirements of subdivision a. The City Engineer or his representative may extend the time required for notice under subdivision a.
- e. The Contractor cannot make a claim for an adjustment under the Contract after the

Contractor has received the final payment under the Contract.

1.04.04 Extra Work

Should the Engineer deem additional work or material changes in design or construction necessary for the good of the work, he shall order the same in writing, and the difference in cost shall be added to or deducted from the contract price upon the basis of the unit prices bid or stipulated for such work, or in case no sum has been stipulated, upon the basis of fair allowance for the cost of the labor and material at market prices plus five percent (5%) profit, the rates of labor and the value of material being agreed upon in advance, but no allowance shall be made or money paid for the use of the Contractor's tools and plant used in executing such work.

On or before the 20th of each month, the Contractor shall submit to the Engineer all bills or claims for extra work done during the preceding month, failing in which, it is mutually understood and agreed that the Contractor shall waive and forfeit all rights and claims to extra compensations for same. The Contractor shall give written notice to the Engineer before commencing work which he considers extra, whether he shall have received written orders for the same or not; failing such notification he shall waive and forfeit all rights and claims to extra compensation for same.

1.04.05 Additional Work Outside of Designated Areas

The Engineer reserves and shall have the right under this Contract to specify areas of work within the City which do not fall within the area designated as this years program. These additional areas of work will be selected and deemed for the good of the City to correct hazardous conditions, trip and fall situations, complaints, and to perform any special work requested by other City of Wyandotte Departments. This work shall be paid for as specified above in Section 1.04.04 Extra Work.

1.04.06 Alterations

No extra charge shall be made for adjustments or alterations usually occurring in construction; and failure to understand the true intent of specifications and plans for any particular cause whatsoever, including possible errors or omissions, will not relieve the Contractor from obligations to perform a complete and perfect piece of work.

To facilitate his work, the Contractor will be permitted, at his own expense, to make such additions or alterations as the City Engineer may approve in writing.

1.04.07 Use of Materials Found on the Work

The Contractor, with the approval of the Engineer, may use on the project such stone, gravel, sand or other native material which satisfies the contract specifications for its intended use. The Contractor shall not excavate or remove material from within the right-of-way which is not within the earth excavation grading limits or cut sections or grade lines.

1.04.08 Removal and Disposal of Structures and Obstructions

The Contractor shall remove any existing structure or part of a structure which is to be replaced or rendered useless by new construction. Salvage material derived therefrom shall become the

property of the Contractor and shall be disposed of by him except as otherwise provided in the specifications or the plans. Payment for this work will be made under the pay items identified for such work in the Proposal. The removal and disposal of structures and obstructions shown on the plans to be removed and not covered by a separate pay item in the Proposal shall be performed by the Contractor at his own expense and shall be included in other items of work.

1.04.09 Final Cleaning Up

Upon completion and before final acceptance the Contractor shall perform the final cleaning up as specified.

SECTION 1.05 CONTROL OF THE WORK

1.05.01 Authority - General

No agents of the party of the first part shall have power to revoke, alter, enlarge or relax the stipulations or requirements of these specifications, except insofar as such authority may be specifically conferred by the specifications themselves, without the formal authorization to do so, conferred by the contract of which the specifications are a part, or by ordinance, resolutions or other usual official action by the party of the first part.

1.05.02 Authority of the Engineer

The Engineer shall in all cases decide every question of an engineering nature which may arise relating to the quality and acceptability of materials furnished and work performed, the manner of performance and the rate of progress of the work. He shall also decide all questions which may arise as to the interpretation of the plans and specifications, and any questions involving coordination of various aspects of the work.

The administration, inspection, assistance and actions by the Engineer shall not be construed as supervisory control of the work or of means and methods employed by the Contractor and shall not relieve the Contractor from any of his responsibilities or obligations under the Contract. The Contractor shall not request or require the Engineer to undertake such supervisory control or to administrate, to supervise, to inspect, to assist, or to act in any manner so as to relieve the Contractor of his responsibilities or obligations. The presence of the Engineer on the project shall in no way relieve the Contractor of his obligation to conform to the Local, State and Federal regulations which govern safety requirements on the project.

1.05.03 Agents

The work shall be carried on under the personal supervision of the Contractor or his property authorized representative, who shall be on the ground at all times during the construction and who shall have full responsibility of the work with power to receive orders and carry out instructions.

1.05.04 Deviation from Plans or Specifications

No person except the Engineer shall have authority to revoke, alter, enlarge, or change any provisions of these specifications or the plans for the work, and if the Contractor deviates from them in any particular without written authorization from the Engineer, he does so at his own risk; and such work and payment therefore may not be approved. The inspector may make such field changes as deemed necessary to facilitate the work.

1.05.05 Cooperation of the Contractor

The Contractor shall conduct his operations so as to interfere as little as possible with those of other Contractors, utilities or any public authority on or near the work as shown on the plans or in the Proposal. The City additionally reserves the right to perform other non-specified work by contract or otherwise, and to permit public utility companies and others to do work on or near the project during progress of the work. The Contractor shall conduct his work and cooperate with

such other parties so as to cause as little interference as possible with their operations and as the Engineer may direct. No additional compensation will be paid to the Contractor for any delay or inconvenience due to material shortages, or delays due to the operation of such other parties doing the work indicated or shown on the plans or in the Proposal, or for any delays on construction due to the encountering of existing utilities whether or not shown on the plans.

1.05.06 Locating Work

Principal location points and Bench Marks shall be given by the Engineer at such time as he may deem necessary, or if the Contractor shall be in need of the Engineer's services in such work, he shall notify the Engineer 24 hours in advance.

No claims will be honored for delay of the job for lack of line and grade if the Contractor has not given the Engineer 24 hours notice prior to the need for such line and grade.

The Contractor shall adequately protect and maintain all stakes and marks given by the Engineer and locate all work accurately therewith. If the Contractor through willfulness or carelessness removes or causes the removal of said stakes or marks before the prosecution of the work requires it, they will be replaced at the Engineer's earliest convenience, and the cost of replacing of same shall be at the expense of the Contractor.

The Engineer shall have access to the work at all times, and the Contractor shall cooperate with him and furnish such assistance as may be required in order to facilitate the laying out of the work and establishing lines and grades.

1.05.07 Authority and Duties of Inspectors

Inspectors may be appointed and directed to inspect all materials used and all work done. The inspection may extend to all or any part of the work and to the preparation or manufacture of the materials for use in the work. The Inspector on the work will inform the Engineer as to the progress of the work, the manner in which it is being done, and the quality of the materials being used. He will also call to the attention of the Contractor any failure to follow the plans and specifications that he may observe.

He shall have the authority to prevent the use of any material and to stop any work being done which does not conform to the specifications and the plans until the question at issue can be referred to and be decided by the Engineer. In no instance shall any action or omission on the part of the Inspector relieve the Contractor of the responsibility of completing the work in accordance with the plans and specifications.

The Inspector shall in no case act as foreman or perform any duties for the Contractor, nor interfere with the management of the work by the latter. Any advice the Inspector may give the Contractor shall not be construed as binding on the Engineer in any way, except as provided in this Section, nor shall it release the Contractor from fulfilling all the terms of the Contract.

1.05.08 Inspection of the Work

The Engineer or his representatives shall be allowed access to all parts of the work at all times and shall be furnished such information and assistance by the Contractor as may be required to make a complete and detailed inspection. Such inspection may include mill, plant or shop inspection of materials and workmanship.

1.05.09 Removal of Defective and Unauthorized Work

Work done beyond the lines shown on the plans or given, or work done without grades where required, or work done without inspection, except as herein provided, or any extra work done without written authorization will not be paid for under the provisions of the Contract. Work so done may be ordered removed or replaced at the Contractor's expense. The Engineer has the right to have removed by the Contractor such portions of the work as he may deem necessary for the discovery of improper work or material, and the Contractor must restore such work at his own expense if improperly done and at the expense of the party of the first part if found to be in proper condition. Any work which during its progress and before its final acceptance may become damaged from any cause, shall be removed and replaced by good satisfactory work at the Contractor's expense.

The Engineer shall have the right to suspend work upon discovery that any part or parts is being done not in accordance with specifications and he shall not order work resumed until materials furnished or methods used or both, as the case may be, corrected to meet plans, specifications and interpretations of same by the Engineer.

No extension of time will be allowed for correction of faulty work.

If the Contractor refuses or neglects to correct any defective work or to remove unsatisfactory materials from the site of the work within 24 hours, unless otherwise directed, after written notice to do so has been given him by the Engineer, the City may employ the necessary labor to correct or to remove the defective work or unsatisfactory materials, and the total cost of the operation shall be deducted from any money that is due or may become due to the Contractor. The Engineer shall have the authority to plainly mark all unsatisfactory materials for removal after the 24 hour notice period has expired.

1.05.10 Contractor's Responsibility for Work

Should any error or inconsistency appear to the Contractor in either the plans or the specifications, or should the Contractor fail to understand the real intent of the specifications, he shall report same to the Engineer before starting the work concerned, and the decision of the Engineer shall be final and conclusive. The Engineer and the party of the first part shall not be held liable to errors made in lay-out work where said errors could have been detected before performing work by use of ordinary intelligent checking of marks by the Contractor or his responsible help.

Until the final acceptance of the work by the Engineer, the Contractor shall have the charge and care thereof and shall take every precaution against injury or damage to any part thereof by the action of the elements or from any other cause, whether arising from the execution or from the non-execution of the work. The Contractor shall rebuild, repair, restore, and make good all injuries or damage to any portion of the work occasioned by any of the above causes before final acceptance and shall bear the expense thereof.

1.05.11 Contractor's Responsibility for Trees and Shrubs

All trees and shrubs not designated or otherwise authorized to be removed shall be protected from injury by the Contractor. When excavating adjacent to trees or shrubs, the Contractor shall exercise due care and caution so as not to unnecessarily disturb or damage the roots. Roots that are exposed and injured during excavation shall be cut clean and smooth by approved methods prior to backfilling.

Other physical damage to the trunk or branches of trees or shrubs shall be repaired at the Contractor's expense by the City of Wyandotte Department of Public Service or an approved tree service organization under the direction of the City of Wyandotte Department of Public Service.

Trees or shrubs damaged beyond repair, or removed without authorization, shall be replaced in kind or paid for by the Contractor, as directed by the Engineer, prior to final acceptance of the project.

1.05.12 Cleanliness of the Work

The Contractor shall at all times keep the right-of-way and/or any public or private premises temporarily occupied by him for purposes of work under this Contract free from accumulations of waste material or rubbish caused by his employees or work. This requirement shall also apply to any areas in the vicinity of the work, including roads which are affected by the Contractor's construction or hauling operations.

Approved sweeping equipment shall be available to adequately clean, as often as necessary in the opinion of the Engineer, all areas which become a nuisance and a source of complaint due to the operations of the Contractor, Subcontractor, or materials suppliers to the project.

If the Contractor fails to keep the above noted areas cleaned of dust or debris resulting from his operations, and thereby creates a public nuisance, he shall be so notified in writing by the Engineer.

If, within 2 hours after receipt of such notice, the Contractor shall fail to clean such areas satisfactorily, the Engineer shall have the City of Wyandotte, Department of Public Services, or such other agency as he shall designate, perform the work; and all costs of such cleaning shall be paid for by the Contractor. If the Contractor fails to reimburse the City for the above costs before completion of the Contract, the costs shall be deducted from monies due or to become due to the Contractor.

1.05.13 Emergencies

The Contractor has a duty to be continually aware and responsible for any condition which could endanger the public or the work. If the Engineer discovers any such endangering condition or situation and is unable to contact the Contractor or if, after notification by the Engineer, the Contractor shall fail to respond immediately with sufficient action to protect life and health of the workmen or the public and to protect the work and adjoining public or private property, the Engineer shall have the City of Wyandotte, Department of Public Services, or such other agency as he shall designate, perform the work or correct the problem; and all costs of such correction

shall be paid by the Contractor. If the Contractor fails to reimburse the City for the above costs before completion of the Contract, the costs shall be deducted from monies due or to become due the Contractor.

1.05.14 Final Inspection

The Engineer shall make inspection of all work included in the Contract, or such portions thereof eligible for acceptance, as soon as possible after notification by the Contractor that the work is completed or after the Engineer's records show that the work is completed. If the work is not acceptable to the Engineer at the time of such inspection, he shall advise the Contractor in writing as to the particular defects to be remedied before final acceptance.

SECTION 1.06 CONTROL OF MATERIALS

1.06.01 Quality and Source of Supply

The Contractor shall furnish only good quality and new materials or fabricated items conforming to the requirements of the specifications and approved by the Engineer prior to use in the work. After award of the Contract, when requested by the Engineer, the Contractor shall furnish complete written statements of the origin, composition and manufacture of all materials or fabricated items required in the work. The Contractor will not be permitted to change the source of supply without giving the Engineer prior notification. The Contractor may be required to submit preliminary samples of materials intended for use.

If it is found that a source of supply does not furnish a uniform product, or if for any reason the product from any source at any time proves to be unsatisfactory, the Engineer may require the Contractor, fabricator or supplier to furnish acceptable material from other sources; and the Contractor shall have no claim for increased cost on account of such requirement.

Whenever and wherever possible, all materials, products or fabricated items used in the performance of this work shall be produced, manufactured, or assembled in the United States.

All manufactured and fabricated items shall be new unless otherwise specified or approved by the Engineer.

1.06.02 Samples of Materials

Samples upon which acceptance or rejection of the material is based shall be taken by a representative of the City in accordance with the methods designated in the specifications or as directed by the Engineer. The Contractor shall afford such facilities as the Engineer may require for collecting and forwarding samples and shall not use the materials represented by the sample until they have been found to satisfy the requirements of the specifications. The Contractor in all cases shall furnish the required samples without charge.

1.06.03 Tests of Materials

Tests of materials will be made by and at the expense of the City unless otherwise provided.

All materials proposed to be used may be inspected and tested at any time and at any place during their preparation, storage and use, unless otherwise specified. All tests of materials will be made in accordance with methods as described or designated in the specifications. Plant inspection may be made if the production is sufficient to warrant such inspection or is in the best interests of the City. Where plant inspection is made, the producer shall furnish and maintain a suitable Field Office for the use of the Inspector in making field tests.

Whenever reference is made to standards of ASTM, AASHTO, or other Standards as specified in Section 1.01.01, it shall be understood that the specification or method current at the date of advertisement for bids shall apply. Current ASTM specification methods shall be either Standard or Tentative Standard Specifications or Methods. Current AASHTO Specifications

shall mean Standard Specifications or Methods of Test but shall not include Interim Specifications or Methods unless specifically named.

1.06.04 Materials Not Mentioned

The sampling and testing of all materials not specifically mentioned shall be done by generally accepted methods, unless otherwise specified by the Engineer.

1.06.05 Storage of Materials

The Contractor shall consult with the Engineer before beginning the work as to available space within the right-of-way for temporary storage of materials, machinery, equipment and other property of the Contractor. Locations for storage shall be accepted by the Contractor as temporary; and the Contractor shall, at his own expense, promptly move any part or all of same, at any time or times, as directed by the Engineer. Private property shall not be used for storage purposes without written permission of the owner or lessee; and, if requested by the Engineer, copies of such shall be furnished to the Engineer.

Materials placed on the roadway shall be neatly and compactly piled in such manner as to cause the least inconvenience to property owners and the general public. No materials shall be stored within the right-of-way unless it is barricaded in accordance with the Michigan Manual of Uniform Traffic Control Devices.

Materials shall be stored so as to insure the preservation of their quality and fitness for the work.

1.06.06 Handling and Transporting Materials

All materials shall be handled in such manner as to preserve their quality and fitness for the work. Aggregates shall be transported from the storage site to the work in vehicles so constructed and maintained as to prevent loss or segregation of materials after loading or measuring.

1.06.07 Unacceptable Materials

All materials not conforming to the requirements of the specifications shall be considered as unacceptable and all such materials will be rejected and shall be removed immediately from the site of the work unless otherwise instructed by the Engineer.

1.06.08 Unused Material

All furnished materials which are not incorporated in the work upon completion of the work items, shall remain the property of the Contractor and shall be removed from the project prior to acceptance of the work.

1.06.09 Brands of Material and Equipment

Special brands of material or equipment specified or shown on the plans are named for the purpose of establishing a standard of quality or performance desired. Other materials or equipment of equal quality or suitability may be substituted on written approval of the Engineer.

SECTION 1.07 LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

1.07.01 Laws to be Observed

In all operations connected with the work, all Federal and State laws, local ordinances, and laws or by-laws controlling or limiting in any way the actions of those engaged on the work shall be strictly complied with by the Contractor and all employees working under his direction.

1.07.01a Commercial Drivers License (CDL)

The Contractor shall have the responsibility to comply with the U.S. Department of Transportation's regulations regarding alcohol and drug testing of all CDL drivers engaged in completing work under this contract. The Contractor shall not allow unlicensed CDL drivers to operate any equipment requiring a CDL. The City may require proof of compliance or will periodically check for compliance.

1.07.02 Permits, Licenses and Taxes

The Contractor shall secure and pay for all permits fees, licenses, and inspection costs. The Contractor shall give all notices necessary to the due and lawful prosecution of the work. Any inspection fees of other governmental agencies or utility companies and other expenses occasioned by the Contractor's work shall be paid by the Contractor and shall not be recoverable from the City. The Contractor shall pay sales, consumer, use and similar taxes for any work provided by the Contractor.

1.07.03 Patented Devices, Materials and Processes

If the Contractor uses any design, device, material or process covered by letters of patent or copyrighted, he shall provide for such use by suitable legal agreement with the patentee or patent owner. The Contractor and the Surety shall indemnify, hold harmless, and defend the City of Wyandotte for any and all claims for infringement by reason of the use of such patent, design, device, material or process, or trademark or copyright in connection with the work to be performed under this Contract, and shall indemnify the City of Wyandotte for any costs, expenses and damages which it may be obligated to pay by reason of such infringement at any time during the prosecution or after the completion of the work.

1.07.04 Sanitary Provisions

The Contractor shall provide and maintain in a neat and sanitary condition such accommodations for the use of his employees as may be necessary to comply with the requirements and regulations of the Federal, State and Local health authorities. All sanitary installations for use during construction shall be removed from the project by the Contractor before final acceptance of the work. The construction, maintenance, and removal of all temporary sanitary facilities shall be included in other items of work and will not be paid for separately.

1.07.05 Public Convenience and Safety

The Contractor shall comply with all Federal, State, Municipal and local laws, by-laws, ordinances, and regulations applicable to the work under this Contract, including OSHA and

MIOSHA. He shall furnish and use all material, safeguards, safety devices, and protective equipment as required by such laws, ordinances or regulations.

The Contractor shall also be responsible for taking any other needed actions to protect the life and health of the Contractor's and Owner's employees on the work and safety of the public, and to protect the work and adjoining utilities and property during the construction of the project. In order to freely prosecute the work the Contractor shall occupy only such parts of the public property along the line of the work as is reasonably needed. Regardless of its degree of proximity of the work, private property shall not be used by the Contractor except upon his obtaining express permission from the owners involved.

During the progress of the work, the Contractor shall accommodate both vehicular and foot traffic and shall provide free access to fire hydrants, water and gas valves. Gutters or waterways must be kept open or other provisions made for removal of storm water. Street intersections may be blocked but one-half at a time and the Contractor shall lay and maintain temporary driveways, bridges, and crossing, such as in the opinion of the Engineer are necessary to reasonably accommodate the public.

In the event of the Contractor's failure to comply with these provisions, the Engineer may cause the same to be done, and will deduct the cost of such work from any money due or to become due the Contractor under this contract, but the performance of such work by the party of the first part, or at its insistence, shall serve in no way to release the Contractor from his general or particular liability for the safety of the public or the work.

Control of Air Pollution: The Contractor shall comply with all Federal, State, and local laws and regulations governing the control of air pollution.

During the construction of any project, adequate dust control measures shall be maintained so as not to cause detriment to the safety, health, welfare, or comfort to any person or cause damage to property or business.

Excavation and Shoring: Excavation and Shoring, where herein specified in the Special Provisions, are intended only as a guide to the Contractor. When in the judgment of the Engineer, any additional excavation, sheeting, shoring and/or bracing is required to adequately protect the work, the Contractor shall promptly provide the same. This additional work will not be a pay item. However in all situations the Contractor will be responsible for the work, the safety of the personnel engaged in the work, and the safety of the public at large.

Utilities: The Contractor shall comply with Act 53 of the Michigan Public Acts of 1974, commonly known as "MISS DIG".

At points where the Contractor's operations are adjacent to properties of railway, telegraph, telephone, water, sewer, electric, gas, petroleum, or cable television companies, hereinafter referred to as "utilities", or are adjacent to other property, damage to which might result in considerable expenses, loss or inconvenience, work shall not be commenced until all arrangements necessary for the protection thereof have been made.

The Contractor shall cooperate with the owners of any underground or overhead utilities in their removal and rearrangement operations in order that these operations may progress in a

reasonable manner, that duplication of rearrangement work may be reduced to a minimum, and that services rendered by those utilities will not be unnecessarily interrupted.

In the event of interruption to utility services as a result of accidental breakage or as a result of being exposed or unsupported, the Contractor shall promptly notify the proper utility and shall cooperate with said utility in the restoration of service. If utility service is interrupted, repair work shall be continuous until service is restored.

1.07.06 Protection and Restoration of Property

The Contractor shall restore at his own expense any public or private property damaged or injured in consequence of any act or omission on his part or on the part of his employees or agents, to a condition equal or better than that existing before such injury or damage was done. If the Contractor neglects to restore or correct such damage or injury, the City may, upon 48 hours notice, proceed to restore or make good such damage or injury and order the cost thereof deducted from any monies that are due or may become due the Contractor.

Where it is the policy of any utility owner to make its own repairs to damaged conduit or other structures, the Contractor shall cooperate to the fullest extent with the utility, and he shall see that his operations interfere as little as possible with these operations, and the Contractor shall assume the cost of any charge against the City therefore.

In cases where existing public and private utility connections are encountered, the Contractor shall perform his operations in such manner that service will be uninterrupted, and the cost thereof shall be at the Contractor's expense.

1.07.07 No Waiver of Legal Rights

Neither the acceptance by the party of the first part or its Engineer, or any of its agents, nor any order, measurements or certificate by the Engineer nor any order of the party of the first part for the payment of money, nor any payment for or acceptance of the whole or any part of the whole, or any part of the work by the Engineer or any party of the first part or its agents shall operate as a waiver for any portion of the contract or any power therein reserved to the party of the first part, or any right to damage therein provided; nor shall any waiver of any breach of the contract be held to be a waiver of any other or subsequent breach.

The party of the first part shall pay, and the Contractor receive, the prices bid on the proposal or agreed upon, based upon measurements made by the Engineer or as otherwise herein stipulated and such measurements shall be final and conclusive.

The quantities of the various classes of work to be done and material to be furnished under this contract, which have been estimated as stated elsewhere herein, are approximate and only for the purpose of comparing on a uniform basis, the bids offered for the work under this contract. Neither the party of the first part, or its agents, is to be held responsible should any of the said estimated quantities be found incorrect during the construction of the work; and the Contractor shall make no claim for anticipated profit nor for loss of profit, during the progress of the work.

1.07.08 Personal Liability of Public Officials

In carrying out any of the provisions of these specifications, or in exercising any power or authority granted to them by or within the scope of the Contract, there shall be no liability upon

the City Engineer, or their authorized representatives, either personally or as officials of the City, it being understood that in all such matters they act solely as agents and representatives of the City.

SECTION 1.08 PROSECUTION AND PROGRESS

1.08.01 Prosecution of the Work

The Contractor shall begin work on the project within 30 calendar days after the acceptance by the City of the executed documents unless otherwise stated or directed by the Engineer. In all cases, work shall be started in time to finish the project by the completion date stated in the Contract. The Contractor shall notify the Engineer at least 48 hours in advance of the time he intends to start.

It is distinctly understood and agreed to, by the parties hereto, that the time specified for the completion of the work is the essence of this contract and the Contractor shall not be entitled to claim performance of the agreement until the work is satisfactorily completed in every respect, within the time herein specified.

The entire project, pieces of work, portions of work and sections of work shall be prosecuted regularly and uninterruptedly, unless the Engineer shall otherwise specifically direct, with such force and at such points as to insure its full completion within the time herein stated. If in the opinion of the Engineer, it is necessary or advisable that certain portions of the work be done immediately, the Contractor, upon written order, shall proceed with such work without delay. Should he fail to so proceed, the Engineer may do or cause to be done such work, and will deduct the cost of the same from any money due or to become due the Contractor under this contract. Further, the Contractor shall be subject to Liquidated Damages as set forth in Section 1.08.06 of these Specifications.

If, in the judgment of the Engineer the work is not being prosecuted in such manner as to ensure its completion within the time specified, the Engineer shall have the right to require the Contractor to furnish and place in operation such additional force and equipment as the Engineer shall deem necessary to insure completion of the work within the time specified in the Contract. Any of the above requirements directed by the Engineer shall be performed by the Contractor at no additional cost to the City.

The Contractor's failure to comply with this Section shall be cause for termination of the Contract in accordance with Section 1.08.07.

1.08.02 Limitations of Operations

The Contractor shall be required to prosecute work done under this contract only during the daylight hours between 7:00 a.m. and 6:00 p.m., unless otherwise authorized by the Engineer, and except for the purpose of making emergency repairs and for the proper protection of the work. The prosecution of the work must be stopped and the daily clean-up completed by 6:00 p.m. No work will be permitted at night or on Sundays, except to save property or life or as specifically authorized or directed by the Engineer.

The Engineer reserves the right to require the Contractor to cease construction operations on legal holidays and the day preceding and the day following, or at such other times as may be determined to be in the interest of the general public, except for the purpose of making emergency repairs and for the proper protection of the work.

In case of a dispute arising between two or more Contractors or others as to the respective rights of each, the Engineer shall determine the matters at issue and shall define the respective rights of

the various interests involved in order to secure the completion of all parts of the work in general harmony and with satisfactory results, and his decision shall be final and binding on all parties concerned and shall not in any way be cause for claim for extra compensation by any of the parties.

1.08.03 Superintendent, Character of Workman and Equipment

The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the project site during performance of the work. The superintendent shall represent the Contractor and communications given to the superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be similarly confirmed on written request in each case.

The Contractor shall employ only skilled workmen experienced in the kind of work to be done, and in sufficient numbers to complete all parts of the work in a substantial neat and workmanlike manner within the time specified.

It is the responsibility of the Contractor to confirm that all of its employees that it uses under this Contract are authorized to work in the United States. It is the Contractor's responsibility to fill out and have on file all necessary paperwork which confirms the employee's eligibility to work in the United States. If any employee of the Contractor is found not to be eligible to work in the United States, the employee shall be immediately removed from the work and the Contractor shall be responsible to pay as Liquidated Damages to the City the monetary amount as set forth in 1.08.06 for each day said ineligible employee was employed on the project. Any information provided by the Contractor to the City to confirm each employee's eligibility will be solely for the purpose to verify that the employee is eligible to work in the United States.

If any authorized representative of the Contractor shall refuse or neglect to obey the directions of the Engineer in anything relating to the work, or if any person shall appear to the Engineer to be incompetent, disorderly, or unfaithful he shall upon order of the Engineer, be at once discharged and shall not be re-employed on the work, and such discharge shall not be used as the basis of any claim nor damages against the party of the first part.

The Contractor shall furnish and use such adequate and proper machinery and equipment as will insure the work being done in a satisfactory manner. Equipment used on any portion of the project shall be such that no injury to the roadway, adjacent property, or other roadway will result from its use.

When the methods and equipment to be used by the Contractor in accomplishing the construction are not prescribed in the Contract, the Contractor is free to use any methods or equipment that he demonstrates, to the satisfaction of the Engineer, will accomplish the work in conformity with the requirements of the Contract, except that equipment for a specific task shall be the type generally designed for this purpose.

1.08.04 Temporary Suspension of Work

The Engineer shall have the authority to suspend the work wholly or in part for such period or periods as he may deem necessary, due to weather, or for such other conditions as are considered unfavorable for the suitable prosecution of the work, or for such time as is necessary, due to the

failure on the part of the Contractor to carry out orders given or to perform any or all provisions of the Contract or for violation of any of the Contract specifications.

The Contractor at his own volition shall not suspend the work without written authority of the Engineer.

1.08.05 Time of Completion

The time allowed for completion of the work, including final cleaning up, shall be as stated in the proposal or specifications, and as mutually agreed upon in a Pre-Construction Meeting.

Upon request of the engineer and before signing the Contract the Contractor shall prepare and submit information on Contractor's construction schedule for the work. The construction schedule shall include a list of any subcontractors with a value for each subcontract. This shall be prepared at no cost to the City even if the Contract is not awarded to the Contractor.

Time will be charged for every day when it is possible for the Contractor to effectively carry out controlling operations, unless otherwise provided.

All days in which work is suspended by order of the Engineer or in accordance with these specifications shall automatically extend the time for completion an equal number of days.

1.08.06 Liquidated Damages

In case the Contractor shall fail in the due performance of the work to be executed under this contract by and at the time or times herein mentioned, or upon direction from the Engineer, or referred to or at other than the day or days to which the period of completion may have been extended, or if the Contractor employs a workman that is not authorized to work in the United States, he shall be liable to pay to the party of the first part, and does hereby agree to pay to the party of the first part, as liquidated damages, and not as penalty, the applicable sum stated in the Schedule of Liquidated Damages. This Schedule shall apply for each and every day which may elapse between the appointed and actual time of completion, or the number of days which an unauthorized employee works, which sum is hereby agreed upon, fixed and determined as the damage which will be suffered by the party of the first part by reason of the failure of said Contractor to complete the work within the time specified or to employ only those authorized to work in the United States.

The Contractor shall complete the work even after the time limits within the scope of this Contract, and such completion shall in no way operate as a waiver on the Part of the City of its rights under this Contract.

SCHEDULE OF LIQUIDATED DAMAGES

ORIGINAL CONTRACT AMOUNT

FROM MORE THAN	TO AND INCLUDING	LIQUIDATED DAMAGES PER CALENDAR DAY
\$0	\$25,000	\$100
\$25,000	\$50,000	\$200
\$50,000	\$100,000	\$400
\$100,000	\$500,000	\$800
\$500,000	\$1,000,000	\$1,000
\$1,000,000	\$2,000,000	\$2,000

1.08.07 Termination of Contract

If the Contractor:

- a. Fails to start work on notice to do so; or
- b. Fails to prosecute the work with manpower, equipment, construction plant or materials sufficient to complete the work by the date set for completion or according to the project completion schedule; or
- c. Performs the work improperly; or
- d. Discontinues the performance of the work before completion without prior approval; or
- e. Neglects or refuses to remove rejected materials or to perform anew such work as shall have been rejected as defective and unsuitable; or
- f. For any other reason fails to carry on the work in accordance with the Contract; or
- g. Shall become insolvent; or
- h. Shall be declared bankrupt in a court proceedings; or
- i. Shall commit any act of bankruptcy or insolvency; or
- j. Makes an assignment for the benefit of creditors; or
- k. Shall be subject to proceedings for reorganization under the Bankruptcy Act; then

The Engineer shall give notice to the Contractor and his Surety, in writing, of the happening of any such event, specifying the same, and notifying them of the City's intention to terminate the Contract pursuant to this Section, and if the Contractor or Surety within a period of five (5) calendar days after such notice shall not proceed satisfactorily in accordance therewith, or fail to halt the proceedings under h., i., j., or k. above, then upon written certification from the Engineer of the fact of the happening of such event, and of the Contractor's or Surety's failure to comply with such notice, the City shall have full power and authority, without violating the Contract, to take the work away from the Contractor. The Surety shall be given the opportunity after termination of the Contract, within a period of five (5) calendar days, to arrange for a new Contractor to promptly complete the work pursuant to all of the Contract's plans and specifications. If the Surety declines such opportunity, the City shall have full power and authority to appropriate or use any or all materials and equipment on the site of the project as may be suitable and acceptable and may enter into a Contract for the completion of the work according to the Contract's plans and specifications, or use such methods as in its opinion shall be required for the proper completion of the work. If the City terminates the Contract and the Surety declines to have the work completed, all additional costs, charges, and damages incurred

by the City, together with the costs of completion of the work, shall be deducted from any monies due or which may become due the Contractor.

If the total of such damages, costs and charges exceed the balance of the contract price which would have been payable to the Contractor had the Contractor completed the work, then the Contractor and Surety shall, upon demand, pay to the City the amount of such excess.

1.08.08 Injunctions

Should the party of the first part be prohibited or enjoined from proceeding with the work, or from authorizing its prosecution, either before or after its commencement, by reasons of any litigation or otherwise, the said Contractor shall not be entitled to any damages by reason of the delays thereby caused except for the actual cost of protecting such work as he may have under way, or for the cost of removal and replacement of such tools, plant and materials as he may have delivered upon such work, such cost to be determined by the Engineer. Nor shall said party be entitled to withdraw from this agreement until such delays, as aforesaid, aggregate one year, but the time of completion shall be extended for such time, as in the judgment of the Engineer, shall be equal to the aggregate delay.

SECTION 1.09 MEASUREMENT AND PAYMENT

1.09.01 Measurement of Quantities

Quantities of work completed under the Contract will be measured by the Engineer according to United States standard measures.

The following descriptions detail the methods of measurement for work outlined in these Specifications unless otherwise noted.

When the method of measurement for a particular item specifies that it will be "measured in place", the measurements will be taken along the actual surface of the completed item to obtain the linear area or measurement.

When material is measured by weight in tons, the unit shall be the ton of 2,000 pounds.

When the method of measurement for a particular item is specified in square yards or square feet, measurements will be made along the actual surfaces. The dimensions used in calculating the pay area shall be the actual dimensions as constructed by not exceeding the neat dimensions provided on the plans unless authorized by the Engineer. The depth of items shall be as shown on the plans or specified in the Proposal.

When the method of measurement specified is for an item "compacted in place", the volume will be that based on the neat lines called for on the plans or as authorized by the Engineer. Unless otherwise authorized by the Engineer, any amount less than the neat line dimension will be subtracted from the calculation of the pay quantity, and any amount greater than the neat line dimension will be omitted from the calculation of the pay quantity. This method of measurement is not intended to eliminate the grading tolerances provided by the Specifications, but establishes the basis of payment for the compacted in-place value.

All materials which are specified for measurement by the cubic yard, loose measure, will be as measured in the hauling vehicle, unless otherwise provided.

Structures will be measured as units unless otherwise specified.

The method of measurement for other items of work will be as provided under the Specifications for the particular item.

When required by the Engineer, the Contractor shall file original copies of freight bills, trucking slips, bills of lading, and paid invoices for any or all materials used in the work.

1.09.02 Scope of Payment

The Contractor shall accept the compensation as herein provided in full payment for furnishing all necessary materials, labor, tools, equipment and incidentals; and for performing all work under the Contract; also for all loss or damage arising from the nature of the work, or from action of the elements, or from any unforeseen difficulties which may be encountered during the prosecution of the work until its final acceptance by the Engineer.

1.09.03 Payments for Increased or Decreased Quantities

Whenever the quantity of any item of work as given in the Proposal shall be increased or decreased, payment for such item of work shall be at the contract price for the actual quantities of work done except as otherwise provided.

1.09.04 Eliminated Items

The Engineer shall have the right at any time to eliminate the performance or the completion of any contract item, such action to be evidenced in writing by the Engineer. In such case, payment will be made to the Contractor of a fair and equitable amount covering all direct costs incurred on such items prior to the date of cancellation, alteration, or suspension of the work. The Contractor shall accept payment in full at the contract unit prices for any work actually performed prior to the date of cancellation, alteration, or suspension of the work by order of the Engineer. No allowances will be made for anticipated profits in payments to the Contractor for deleted items of work.

1.09.05 Progress Payments

Progress payments, upon estimates of the Engineer, shall be made by the City to the Contractor every fourth week, or more often at the discretion of the City. Progress payments shall not exceed 90% of the value of completed work at the date of authorized payment unless otherwise approved by the Engineer.

Progress payments shall not be considered as an acceptance of the work, or any portion thereof.

If any work completed by the Contractor or material furnished by the Contractor is determined to be defective, or should a reasonable doubt arise as to the integrity of any part of the work completed by the Contractor prior to the final acceptance and payment, there will be withheld from the Contractor's progress payments, after the discovery of such work, an amount equal in value to the replacement cost of the defective or questioned work until the defects have been remedied or the causes for doubt removed.

1.09.06 Acceptance and Final Payment

When the work has been completed and the City shall have found that each and every part of the work has been done in accordance with the Contract, plans and specifications or such modifications thereof as have been approved, the same will be accepted; and the Engineer will make a final estimate as soon as practical of the completed work; and the total amount due the Contractor less the total amount of all previous payments will be paid.

The Contractor, for himself or for any Sub-Contractor under him, shall well and truly pay, as the same may become due and payable, all indebtedness which may become due to any person, firm corporation or City on account of which these specifications form a part; and in case of his failure to do so, and on sworn statement of any unpaid claim for labor or material as above being filed with the Engineer, a sum of money sufficient to cover such claim or claims shall be retained from any monies due substantiated to the satisfaction of the Engineer, said Engineer shall pay such claim or claims from the monies so retained, any residue to be paid to such contractor on the completion of the work.

Any and all monies due the City by the Contractor on this Contract at the final completion of the Contract shall be deducted from monies due or which may become due the Contractor before final payment.

Before final payment is made, the Contractor shall as directed by the party of the first part make affidavit that he has paid all claim of every nature or secure a release from the surety or sureties approving payment of final estimate by the party of the first part. The final payment, when made, shall be considered as final approval and acceptance of the completed work herein specified. The acceptance by the Contractor of the final payment aforesaid shall operate as and shall be, a release to the party of the first part and its agents, from all claims and liability to the Contractor for anything done or furnished for, relating to the work, or for any act or neglect of the party of the first part of any person relating to or affecting the work.

1.09.07 Payment Not to be Stopped

The party of the first part shall not, nor shall any officer thereof be precluded by any return or certificate made or given by the Engineer, or other officer, agent or appointee, under the provisions of this agreement at any time (either before or after the final completion and acceptance of the work and payment made thereof pursuant to any such return or certificates showing the true and correct amount of money due therefore, notwithstanding any such return or certificate, or any payment made in accordance therewith), from demanding and receiving from the Contractor or his Sureties, separately or collectively, such sums as may have been improperly paid said Contractor by reason of any such return or certificate which has been untruly or incorrectly compiled.

1.09.08 General Guarantee

Neither the final certificate of payment nor any provision in the Contract Documents nor partial or entire occupancy of the premises by the owner shall constitute an acceptance of work not done in accordance with the Contract Documents or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. Unless otherwise specified the Contractor shall bear the cost of correcting any defects in the work and pay for any damage to other work resulting therefrom, which shall appear within a period of one year from the date of final acceptance. The Owner will give notice of observed defects with reasonable promptness.

SPECIAL PROVISIONS

PRECONSTRUCTION MEETING

A meeting will be held in the Engineering Department at the Wyandotte City Hall, 3200 Biddle Avenue, Suite 200, following submittal of contract, bonds and insurance, between the Engineer and his representatives, and the successful bidder, and his subcontractors. The purpose of this meeting will be to review the plans and specifications and to prepare a mutually agreeable construction schedule which will adhere to the completion date stated in the Bid Proposal and time frames set forth herein. The Contractor shall provide the following submittals at the preconstruction meeting:

1. Proper proof of insurance (should be returned to Clerk).
2. Signed contract (should be returned to Clerk).
3. All signed subcontracts for review and approval.
4. Construction progress schedule and staging plan.
5. Material source lists.

GENERAL

Contractor shall install 12-inch HDPE water main via direction boring. Connections to the existing 4-inch and 8-inch ductile iron services to the Wyandotte Central Fire Station shall be made via open cut. The existing water main along Maple Street will remain active upon completion of this project; both mains will provide a redundant supply of water to the vicinity.

STAGING

The Contractor shall stage materials in the north 8 feet of Maple Street between 3rd Street and 4th Street; closure of two parking lot approaches is required. The Contractor shall close traffic on 3rd Street between Sycamore and Elm during the pulling of the proposed 12-inch main.

CONSTRUCTION TIME FRAMES

The length of time from the first construction activity to the final clean-up shall be no longer than twenty eight (28) calendar days. All work shall be complete prior to February 1st, 2019.

No construction debris shall be stored on the streets longer than two (2) days unless otherwise noted below or approved by the Engineer. Clean-up and disposal of pavement removal debris and earth spoils will be completed the same day as removal by use of a street sweeper. A “vactor style” sweeper may be required as directed by the Engineer.

Concrete placement shall include all cold weather protection measures (including but not limited to heated water/aggregate, insulation blankets, chemical admixtures, etc.). Clean-up and disposal of concrete spillage shall be completed the same day as deposited.

The Contractor shall take all precautionary measures not to damage the new irrigation system at the Central Fire Station. Any irrigation repairs shall be performed at no cost to the City.

No later than three (3) days, unless otherwise approved by the Engineer, after installation of new curb, miscellaneous concrete overspill behind the curb shall be removed, honeycombing or voids at back of curbs shall be parged smooth and service walk, sidewalk and other concrete work shall be started and prosecuted regularly and uninterruptedly until that particular street is complete. Five (5) days after completion of finished concrete flat work on a particular street the affected areas shall be backfilled and compacted, seeded or sodded, and clean up completed. Construction barricades, barrels, signage and notifications shall be removed from the work areas within two (2) days of the completion of backfill and temporary seeding with mulch blanket. Final restoration shall be completed by May 24th, 2019.

NOTIFICATION

The Contractor shall provide notification to residents of pending construction activities a minimum of 48 hours in advance of the proposed work. The notice, at a minimum, shall advise residents of the date work activity will start, the anticipated length of time the area will be worked on, notification of temporary loss of curbside or driveway access to property, and request that street be cleared of parked vehicles. The notice shall contain the Contractor's 24 hour contact phone number.

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

PROJECT COORDINATION

The Contractor shall request written approval from the Engineer prior to closing any street. All traffic control measures shall be in place prior to any closure. The new water main will be installed directly in front of the fire station; the Contractor shall coordinate daily activities with the Fire Chief at 734-358-1068. All water facilities shall be coordinated with Bill Weirich at 734-324-7142.

CONSTRUCTION EROSION AND SEDIMENTATION CONTROL

Prior to starting work on a particular street or block, all catch basin covers on that street or block, or those that the street being worked on drains to, shall be wrapped with a filter fabric. The fabric shall allow water to flow through, but shall prevent the passage of silts, dirt, clay, stone and other construction debris. The fabric shall be wrapped over the top of the cover and extended under, such that when the cover is placed back in the frame, the fabric is around the entire perimeter, on top and between the frame and cover. During final clean-up of the area, the fabric shall be carefully removed, preventing any captured debris from falling into the catch basin. The fabric shall be inspected daily and repaired immediately to insure the complete and consistent effectiveness of the erosion and sedimentation control.

CITY OF WYANDOTTE
SPECIAL PROVISIONS FOR
WATER MAIN MATERIALS AND CONSTRUCTION METHODS
DUCTILE IRON PIPE

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GENERAL

This work shall consist of all labor, material, tools and equipment and testing necessary to install ductile iron pipe with polyethylene encasement in accordance with the following procedures.

MATERIALS

Ductile Iron Pipe

The pipe shall be Ductile Iron with a push-on type joint unless otherwise specified or shown on plans, conforming to the requirements of Class 54 Ductile Iron Pipe, cement-mortar lined, specifications ANSI/AWWA C151/A21.51-86 and ANSI/AWWA C104/A21.4-90 in all respects. The pipe shall be laid according to grade established by the Engineer.

Polyethylene Encasement

The encasement of piping with polyethylene film in tube or sheet form.

Standard of reference: ANSI/AWWA C105/A21.5-88

This standard covers materials and installation procedures for polyethylene encasement to be applied to underground installations of ductile iron pipe. This standard also may be used for polyethylene encasement of fittings, valves, and other appurtenances to ductile iron pipe systems.

Definitions

Polyethylene film shall be manufactured of virgin polyethylene material conforming to the following requirements of ASTM Standard Specification D-1248-78 Polyethylene Plastics Molding and Extrusion Materials.

Raw material used to manufacture polyethylene film:

Type I

Class: A (natural color) or C (black)

Grade: E-1

Flow Rate (formerly melt index): 0.4 maximum

Dielectric strength: Volume resistivity, minimum $\text{ohm-cm}^3 = 10^{15}$

Polyethylene Film:

Tensile strength: 1,200 psi (8.3 MPa) minimum

Elongation: 300 percent minimum

Dielectric strength: 800 V/mil (31.5 V/um) thickness

Polyethylene film shall have a minimum thickness of 0.008 in. (8 mil, or 200 um). The minus tolerance on thickness shall not exceed 10 percent of the nominal thickness.

Tube size or sheet width for each pipe diameter shall be as listed in Table 1.1:

TABLE 1.1
TUBE AND SHEET SIZES

Nominal Pipe Diameter (in.)	Minimum Polyethylene Width in. (cm)	
	Flat Tube	Sheet
3	14 (35)	28 (70)
4	16 (41)	32 (82)
6	20 (51)	40 (102)
8	24 (61)	48 (122)
10	27 (69)	54 (137)
12	30 (76)	60 (152)
14	34 (86)	68 (172)
16	37 (94)	74 (188)

CONSTRUCTION METHODS

Interruption to Water Supply

Where the construction involves the interruption of existing water mains and services, the Contractor shall, at least twenty four (24) hours prior to the time such connections are to be made, notify the Wyandotte Municipal Services Water Department so that they may take the necessary steps to make the shutoff, perform such work as they may elect to do, and provide for the services involved.

The Contractor shall not cut or disturb any existing water main which is in service nor operate any valve in the water system without written permission from the Wyandotte Municipal Services Water Department.

The Contractor shall, in all cases, expedite the work on connections in order that service shall not be cut off on any section of existing water main for more than a few hours.

The Contractor shall notify the occupants of any dwelling or business affected by the work a day in advance of the time when it is necessary to shut off the water supply to make connections to existing mains.

Excavation

Water main trenches shall be excavated six (6) inches below the bottom of the pipe and a bed of approved porous material shall be tamped in place. Once the pipe has been properly placed, the same porous material shall then be placed and tamped up to the center of the pipe.

If a profile of the water main is not shown, trench depths shall provide a minimum cover of five (5) feet to the top of the pipe, or such modifications thereof, as may be directed by the Engineer, to conform to irregularities of the surface of the ground or to meet or pass other utility structures. The trench shall be of sufficient width to provide free working space and to permit ramming and compacting of the backfill around the pipe. The width shall not exceed the outside diameter of the barrel of the pipe plus six (6) inches on each side, with a minimum width of twenty four (24) inches. The sides of the trench shall be vertical.

Where boulders, rock or hardpan are encountered, they shall be removed to a depth of at least seven (7) inches below the bottom of the pipe. Permanent blocking under the pipe is strictly prohibited.

Where soil containing refuse, peat, vegetable or other organic material is encountered in trenches in which ductile iron pipe is to be laid, the Contractor shall excavate up to thirty six (36) inches below the bottom of the pipe to remove such soils. Sand or an approved porous material shall be placed and compacted to fill the void to the proper trench elevation.

Sufficient trench shall be opened ahead of construction so that underground utilities can be located and the proper alignment and grade of the new main can be determined before assembling the pipe.

In cases where deemed necessary to safeguard life and property, hand excavated test holes shall be dug by the Contractor to locate existing utilities which cross or are adjacent and in close proximity to the excavation.

All areas of pavement removal shall be sawed in a straight line parallel or perpendicular to the line of work or removed to the nearest joint.

Coupling holes shall be excavated to sufficient width and depth to permit proper jointing of pipe and thorough examination of joints. The location and length of coupling holes shall be carefully controlled to avoid unnecessary length of excavation beneath the pipe. If over excavation occurs, the area shall be filled and compacted to the level of the bottom of the pipe trench.

The Contractor shall provide suitable pumping equipment and shall keep the excavation dry during the progress of the construction work.

Gutters, or pavement flow lines, shall be kept clear of debris impeding flow to drainage structures, or other satisfactory provisions, approved by the Engineer, shall be provided for street drainage.

Construction Erosion and Sedimentation Control

Prior to starting work on a particular street or block, all catch basin covers on that street or block, or those that the street being worked on drains to, shall be wrapped with a filter fabric. The fabric shall allow water to flow through, but shall prevent the passage of silts, dirt, clay stone and other construction debris. The fabric shall be wrapped over the top of the cover and extended under, such that when the cover is placed back in the frame, the fabric is around the entire perimeter between the frame and cover. During final clean-up of the area, the fabric shall be carefully removed, preventing any captured debris from falling into the catch basin. The fabric shall be inspected daily and repaired immediately to insure the complete and consistent effectiveness of the erosion and sedimentation control.

Sheeting and Bracing

The Contractor shall furnish, place and maintain at all times such sheeting and bracing as may be required to support the sides of the excavation and to support and protect from damage all structures, including pavement, curbs, sidewalks, drainage structures, pipe lines and conduits adjacent to or crossing the trench until the trench is backfilled. Supports for pipes and conduits crossing the trench shall conform to the requirements of the owners of those facilities, and if so ordered, shall be left in place.

Tunneling Under Trees

This work shall consist of tunneling under or adjacent to existing trees whenever underground installations are made for any purpose.

Tunneling Requirements:

1. Depth of Cover – Tunnels shall be placed at a minimum depth of thirty (30) inches measured from the ground surface to the top of the tunnel.
2. Length of Tunnel – Tunnel length in feet shall be in direct proportion to the diameter of the tree in inches for trees eight (8) inches or larger in diameter. One (1) foot of tunnel shall be constructed for each inch of tree diameter whenever the trench or any portion thereof approaches the tree trunk a distance in feet equal to one-half the tree diameter in inches.
3. Measurements – Trees under eight (8) inches in diameter will require the same length of tunnel as eight (8) inch diameter trees.
4. Measurements of tree diameters shall be taken four (4) feet above the ground surface.

Construction Methods:

1. All tunneling shall extend a minimum of ten (10) feet outside the edges of primary and quarter-line road pavements and a minimum of five (5) feet outside the edges of residential street pavements
2. For tunnel construction, a casing pipe shall be jacked or bored across roadways. The leading edge of the casing pipe must always precede the auger.
3. Within twenty four (24) hours after completion of a tunnel, all voids shall be filled by means of pressure grouting with a 1:3 cement-sand mortar.
4. Air jetting is prohibited under all pavements.

Handling and Laying of Pipe

Handling and laying of pipe shall be in accordance with the manufacturer's recommendations. Each pipe shall be handled with extreme caution during transportation to avoid any damage to the material. No pipe shall be accepted if it was transported with any portion of the pipe extending over the bed of the truck.

Each pipe, when placed to the required grade and line, shall have bearing on the trench bottom throughout its length between coupling holes. The trench bottom shall have a six (6) inch cushion of approved porous material. If, when any pipe is placed in the trench, the subgrade is found to be improperly prepared, the pipe shall be removed and the trench bottom corrected by further excavation or by placing approved porous material.

Every precaution shall be taken to prevent foreign material from entering the pipe while it is being placed. During laying operations, no debris, tool, clothing or other materials shall be placed in the pipe. If the pipe laying crew cannot put the pipe into the trench and in place without letting earth into it, the Engineer may require that before lowering the pipe into the trench, a heavy, tightly woven canvas bag of suitable size be placed over each end and left there until the connection is to be made to the adjacent pipe.

When pipe laying is not in progress, the open ends of pipe shall be closed by a watertight plug or other means approved by the Engineer. Joints of pipe in the trench which cannot be completed shall be caulked with packing to make them as watertight as possible. This provision shall apply during the noon hours as well as overnight. If water is in the trench, the seal shall remain in place until the trench is pumped completely dry. No pipe shall be laid in water nor laid when in the opinion of the Engineer the trench conditions are unsuitable.

Cleaning Pipe

All pipe shall be free from bulges, dents and tears on the inside surface and coupling areas on the barrel shall be free from dents and gouges that will affect the water tightness of the joints. The outside of the spigot and the inside of the coupling shall be wire brushed and wiped clean, dry and free from oil and grease. The interior of each pipe shall be inspected and shall be cleaned of all dirt and foreign matter before being lowered into the trench. An approved lubricant shall be applied to the entire circumference of the pipe, back to the stop shoulders, before the pipe is laid.

Installation of Polyethylene Encasement

The polyethylene encasement shall prevent contact between the pipe and the surrounding backfill and bedding material, but is not intended to be a surrounding backfill and bedding material, or to be a completely airtight an watertight enclosure. Overlaps shall be secured by the use of adhesive tape, plastic string, or any other material capable of holding the polyethylene encasement in place until backfilling operations are completed.

This specification includes three different methods of installation of polyethylene encasement on pipe. Methods A and B are for use with polyethylene tubes, and Method C is for use with polyethylene sheets.

Method A. Cut polyethylene tube to a length approximately two (2) foot longer than that of the pipe section. Slip the tube around the pipe, centering it to provide a one (1) foot overlap on each adjacent pipe section, and bunching it accordion fashion length wise until it clears the pipe ends. Lower the pipe into the trench and match up the pipe joint with the preceding section of pipe. A shallow bell hole must be made at joints to facilitate installation of the polyethylene tub.

After assembling the pipe joint, make the overlap of the polyethylene tube. Pull the bunched polyethylene from the preceding length of pipe, slip it over the end of the new length of pipe, and secure it in place. Next, slip the end of the polyethylene from the new pipe section over the wrap at the end of the previously laid section until it overlaps the joint. Secure the overlap in place. Take up the slack width to make a snug, but not tight, fit along the barrel of the pipe, securing the fold at quarter points.

Repair any rips, punctures, or other damage to the polyethylene with adhesive tape or with a short length of polyethylene tube cut open, wrapped around the pipe, and secured in place. Proceed with installation of the next section of pipe in the same manner.

Method B. Cut polyethylene tube to a length approximately one (1) foot shorter than that of the pipe section. Slip the tube around the pipe, centering it to provide six (6) inches of bare pipe at each end. Make polyethylene snug, but not tight, secure ends as described in Method A.

Before making up a joint, slip a three (3) foot length of polyethylene tube over the end of the preceding pipe section, bunching it accordion fashion lengthwise. After completing the joint, pull the three (3) foot length of polyethylene over the joint, overlapping the polyethylene previously installed on each adjacent section of pipe by at least one (1) foot, make snug and secure each end as described in Method A.

Repair any rips, punctures, or other damage to the polyethylene with adhesive tape or with a short length of polyethylene tube cut open, wrapped around the pipe, and secured in place. Proceed with installation of the next section of pipe in the same manner.

Method C. Cut polyethylene sheet to a length approximately two (2) feet longer than that of pipe section. Center the cut length to provide a one (1) foot overlap on each adjacent pipe section, bunching it until it clears the pipe ends. Wrap the polyethylene around the pipe so that it circumferentially overlaps the top quadrant of the pipe. Secure the cut edge of polyethylene sheet at intervals of approximately three (3) feet.

Lower the wrapped pipe into the trench and make up the pipe joint with the preceding section of pipe. A shallow bell hole must be made at joints to facilitate installation of the polyethylene. After completing the joint, make the overlap as described in Method A.

Repair any rips, punctures, or other damage to the polyethylene with adhesive tape or with a short length of polyethylene tube cut open, wrapped around the pipe, and secured in place. Proceed with installation of the next section of pipe in the same manner.

Cover bends, reducers, offsets and other pipe shaped appurtenances with polyethylene in the same manner as the pipe.

When valves, tees crosses, and other odd shaped pieces cannot be wrapped practically in a tube, wrap with a flat sheet or split length of polyethylene tube by passing the sheet under the appurtenance and bringing it up around the body. Make seams by bringing the edges together, folding over twice, and taping down. Handle width and overlaps at joints as described in Method A. Tape polyethylene securely in place at valve-stem and other penetrations.

Provide openings for branches, blow-offs, air valves, and similar appurtenances by making an x-shaped cut in the polyethylene and temporarily folding back the film. After the appurtenance is installed, tape the slack securely to the appurtenance and repair the cut, as well as any other damaged areas in the polyethylene, with tape.

For service taps, wrap the polyethylene encased main with one layer of 8 mil polyethylene film one (1) foot long where the tap is to be made. Tap directly through the polyethylene.

Where polyethylene wrapped pipe joins an adjacent pipe that is not wrapped, extend the polyethylene wrap to cover the adjacent pipe for a distance of at least two (2) feet. Secure the end with circumferential turns of tape.

Use the same backfill material as that specified for pipe without polyethylene wrapping, exercising care to prevent damage to the polyethylene wrapping when placing backfill. Backfill material shall be free from cinders, refuse, boulders, rocks, stones or other material that could damage polyethylene. In general, backfilling practice should be in accordance with the latest revision of AWWA C600, Standard for Installation of Ductile Iron Water Mains and their Appurtenances.

Ductile Iron Pipe

Ductile iron pipe shall be carefully handled at all times to avoid damages to the material. In loading or unloading, the pipe shall be lifted by hoists or slid or rolled on skid-ways. They shall be lowered into the trench piece by piece by means of suitable equipment. Under no circumstances shall pipe or fittings be dropped, skidded or rolled against other pipe or objects.

Where it is necessary to cut pipe, the cutting shall be done with approved tools by experienced and skilled workmen and in strict conformance with the manufacturer's recommendations. Cut ends of pipe shall be square and regular.

Before being lowered into the trench, each pipe shall be inspected for defects. Defective, damaged or unsound pipe shall be rejected, and any piece found to be defective after it has been laid shall be removed and replaced with a sound piece at the Contractor expense.

After a length of pipe is placed in the trench, the spigot shall be centered in the coupling of the adjacent pipe, the pipe shoved into position and brought to true alignment and then secured with an approved porous backfill tamped under and on each side of the pipe, except at coupling holes. No earth or other foreign matter shall be allowed to enter the joint spaces. "Push Type" joints shall be used on all pipe installed below grade, unless otherwise noted herein.

The jointing of mechanical joint pipe shall be done with torsion wrenches and shall be performed in strict conformance with the recommendations of the manufacturer of the joint.

Whenever deflections at joints are required by changes in grade or alignment, or to plumb valve stems, the deflection at any joint shall not exceed the maximum specified by the A.W.W.A. Specifications. The deflection at any joint shall not exceed three quarters (3/4) of the maximum deflection recommended by the manufacturer of the joint used.

Water main shall be backfilled immediately after laying. However, coupling holes may be left open until the hydrostatic test is made.

Backfilling

Backfilling shall be placed with care to avoid damage to the pipe or coating, or to avoid altering the pipe alignment and grade. Backfill with approved material around the pipe and up to an elevation of six (6) inches above the pipe, and place in horizontal layers of not more than six (6) inches in depth with each successive layer thoroughly compacted by tamping. Special care shall be taken to assure complete filling of all space beneath the pipe with thoroughly compacted material.

All water main trenches, excavations and other structures, shall be backfilled with approved sand or porous backfill material to grade. From an elevation of six (6) inches above the pipe, the sand backfill shall be placed in twelve (12) inch lifts and consolidated to a maximum density by means of a vibratory compactor.

Ground surfaces shall be left by the Contractor in essentially as good condition as before water main construction started and any trees, or other appurtenances damaged or destroyed on account of the water main construction shall be repaired, replaced or settled for at the Contractor's expense unless otherwise noted on the plans. All excavated material shall be disposed of by the Contractor or as directed by the Engineer. Whenever pavement has to be removed it shall be sawcut in straight lines parallel and perpendicular to the line of work or removed to the nearest joint.

Water main trenches, excavations for thrust blocks and other structures out side pavement areas, other road surfaces, sidewalk and curb, and where the center line of the trench is six (6) or more back of the face of the curb, shall be backfilled to within four (4) inches of the top of the trench with yellow sand or equal and compacted by tamping, or other effective means with the approval of the Engineer. The backfilling shall then be completed to the top of the trench, level with the surrounding ground, with topsoil.

HYDROSTATIC TEST FOR WATER MAIN

Prior to and during the hydrostatic test the new main is not be to connected to existing water system, except as specified herein. Temporary blow-offs, caps or plugs shall be provided at the ends of the new main. Blow-offs shall not be connected to any sewer. Water mains shall be constructed in a manner that will prohibit back siphoning into the distribution system.

At the option of the authorized representative Wyandotte Municipal Services Water Department, the Contractor may test against closed valves providing that the new main to be tested and the testing apparatus shall have first been flushed and chlorinated in accordance with accepted procedure. After chlorination and subsequent flushing, a sample of water must show by test by a recognized laboratory, safe bacteriological results. The Contractor shall in event of an unsatisfactory hydrostatic test, cut the new main, install caps or plugs, pressure test and re-chlorinate without additional cost or charge.

The Contractor shall furnish all necessary personnel, temporary timber bracing, plugs, test pumps and all other necessary apparatus for conducting the test.

WARNING: The testing methods described in this section are specific for water pressure testing. These procedures should not be applied for air-pressure testing because of the serious safety hazards involved.

Pressure and Leakage Test: ANSI/AWWA C600-87

Test restrictions

Test pressure shall not be less than 1.25 times the working pressure at the highest point along the test section.

Test pressure shall not exceed pipe or thrust restraint design pressures.

The hydrostatic test shall be of at least 2 hour duration.

Test pressure shall not vary by more than +/- 5 psi (35 MPa or 0.35 bar) for the duration of the test.

Valves shall not be operated in either direction at differential pressure exceeding the rated valve working pressure. Use of a test pressure greater than the rated valve pressure can result in trapped test pressure between the gates of a double disc gate valve. For tests at these pressures, the test setup should include provision, independently of the valve, to reduce the line pressure to the rated valve pressure on completion of the test. The valve can then be opened enough to equalize the pressure with the line pressure, or fully opened if desired.

Test pressure shall not exceed the rated pressure of the valves when the pressure boundary of the test section includes closed, resilient seated gate valves or butterfly valves.

Pressurization: After the pipe has been laid, all newly laid pipe or any valved section thereof shall be subjected to a hydrostatic pressure of at least 1.5 times the working pressure at the point of testing. Each valved section of pipe shall be slowly filled with water, and the specified test pressure, based on the elevation of the test gauge, shall be applied by means of a pump connected to the pipe in a manner satisfactory to the owner. Valves shall not be operated in either the opening or closing direction at differential pressures above the rated pressure. It is good practice to allow the system to stabilize at the pressure before conducting the leakage test.

Air removal: Before applying the specified test pressure, air shall be expelled completely from the pipe, valves and hydrants. If permanent air vents are not located at all high points, the contractor shall install corporation cocks at such points so that the air can be expelled as the line is filled with water. After all the air has been expelled, the corporation cocks shall be closed and the test pressure applied. At the conclusion of the pressure test, the corporation cocks shall be removed and plugged or left in place at the discretion of the owner.

Examination: Any exposed pipe, fittings, valves, hydrants, and joints shall be examined carefully during the test. Any damaged or defective pipe, fittings, valves, hydrants, or joints that are discovered following the pressure test shall be repaired or replaced with sound material, and the test shall be repeated until it is satisfactory to the owner.

Leakage defined: Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe or any valved section thereof to maintain pressure within 5 psi (35 MPa or 0.35 bar) of the specified test pressure after the pipe has been filled with water and the air has been expelled. Leakage shall not be measured by a drop in pressure in a test section over a period of time.

Allowable leakage: No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

$$L = \frac{SD \sqrt{P}}{133,200}$$

Where:

L = allowable leakage, in gallons per hour

S = length of pipe test, in feet

D = nominal diameter of the pipe, in inches

P = average test pressure during the leakage test, in pounds per square inch gauge

This formula is based on an allowable leakage of 11.65 gpd/min/in. of nominal diameter at a pressure of 150 psi.

Allowable leakage at various pressures is shown in Table 6 of the AWWA Standard Ductile Iron mains and appurtenances.

When testing against closed metal seating valves, an additional leakage per closed valve of 0.0078 gph/in. (0.0012 L/h/mm) of nominal valve size shall be allowed.

When hydrants are in the test section, the test shall be made against closed hydrant valves.

Acceptance of installation: Acceptance shall be determined on the basis of allowable leakage. If any test of laid pipe discloses leakage greater than that specified, the contractor shall, at his own expense, locate and make approved repairs as necessary until the leakage is within the specified allowance.

All visible leaks are to be repaired, regardless of the amount of leakage.

In the event the authorized representatives of the D.M.S. having jurisdiction over the work directs the Contractor to backfill the trench before the main is tested and difficulty is experienced in obtaining a satisfactory hydrostatic test, the joints shall progressively be exposed and repaired in such manner as to provide protection to the pipe. Under no circumstances will test requirements be waived or reduced because the trench is backfilled.

DISINFECTING WATER MAINS

SEC. 1 – GENERAL

It is the intent of his standard to present essential procedures for disinfecting new and repaired water mains. All procedures will be under the direction of the Department of Municipal Service Water Department.

SEC. 2 – BASIC PROCEDURE

The basic procedure comprises:

- 2.1 Preventing contaminating materials from entering the water mains during construction or repair and removing by flushing materials that may have entered the water main.
- 2.2 Disinfecting any residual contamination that may remain.
- 2.3 Determining the bacteriologic quality by laboratory test after disinfection.

SEC. 3 – SUPPLEMENTARY INFORMATION TO BE SUPPLIED BY THE WATER DEPARTMENT

When the disinfecting of water mains is to be done under a separate contract or as part of a contract for installing the mains, the Water Department shall provide the following items of specific information in these specifications.

- 3.1 Standard of Reference: ANSI/AWWA C651.
- 3.2 Places where flushing may be done, rates of flushing, and locations of drainage facilities (Sec. 5 and Table 1).
- 3.3 Form of chlorine to be used (Sec. 6) and method of application (Sec. 7).
- 3.4 The number and frequency of samples for bacteriologic tests (Sec. 9).
- 3.5 Method of taking samples (Sec. 9.2).

SEC. 4 – PREVENTATIVE MEASURES DURING CONSTRUCTION

4.1 Keeping Pipe Clean and Dry. Precautions shall be taken to protect pipe interiors, fittings and valves against contamination. Pipe delivered for construction shall be strung so as to minimize entrance of foreign material. When pipelaying is not in progress, as, for example, at the close of the day's work, all openings in the pipeline shall be closed by water tight plugs. Joints of all pipe in the trench shall be completed before work is stopped. If water accumulates in the trench, the plugs shall remain in place until the trench is dry.

NOTE: Delay in placement of delivered pipe invites contamination. The more closely the rate of delivery is correlated to the rate of pipelaying, the less this delay. If dirt enters that pipe that, in the opinion of the Engineer, will not be removed by the flushing operation (Sec. 5), the interior of the pipe shall be cleaned and swabbed as necessary, with a 5 percent hypochlorite solution.

4.2 Flooding by Storm or Accident during Construction. If the main is flooded during construction, it shall be cleared of the flood water by drainage and by flushing with potable water until clean. The section exposed to the flood water shall then be filled with chlorinated potable water which at the end of a 24-hour holding period will have a free chlorine residual of not less than 25 mg/L. The chlorinated water may then be drained or flushed from the main. After construction is completed, the main shall be disinfected using the continuous feed method.

4.3 Packing Materials and Joints. No contaminated material or any material capable of supporting prolific growth of microorganisms shall be used for sealing joints. Packing material shall be handled in such a manner as to avoid contamination.

Where applicable, packing materials must conform to A.W.W.A. standards. Packing material for cast iron pipe must conform to A.W.W.A. C600. Yarning or packing material shall consist of molded or tubular rubber rings, or rope made of asbestos or treated paper. Materials such as jute or hemp shall not be used.

The lubricant used in the installation of sealing gaskets shall be suitable for use in potable water. It shall be delivered to the job in enclosed containers and shall be kept clean.

SEC. 5 – PRELIMINARY FLUSHING

The main shall be flushed prior to disinfection. The sites and velocities of flushing shall be as specified in these specifications.

NOTE 1: It is recommended that the flushing velocity be not less than 2.5. ft/sec. The rate of flow required to produce this velocity in various diameters is shown in Table 1. No site for flushing should be chosen unless it has been determined that drainage is adequate at that site.

NOTE 2: Flushing is no substitute for preventative measures taken before and during pipelaying (Sec. 4). Certain contaminants, especially in caked deposits, resist flushing at any velocity. Furthermore, with diameters of 16 in. or more, even the flushing at any velocity. Furthermore, with diameters of 16 in. or more even minimum recommended flushing velocity of 2.5 ft/sec is sometimes difficult to achieve.

SEC. 6 – FORM OF CHLORINE FOR DISINFECTION

The most common forms of chlorine used in disinfecting solutions are liquid chlorine (gas at atmospheric pressure), calcium hypochlorite granules, sodium hypochlorite solutions, and calcium hypochlorite tablets.

6.1 Liquid Chlorine: See B301—A.W.W.A. Standard for Liquid Chlorine

6.1.1 Packaging. Liquid chlorine is packaged in steel cylinders usually of 100-lb., 150-lb. or 1-ton capacity.

6.1.2 Use. Liquid chlorine shall not be used only when suitable equipment is available and only under the direct supervision of a permit familiar with the physiological, chemical, and physical properties of this element and who is properly trained and equipped to handle any emergency that may arise. Introduction of chlorine-gas directly from the supply cylinder is unsafe and shall not be permitted.

NOTE: The preferred equipment consists of a solution feed chlorinator in combination with a booster pump for injecting the chlorine-gas water mixture into the main to be disinfected. Direct feed chlorinators are not recommended because their use is limited to situation where the water pressure is lower than the chlorine cylinder pressure.

6.2 Hypochlorites: See B301—A.W.W.A. Standard for Liquid Chlorine

6.2.1 Calcium Hypochlorite. Calcium hypochlorite contains 70 percent available chlorine by weight. It is either granular or tabular in form. The tables, 6-8 to the ounce, are designed to dissolve slowly in water (Sec. 7 .3). Calcium hypochlorite is packaged in containers of various types and sizes ranging from small plastic bottles to 100-lb drums.

A chlorine-water solution is prepared by dissolving the granules in water in the proportion requisite for the desired concentration.

6.2.2 Sodium Hypochlorite. Sodium Hypochlorite is supplied in strength from 5.25 to 16 per cent available chlorine. It is packaged in liquid form in glass, rubber or plastic containers ranging in size from 1-qt bottles to 5-gal carboys. It may also be purchased in bulk for delivery by tank truck.

The chlorine-water solution is prepared by adding hypochlorite to water. Product deterioration must be reckoned with in computing the quantity of sodium hypochlorite required for the desired concentration.

6.2.3 Application. The hypochlorite solutions shall be applied to the water main with a gasoline or electrically-powered chemical feed pump designed for feeding chlorine solutions. For small applications, the solutions may be fed with a hand pump, for example, a hydraulic test pump. Feed lines shall be of such material and strength as to withstand safely the maximum pressures that may be created by the pumps. All connections shall be checked for tightness before the hypochlorite solution is applied to the main.

SEC. 7 – METHODS OF CHLORINE APPLICATION

Shall be done under the Supervision of the Department of Municipal Service Water Department.

7.1 Continuous Feed Method

7.1.1 Water from the existing distribution system or other approved sources of supply shall be made to flow at a constant, measured rate into the newly-laid pipeline. The water shall receive a dose of chlorine, also fed at a constant, measured rate. The two rates shall be proportioned so that the chlorine concentration in the water in the pipe is maintained at a minimum of 50 mg/L available chlorine. To assure that this concentration is maintained, the chlorine residual should be measured at regular intervals in accordance with the procedures described in the current edition of Standard Methods and A.W.W.A. M12 – Simplified Procedures for Water Examination (see Appendix)

NOTE: In the absence of a meter, the rate may be determined either by placing a pitot gauge at the discharge or by measuring the time to fill a container of know volume.

Table 2 gives the amount of chlorine residual required for each 100 ft. of pipe of various diameters. Solutions of 1 per cent chlorine may be prepared with sodium hypochlorite or calcium hypochlorite. The latter solution requires approximately 1-lb of calcium hypochlorite in 89.5 gal. of water.

7.1.2 During the application of the chlorine, valves shall be manipulated to prevent the treatment dosage from flowing back into the line supplying the water. Chlorine application shall not cease until the entire main is filled with the chlorine solution. The chlorinated water shall be retained in the main for at least 24 hours during which time all valves and hydrants in the section treated shall be operated in order to disinfect the appurtenances. At the end of this 24 hour period, the treated water shall contain no less than 25 mg/L chlorine throughout the length of the main. This operation shall be done in accordance and supervision of the Department of Municipal Service.

SEC. 8 – FINAL FLUSHING

After the applicable retention period, the heavily chlorinated water shall be flushed from the main until the chlorine concentration in the water leaving the main is no high than that generally prevailing in the system, or less than 1 mg/L. Chlorine residual determination shall be made to ascertain that the heavily chlorinated water has been removed from the pipeline.

SEC. 9 – BACTERIOLOGIC TESTS

9.1 After final flushing and before the water main is placed in service, a sample or samples shall be collected from the end of the line and tested for bacteriologic quantity and shall show the absence of coliform organisms. If the number and frequency of samples is no prescribed by the public health authority having jurisdiction, at least one sample shall be collected from chlorinated supplies where a chlorine residual is maintained throughout the new main. From unchlorinated supplies at least two samples shall be collected at least 24 hours apart.

NOTE: In the case of extremely long mains, it is desirable that samples be collected the length of the line as well as its end.

9.2 Samples for bacteriologic analysis shall be collected in sterile bottles treated with sodium thiosulphate. No hose or fire hydrant shall be used in collection of samples. A suggested sampling tap consists of a standard corporation cock installed in the main with a copper tube gooseneck assembly. After samples have been collected the gooseneck assembly may be removed, and retained for future use.

SEC. 10 – REPETITION OF PROCEDURE

If the initial disinfection fails to produce satisfactory samples, disinfection shall be repeated until satisfactory samples have been obtained. The tablet method cannot be used in these subsequent disinfections. When the samples are satisfactory, the main may be placed in service.

SEC. 11 – PROCEDURE AFTER CUTTING INTO OR REPAIRING EXISTING MAINS

The procedures outlined in this section apply primarily when the mains are wholly or partially dewatered. Leaks or breaks that are repaired with clamping devices while the mains remain full of water under pressure present little danger of contamination and require no disinfection.

11.1 Trench “Treatment”. When an old line is opened, either by accident or by design, the excavation will likely be wet and badly contaminated from nearby sewers. Liberal quantities of hypochlorite applied to open trench areas will lessen the danger from such pollution. Tablets have the advantage in such a situation because they dissolve slowly and continue to release hypochlorite as water is pumped from the excavation.

11.2 Main Disinfection

11.2.1 Swabbing and Flushing. The following procedure is considered as a minimum that may be used.

11.2.1.2 Flushing. Throughout flushing is the most practical means of removing contamination introduced during repairs. If valving and hydrant locations permit, flushing from both directions is recommended. Flushing shall be started as soon as the repairs are completed and continued until discolored water is eliminated

11.2.2 Slug Method. Where practicable in addition to the procedures of 11.2.1, a section of main in which the break is located shall be isolated, all service connections shut off, and the section flushed and chlorinated as described in Section 7.2, except that the dose may be increased to as much as 500 mg/L, and the contact time reduced to as little as ½ hr. After chlorination, flushing shall be resumed and continued until discolored water is eliminated.

11.3 Sampling. Bacteriologic samples shall be taken after repairs to provide a record by which the effectiveness of the procedures used can be determined. If the direction of flow is unknown, samples shall be taken on each side of the main break.

CHLORINE RESIDUAL – DROP DILUTION METHOD

The drop dilution method of approximately total residual chlorine is suitable for concentrations above 10 mg/L, such as are applied in the disinfection of water mains or tanks. It is taken from A.W.W.A. M12 – Simplified Procedures for Water Examination, P. 29.

Apparatus:

1. A graduated cylinder or measuring distilled water.
2. An automatic or safety pipet.
3. A dropping pipet that delivers a 1 ml sample in 20 drops. This pipet is for measuring the water sample and should not be used for any other purpose.
4. A comparator kit containing a suitable range of standards.

Procedure:

1. Ascertain the volume of the comparator cell and using an automatic or safety pipet add 0.5 ml of orthotolidine for each 9.5 of distilled water to be added.
2. Using a graduated cylinder, add a measured volume of distilled water.

3. With the dropping pipet, add the water sample a drop at a time, allowing mixing, until a yellow color is formed that matches one of the color standards.
4. Record the total number of drops used and the final chlorine value obtained.
5. Calculate the milligrams per liter residual chlorine as follows:
 - (a) Multiply by 20 the number of milliliters of distilled water used in step 2.
 - (b) Multiply this product by the final chlorine value in milligrams per liter recorded in step 4.
 - (c) Divide the product found in step (b) by the total number of drops of water sample recorded in step 4.

Table 1

Required Openings to Flush Pipelines*
(40-psi Residual Pressure)

Pipe Size In.	Flow Required To produce 2.5 fps Velocity gpm	Orifice Size in.	Hydrant Outlet Nozzles	
			Number	Size in.
4	100	15/16	1	2-1/2
6	220	1-3/8	1	2-1/2
8	390	1-7/8	1	2-1/2
10	610	2-5/16	1	2-1/2
12	880	2-13/16	1	2-1/2
14	1,200	3-1/4	2	2-1/2
16	1,565	3-5/8	2	2-1/2
18	1,980	4-3/16	2	2-1/2

*With 40 psi residual pressure, a 2-1/2 in. hydrant outlet nozzle will discharge approximately 1,000 gpm and a 4-1/2 in. hydrant nozzle will discharge approximately 2,500 gpm.

Table 2

Chlorine Required to Produce 50 mg/L
Concentration in 100 ft.
of Pipe by Diameter

Pipe Size in	100 per cent Chlorine lb.	1 per cent Chlorine Solutions gal.
4	0.027	0.33
6	0.061	0.73
8	0.108	1.30
10	0.170	2.04
12	0.240	2.88

METHOD OF MEASUREMENT

“Water Main” of the size, type and method specified will be paid for at the contract unit price per foot, which price shall be payment in full for furnishing all labor, materials, and equipment, for installing the main complete, including all items for which no separate unit price is included in the contract, and shall include all excavation, removal of existing “dead” mains as required, excavation, backfilling, protection of existing utilities, including sedimentation controls at drainage structures, sheeting and bracing, tunneling under trees, protection of trees, temporary blow-offs, anchors, thrust blocks, polyethylene encasement, hydrostatic testing and water main disinfecting.

TRAFFIC MAINTENANCE AND CONTROL

GENERAL REQUIREMENTS

All traffic control devices as required for this project shall conform to the design, material, color, and fabrication requirements as specified on the plans or in the current edition of the Michigan Manual of Uniform Traffic Control Devices and the Michigan Department of Transportation 2012 Standard Specifications for Construction, Section 812.

The Contractor shall be responsible for the posting/signing of work areas to alert residents of upcoming work at a minimum of 48 hours in advance of the start of the work. Moving of parked vehicles which interfere with the prosecution of work will be the responsibility of the Contractor.

The contractor shall furnish, erect, maintain and remove upon completion of the work, all traffic control devices and barricade lights within the project and around the perimeter of the project for the safety of pedestrian and vehicular traffic. This includes, but is not limited to, advance, regulatory, and warning signs, barricades and channeling devices at intersecting streets on which traffic is to be maintained, barricades at the ends of the project and at right-of-way lines for intersecting streets which are to be closed to traffic, along with barricades, signs, and lights at the intersection of these streets to be closed with the first usable street on each side of the project. Traffic regulators, where required by the Engineer, are included. Barricades shall effectively bar vehicular traffic from driving onto the work site, barricades shall be used and maintained in good repair at all times during progress of the work and shall be opened only for construction purposes and public emergency.

Barricades for all parts of the work shall be erected and maintained by the Contractor so as to prevent personal and property damages of all description. Any damages from traffic or other causes occurring previous to the official acceptance of the work shall be repaired by the contractor.

Provisions for the protection of pedestrians shall be maintained at all times. Walks, driveways and entrances to buildings shall not be unnecessarily blocked. Vehicular access shall be maintained to all commercial properties designated by the Engineer.

Side streets shall not be closed to through traffic except as approved by the Engineer. Interference with traffic at all cross-streets must be held to a minimum during the time required for construction.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Traffic Maintenance and Control shall be bid as a lump sum amount and will be paid for proportionately to the amount of work performed.

HOT MIX ASPHALT MATERIALS

GENERAL

Plant mixed hot mix asphalt (HMA) shall consist of asphalt binder, aggregates, mineral filler, and other additives. The HMA materials, composition, production equipment and production shall comply with the Michigan Department of Transportation 2012 Standard Specifications for Construction (MDOT Standard Specifications).

MIXTURE TYPES

The HMA used for Base Patching and Wearing Course shall be 13A, with an application rate of 165 lbs/syd. Maximum depth for Base Patching shall be three (3) inches and minimum depth for Wearing Course shall be one and one half (1.5) inches.

The HMA used for Driveway Patching shall be 36A, with an application rate of 165 lbs/syd.

ASPHALT BINDER

The asphalt binder shall comply with the requirements of Section 904 Asphaltic Materials of the MDOT Standard Specifications Table 904-2. Asphalt binder shall be prepared by refining crude petroleum by suitable methods. The asphalt binder shall be free from water and be homogeneous.

The binder shall comply with Table 904-7, Temperatures for Asphaltic Materials.

The asphalt binder shall be at a minimum Performance Grade PG 58 - 28.

AGGREGATE

Aggregate shall meet the requirements of MDOT Standard Specifications Section 902.09. Aggregate General Requirements for HMA Mixtures.

MINERAL FILLER

Mineral filler shall be limestone dust, dolomite dust, hydrated lime or Portland cement. It shall be dry, free from lumps and objectionable materials and meet the requirements for 3MF mineral filler set forth in Section 902.11 of the MDOT Standard Specifications.

BITUMINOUS BOND COAT

GENERAL

The bituminous bond coat shall be emulsified asphalt made from an approved base asphalt having a negative spot.

The emulsified asphalt shall show no separation within thirty (30) days after delivery and shall be homogenous after thorough mixing.

Bond coat material shall be SS-1h, meeting the requirements of Table 904-4 Anionic Emulsified Asphalts of the Michigan Department of Transportation 2012 Standard Specifications for Construction

PRODUCING AND WEIGHING HOT MIX ASPHALT PAVEMENTS

GENERAL

Bituminous mixtures shall be produced in continuous batch or drum mixer type plants, approved by the Engineer and operated within the plant manufacturer's recommendations. Plants shall be maintained in good mechanical condition, any defective parts which in the opinion of the Engineer adversely affect the proper functioning of the plants or which adversely affect the quality of the mixture in any manner, shall be replaced or repaired immediately.

Continuous plants shall include a means to accurately proportion aggregate, mineral filler, and asphalt cement by volumetric measurement.

Batch plants shall accurately proportion aggregate, mineral filler and asphalt cement by weight.

Drum mixer plants shall be capable of simultaneously heating and mixing the aggregates with a controlled amount of bitumen and mineral fillers in a rotating cylindrical dryer drum and discharging the mixture into a hot mix surge bin. The plant console shall have displays for both the rate of feed and accumulated weights of the aggregate, mineral filler and bitumen, by weight or volume.

The plant shall meet the requirement specified herein. The use of more than one mixing plant is not allowed unless otherwise approved by the Engineer.

PRODUCTION OF HOT MIXED ASPHALT

Hot mixed asphalt shall be produced in accordance with the Michigan Department of Transportation 2012 Standard Specifications for Construction, Section 501 Plant Produced Mix Hot Asphalt.

TRANSPORTATION OF HOT MIXED ASPHALT

Hot mixed asphalt shall be transported to the project site in accordance with the Michigan Department of Transportation 2012 Standard Specifications for Construction, Section 501.03.E Transportation of Mixtures.

WEIGHING HOT MIX ASPHALT LOADS

Weigh each load delivered to the nearest twenty (20) pounds on an approved scale having an automatic print out system. The scale and print out system shall meet the Michigan Department of Transportation 2012 Standard Specifications for Construction, Section 109.01.B.6.

PLANT INSPECTION

The Engineer shall at all times have access to all parts of the Contractor's plant in order to verify weights, proportions, materials and temperatures used in the preparation of the mixture.

CHARACTERISTICS OF HOT MIXED ASPHALT

DESCRIPTION

Representative samples of the mixture will be taken prior to placement or from the finished pavement. Testing equipment and tests will be furnished and conducted by the City and at the expense of the City except for the complete chemical and physical analysis of the Refined Asphalt proposed to be used. Whenever required, the Contractor shall furnish the Engineer with samples for testing.

TESTING AND ACCEPTANCE

HMA testing and acceptance shall be performed in accordance with Section 501.03.N of the 2012 MDOT Standard Specifications.

PRICE ADJUSTMENT

ASPHALT CEMENT

Where test results of samples taken deviate from specification requirements, the affected material will be subject to price adjustments on the following basis:

When penetration test results for penetration-graded asphalts, or the viscosity test results conducted at 60 C on viscosity-graded asphalts deviate from the limits as herein specified for Asphalt Cement by 10 percent or more, the mixture produced will be evaluated by the Engineer, if in the Engineer’s judgment the defective pavement warrants removal, the affected area shall be removed and replaced at the Contractor’s expense. If it is determined by the Engineer that removal is not required, the contract unit price will be reduced by 10 percent for the affected mixture, except that where price adjustments are required from test failures on recovered asphalt, these price adjustments will not apply.

When penetration results on recovered asphalt fall within the ranges shown below, the contract unit price will be decreased for the affected mixture by the percentages shown.

Penetration From To	Penetration From To	Penetration Below
40 30	29 25	25
10% Decrease	50% Decrease	90% Decrease*

*These areas will be evaluated by the Engineer. If in the judgment of the Engineer the defective area warrants removal, the defective area shall be removed and replaced at the Contractor’s expense with pavement meeting specification requirements.

REJECTED MATERIAL

The weight of any hot mixed asphalt material which has been rejected on account of improper temperatures, improper preparation, or for failure to comply with the specification requirements in any other detail, will be deducted and payment will not be allowed for such rejected material.

HOT MIXED ASPHALT CONSTRUCTION EQUIPMENT

GENERAL

All equipment which is to be used on the work shall be of sufficient size and mechanical condition as to meet the requirements of the work and to produce satisfactory results. All equipment and methods shall be as specified unless otherwise approved by the Engineer. If equipment or methods to be used are not specified, the Contractor shall use equipment and methods satisfactory to the Engineer that will accomplish the work in conformity with the requirements. In all cases the Contractor will be fully responsible for producing construction work in conformity with contract requirements.

EQUIPMENT

All equipment used shall comply with the requirements of the Michigan Department of Transportation 2012 Standard Specifications for Construction, Section 501.03.A.

PREPARING THE EXISTING SURFACE

DESCRIPTION

This item of work shall consist of preparing the existing pavement which will be used as a base for the hot mixed asphalt (HMA) material in accordance with the following procedure:

On pavement not previously surfaced with asphalt, joints and cracks one inch or more in width shall have any filler, sealer and foreign materials removed by hand or mechanical methods to a depth below the pavement surface not less than the width of the joint, the resulting space shall be cleaned and completely filled with bituminous mixture of the type specified for Base Patching, well tamped or rolled in place.

All broken existing HMA not bonded to the base pavement or to other HMA and/or patches which, in the opinion of the Engineer, may cause bleeding or instability of the proposed bituminous resurfacing, and/or high joints or patches, shall be removed. Material may be removed by use of a cold-milling machine, jack hammers or by methods achieving similar results as approved by the Engineer.

All underlying loose, deteriorated concrete base shall be removed by thorough sweeping with a "vactor", power broom, compressed air jet or other means approved by the Engineer. All existing or resulting holes, ruts, cracks and depressions in the existing concrete pavement or HMA pavement surface shall be vacuumed, swept or blown clean of dust, dirt or other loose material, bond coat applied, and completely refilled with the hot mixed asphalt mixture specified for Base Patching. The HMA shall be thoroughly compacted by mechanical tamping or rolling. All areas cleaned during the day shall be patched and repaired as specified above by the end of the day's work. Where the removal is by milling, the filling of holes and depressions shall take place within 3 to 5 working days of the milling operation, or pavement concrete base repair, or as directed by the Engineer.

The existing pavement shall be brought to a uniform contour below the grade established for the required thickness of the proposed HMA surfacing by removing necessary pavement and/or the use of leveling material, machine-placed and rolled in layers not exceeding 3 inches in thickness or as directed by the Engineer. This work shall be done prior to constructing the Leveling Course (if required) or the Wearing Course.

Before the bond coat is applied at the rate specified, the existing pavement shall be dry and swept clean of dust, dirt and other foreign materials.

Connections with existing surfaces at specified locations or intersections, as directed and located by the Engineer, shall be made by cutting a groove into the old pavement surface to form a butt-type joint having a true vertical face at least 1½" in depth and a sloping bottom width of at least four feet for the full length of the joint. All such joints formed in an existing HMA surface shall have the 1½" vertical face maintained until the new

HMA surface is placed. Where the vertical face is deformed by traffic or by other means, the Contractor at his expense shall trim the deformed joint to a true line and vertical face.

All materials removed shall become the property of the Contractor, and shall be removed from the project.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

“Surface Preparation” will be measured in square yards and shall be paid for at the contract unit price per square yard, which price shall be payment in full for all work required in the preparation of the base, except the following:

“Butt Joint” will be paid for separately. It will be measured in linear feet shall be paid for at the contract unit price per linear foot which shall be payment in full for all work required.

Filling, patching and compacting holes or depressions will be paid at the contract unit price for “HMA Base Course Patching”.

Leveling by self-propelled paver, if required, will be paid at the contract unit price for “Leveling Course”.

COLD-MILLING SURFACES

DESCRIPTION

This work shall consist of preparing a foundation for the placement of the Hot Mixed Asphalt (HMA) surface course(s) by the removal of existing HMA or concrete material to the depth, width, grade and cross section as shown on the plans.

CONSTRUCTION METHODS

The existing surface shall be removed to the depth, width, grade and cross section shown on the plans or as directed by the Engineer. Where deteriorated base material is removed below the grade specified, the resultant holes or depressions shall be filled and compacted by Base Course Patching or as directed by the Engineer.

The material removed from the pavement surface shall become the property of the Contractor unless otherwise shown on the plans or in the proposal. Materials reserved by the City shall be stored at a location, and in the manner, approved by the Engineer. Materials that become the property of the Contractor shall be removed from the project and properly handled and/or disposed of outside the City's boundaries.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

"Cold-Milling Surfaces" will be measured by area in square yards. The contract unit price per square yard shall be payment in full for all work required to remove the surface as required, and loading and disposal of the material. Any work of removing by hand the existing surface along curbs, curbed radii, in intersections, around drainage or utility structures etc., shall be included in the cost of removing surfacing by this method. No additional compensation will be allowed for concrete patches encountered in the milling area.

Filling and compacting holes and depressions will be paid at the contract unit price for "HMA Base Course Patching".

HOT MIXED ASPHALT BASE COURSE PATCHING

DESCRIPTION

This work shall consist of constructing a hot mixed asphalt (HMA) base course, as directed by the Engineer, for the patching of existing utility structure adjustments and concrete base repair areas, filling of all holes and depressions in the concrete or HMA foundation/base, and filling of all spaces resulting from the removal of old HMA surfacing and patches of temporary bituminous mixture, or from other operations of surface preparation, to the required elevation.

CONSTRUCTION METHODS

The base course patching mixture shall meet the requirements specified for Hot Mixed Asphalt Materials. The base course material shall be placed in layers not to exceed 3 inches in thickness after compaction.

The surface of the final lift before compaction shall be placed above the surface of the existing adjacent pavement, so that the weight of the roller will be placed entirely upon the new asphalt. The surface of the patch after compaction shall be no more than 1/4 inch above the elevation of the adjacent existing surface.

The areas shall be cleaned of dust, dirt and other loose material by sweeping or by the use of a "vactor"; and the resulting areas, when dry, shall be sprayed with bond coat material and completely filled to the grade of the base. The mixture may be hand-placed and shall be thoroughly compacted by mechanical tamping or rolling. All areas cleaned during the day shall be patched and repaired as specified above by the end of the day's work.

Base Course Patching shall also be used to fill the space formed by removal of existing HMA surfacing at proposed connections with existing surfaces at the specified locations or intersections. This material shall be placed as specified above and shall maintain a 1½-inch vertical surface in this joint until the new wearing course is placed.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

"HMA Base Course Patching" will be measured in tons, and shall be paid for at the contract unit price per ton, which price shall be payment in full for all preparation, application of bond coat, furnishing the materials and constructing the base course complete.

The removal of loose or deteriorated areas in the existing HMA surface and/or concrete surface, including existing surfacing at longitudinal and transverse cracks and joints, along pavement edges, or the removal of any surface area where directed by the Engineer, will not be paid for separately but shall be included in the contract unit price per ton of "HMA Base Course Patching" which will be used to fill in the areas.

APPLICATION OF BITUMINOUS BOND COAT

DESCRIPTION

The work shall consist of applying to the prepared foundation a bond coat of the material specified. The bituminous material shall be applied uniformly at a rate of 0.10 gallons per square yard, or as directed by the Engineer, by means of pressure distributor. Only in such areas as are inaccessible to the regular distributor operation shall the bituminous material be applied by means of the hand spraying apparatus of the distributor. The foundation shall be clean and free from moisture when the bond coat is applied. The new Hot Mixed Asphalt surface shall not be placed until the bond coat has cured. Proper care shall be taken so as to prevent spreading of the bituminous bond coat material on adjacent pavement, structures, surfaces, curbs, walks, laws, shrubbery or other appurtenances. Any material applied to said items shall be removed at the Contractors expense.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Furnishing, heating, hauling and all work required to apply the bond coat shall not be paid for separately, but shall be included in the unit costs for "HMA Base Course Patching", "Leveling Course", "Wearing Course", and "Driveway Patching".

PLACING & COMPACTING HOT MIXED ASPHALT LEVELING & WEARING COURSE

DESCRIPTION

The hot mixed asphalt (HMA) shall be dumped into the center of the hopper of an approved self propelled mechanical paver and shall be placed to such a depth that when compacted it will have the thickness specified or directed by the Engineer. When placing a HMA wearing course, the placing operation shall be conducted in such widths that the longitudinal joint will coincide with the traffic lanes. When placing a lane adjoining a previously placed lane, the HMA shall be placed such that it overlaps the first lane by 2 to 4 inches and at such height above the cold mat equal to the breakdown roller depression on the hot mat.

Finishing at specified pavement ends and intersections shall be made by constructing a “Butt Joint” as specified herein. At all joints, pavement ends, or where required, approved hand methods shall be used to provide a smooth dense surface.

All paving lanes shall be completed to approximately the same point of ending at the end of each day. If the longitudinal edge of a pave lane of wearing course is distorted during the day’s work by traffic or other means, it shall be trimmed by saw-cutting to a true line and vertical face prior to placing the abutting lane. Transverse joints in both the leveling and wearing course shall be carefully constructed and maintained with a vertical face until additional material is placed against the joint. If the joint has been distorted by traffic, or by other means, it shall be trimmed back sufficiently by a method approved by the Engineer to provide a straight line and vertical face.

Corrections to the longitudinal and transverse edges by a method approved by the Engineer will not be paid for separately.

Rolling of the mixture shall begin as soon after placing as it will bear the roller without undue displacement, picking up of the mat or cracking. To prevent adhesion of the mixture to the roller wheels they shall be kept properly moistened with water. Rolling shall start longitudinally at the side of the pavement and proceed toward the center of the pavement, overlapping on successive trips by at least one half the width of the roller. Alternate passes of the roller shall be of slightly different lengths. When compacting an adjoining lane, the longitudinal joint shall be rolled first. The roller shall be supported mainly on the cold lane with only 3 to 6 inches of the roller extending onto the freshly placed bituminous material.

Rolling shall proceed continuously until all roller marks are eliminated and no further compaction is possible. Any placed HMA which is displaced by rolling operations, becomes mixed with foreign material or is in any other way defective, shall be removed and replaced with fresh HMA and compacted as required. In all locations not accessible to the roller, the HMA shall be compacted by hand-tampers.

The finished surface, after final rolling, shall be even and smooth, true to the established crown and grade. The variation of the surface from the testing edge of 10-foot straight edge paralleling the centerline of the pavement shall at no point exceed 1/4 inch.

Variations in excess of the specified tolerance shall be corrected as directed by the Engineer at the Contractors expense.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

“Leveling Course” and Wearing Course” will be measured by the weight of the specified material placed in tons, and shall be paid for at the contract unit price per ton which price shall be payment in full for furnishing all materials, labor and equipment, including bond coat, required to complete the work as specified.

BUTT JOINT CONSTRUCTION

DESCRIPTION

Butt joints shall be constructed at the interface of existing hot mixed asphalt (HMA) surfaced streets and a street being resurfaced or reconstructed.

Butt joints shall be constructed to the length and width as specified at the locations shown on the plans and as marked by the Engineer for the full width of the street or interface.

MATERIALS

Bond coat material shall be SS-1h, meeting the requirements of Table 904-4 Anionic Emulsified Asphalts of the Michigan Department of Transportation 2012 Standard Specifications for Construction.

Hot Mixed Asphalt shall be MDOT mix designation 13A as specified herein.

CONSTRUCTION METHODS

Joints shall be cut by approved methods to provide a straight line and vertical face equal to the thickness of the proposed overlay, but not less than 1-1/2 inches. The prepared joint shall be a minimum two (2) feet wide. Any joint that becomes distorted by traffic, or by other means shall be recut to form a straight line and vertical face. All cut material shall be removed and disposed of, and the joint thoroughly cleaned of all dirt and debris.

Where the existing HMA surfaced street abuts a street receiving an overlay, the butt joint shall be uniformly tapered up to the original surface over a minimum distance of five (5) feet or as marked by the Engineer.

The prepared pavement shall then be treated with bond coat, including the vertical face of the existing pavement. The bond coat shall be applied uniformly by approved methods. The foundation shall be clean and free from moisture when the bond coat is applied. The HMA mixture shall not be applied until the bond coat has been properly cured.

The HMA shall be placed, spread and compacted so that the new surface is flush and even with that of the existing surface.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

“Butt Joint” will be measured by length in linear feet and will be paid for at the contract unit price per linear foot which shall be payment in full for furnishing all material, equipment and labor to complete the work specified including milling, sawcutting, removal and disposal of all material.

HOT MIXED ASPHALT FOR DRIVEWAY PATCHING

DESCRIPTION

This work shall consist of furnishing, placing and compacting hot mixed asphalt (HMA) on driveway approaches as directed by the Engineer. Patching of driveway approaches shall be performed after the mainline paving work has cured. This work shall be in accordance with applicable provisions of these specifications.

CONSTRUCTION METHODS

- (a) The driveway shall be scraped clean of existing HMA overlay, if any, thoroughly swept clean and be free of moisture and debris before work is started.
- (b) Bond coat, of the type and at the rate as specified herein, shall be applied to the driveway and terminate in a neat, straight line at the point indicated by the Engineer.
- (c) The HMA shall meet the requirements as specified in the Specifications section titles Hot Mixed Asphalt Materials.
- (d) The HMA shall be placed and compacted from the newly constructed pavement surface to a point in the drive which will provide positive drainage from the driveway out to the street flow line.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

“HMA Driveway Patching” will be measured by the weight of material placed in tons, and shall be paid for at the contract unit price per ton which shall be payment in full for furnishing all materials, labor and equipment, including bond coat, required to complete the work as specified.

WEATHER LIMITATIONS

DESCRIPTION

Hot mixed asphalt shall not be placed, nor the prime coat or bond coat applied, when rain is threatening or when the moisture on the existing surface would prevent satisfactory bonding.

Unless otherwise approved by the Engineer, hot mixed asphalt paving will not be allowed when the temperature of the surface being overlaid is below 40 F as measured in the shade, nor when there is frost on the grade.

EXCAVATING AND PREPARING PAVEMENT FOUNDATION

DESCRIPTION

The work consists of excavating material and disposing of as herein specified or shown on the plans, compacting the subgrade to the density specified, constructing thereon where required or shown on the plans a granular or aggregate subbase, and maintaining the work in a finished condition until acceptance. Where used in this Section, the letters "C.I.P." are an abbreviation for "Compacted in Place". The term denotes furnishing, placing and compacting the material in accordance with the plans and specifications.

EXCAVATION

Earth and material within the pavement or pavement and curb area and contiguous thereto shall be removed to the grades established by the plans. After the subgrade has been excavated to the approximate grade, the Engineer will inspect the grade to determine if natural materials meet subbase requirements or if "Subgrade Undercutting" is required. Where natural materials meet sub-base requirements, as determined by the Engineer, it shall be left in place and shall be compacted to not less than 95 percent of Maximum Unit Weight by a power compactor. After compaction the Engineer will check the subgrade for trueness, if not found true to established grade the Contractor shall add, remove, or scarify and redistribute material to the established grade. The subgrade shall then be re-compacted. No allowance will be made for over excavation by the Contractor.

Excavated material shall not be placed or stored on private property without written approval of the owner. Material may be placed within the paved right-of-way only when approved by the Engineer, but not in an open traveled lane of a street for more than twenty-four (24) hours. Filter fabric shall be placed over and around the covers of all utility structures located downstream from the stored material.

Excess material shall become the property of the Contractor and shall be properly disposed of at his expense and liability, except the Engineer has the right to direct the Contractor to haul any portion of said material to points not exceeding one mile from place of excavation. Cost of such haul shall be included in this item of work.

SUBGRADE UNDERCUTTING

In excavated areas, after the subgrade elevation has been established, or in areas where existing pavement has been removed, the Engineer will inspect the subgrade to certify the adequacy of the native soils and to determine the extent of any additional excavation of unsuitable soils.

If the Engineer determines that the subgrade is unsuitable, additional removal of material shall be performed until a stable, firm, dry native soil satisfactory to the Engineer is reached. All such excavated material shall become the property of the Contractor and shall be disposed of as specified for excavation.

UNDERCUTTING BACKFILL

Backfill material shall be placed in subgrade undercut areas as called for on the plans or as directed by the Engineer. Backfill material shall be 21A limestone, or crushed concrete as specified in the

Michigan Department of Transportation 2012 Standard Specifications for Construction, Section 902.05. The backfill shall be compacted to not less than 95 percent of the Maximum Unit Weight.

SUBBASE

Subbase material shall be 3" and up crushed limestone or concrete and placed on the prepared subgrade as shown on the plans or as directed by the Engineer. The subbase material shall be evenly spread and compacted. Material shall be placed in layers of approximately equal thickness. Should the subgrade at any time prior to or during placement of the subbase become soft or unstable to the extent that subgrade material is forced up into the subbase material, the operation shall be immediately discontinued. Where subgrade material has become mixed with the subbase material, the mixed material shall be removed and disposed of. After the subgrade has been corrected as directed by the Engineer, new subbase material shall be placed and compacted as specified. Any damage to the subgrade or subbase caused by operation of the Contractors equipment on the subbase shall be corrected at the Contractors expense.

AGGREGATE BASE COURSE

This work shall consist of constructing an aggregate base course on a prepared subbase. The material shall be 21A aggregate and shall conform to the Michigan Department of Transportation 2012 Standard Specifications for Construction, Section 902.05

The subbase shall be established so that the compacted depth of the aggregate base course is of the minimum thickness specified on the plans or in the proposal. The manner of spreading shall be such that the subbase material will not become rutted or distorted. The aggregate base course shall be compacted to not less than 95 percent of Maximum Unit Weight. The surface of the aggregate base course shall be finished to the specified grade and cross section within a tolerance of 3/4 inch from the established grade.

DELIVERY OF MATERIAL

All material shall be delivered to the site in trucks suitable for the purpose and having proper safeguards in place to prevent material being ejected from the area containing the stone.

All loads delivered shall have a delivery ticket from the supplier indicating, but not limited to, the following information: Supplier, date of delivery, location or project name, type of material, scale measured weight in pounds and tons of material delivered.

Delivered material shall not be placed or stored on private property without written permission of the owner. Material may be placed within the paved right-of-way only when approved by the Engineer, but not in an open traveled lane of a street for more than twenty-four (24) hours. Filter fabric shall be placed over and around the covers of all utility structures located downstream from the stored material.

SURFACE STRUCTURES

Catch basins, manholes, water gates, roadway valve boxes for gas and water shut-off valves and other like structures located within the pavement area shall be raised, lowered or shifted in alignment by the Contractor to the proposed line grade as established by the Engineer. The work will be performed and paid for as specified in these specification sections titled "Adjusting Structures" and "Reconstructing Structures".

UNDERGROUND UTILITIES

The City reserves the right to construct or to allow to be constructed, by itself or by public utility companies, various underground utilities such as house sewer connections, water and gas services, electric conduits etc., and related structures at any time prior to the placing of new concrete.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

"Excavation" will be measured in cubic yards of volume in its original position, and shall be paid for at the contract unit price per cubic yard which shall be payment in full for all labor, material and equipment necessary to complete the work as specified.

"Subgrade Undercutting" will be measured in cubic yards of volume as determined by the tons of "Undercutting Backfill" delivered and placed, divided by 1.72 tons per cubic yard, and shall be paid for at the contract unit price per cubic yard which shall be payment in full for all labor, material and equipment necessary to complete the work as specified.

"Undercutting Backfill" will be measured by weight in tons delivered as determined by the delivery tickets, and shall be paid for at the contract unit price per ton which shall be payment in full for furnishing, hauling, placing and compacting the material in place as specified or as directed by the Engineer.

"Subbase" will be measured by weight in tons delivered as determined by the delivery tickets, and shall be paid for at the contract unit price per ton which shall be payment in full for furnishing and hauling all materials and constructing the compacted subbase to the neat lines on the plans or as directed by the Engineer and to the depth specified on the plans or in the proposal.

"Aggregate Base Course" of the depth specified, will be measured by weight in tons delivered as determined by the delivery tickets, and shall be paid for at the contract unit price per ton which shall be payment in full for furnishing and hauling all materials and constructing the compacted

base course to the neat lines on the plans or as directed by the Engineer and to the depth specified on the plans or in the proposal.

CONCRETE PAVEMENT

DESCRIPTION

This work shall include all labor, equipment and materials required to construct or repair jointed Portland cement concrete street and alley pavement, with or without reinforcement, including curbs where required. The work shall be as shown and noted on the plans and as specified herein.

All concrete shall be ready-mixed concrete, prepared by an approved mixing method. The concrete shall consist of Portland cement, fine aggregate, coarse aggregate, admixture (if any) and water combined.

MATERIALS

Portland Cement

Cement shall be Portland Cement and shall conform to ASTM C 150 "Portland Cement", and 2012 MDOT Standard Specification Section 601.02. The Contractor shall, if required, submit at his own expense, to the Engineer, a certified analysis, by a competent laboratory of the cement to be used.

Aggregates

Fine aggregate shall consist of clean, hard, durable, uncoated particles of sand, free from clay lumps and soft or flaky material. The sand shall conform to the requirements of the 2012 MDOT Standard Specifications Section 902.08 for 2NS Sand.

Coarse aggregate shall consist of crushed stone or concrete and shall conform to the requirements of the 2012 MDOT Standard Specifications Section 902.03 for 6A Coarse Aggregates.

Water

Water shall conform to the requirements of the 2012 MDOT Standard Specifications Section 911 for Water.

Tie Bars and Hook Bolts (**Hook Bolts Not Permitted On This Project**)

Straight tie bars shall be epoxy coated, deformed, No. 5, unless otherwise specified, of the length as shown on the plans, and shall meet the requirements specified in ASTM A 615, A 616, A 617 or A 706.

Hook bolts shall consist of two epoxy coated hook bolts, minimum #5 bar, mechanically coupled to form a lane tie assembly as shown on the plans. The assembly shall have an ultimate tensile strength of not less than 24,000 pounds.

Joint Sealant

Hot-poured type joint sealant shall conform to the requirements of the 2012 MDOT Standard Specifications Section 914.04 Joint Sealants for Concrete Construction.

Curing Material

White membrane curing compound for curing concrete shall conform to the requirements of the 2012 MDOT Standard Specification Section 903.06.A Concrete Curing Materials for Pavements.

Load Transfer Assemblies

Epoxy coated load transfer assemblies for transverse joints shall conform to the requirements of the 2012 MDOT Standard Specifications Sections 602.02. Materials, and 602.03.F.03 Transverse Joints.

Backfill Material

Topsoil shall conform to ASTM D 5268, pH range of 5.5 to 7.4 percent organic material minimum, free of stones 1 inch or larger in any dimension, and other extraneous materials harmful to plant growth. Topsoil shall be a dark, organic, natural surface soil consisting of clay, sand, and silt, exclusive of any peat or muck, and shall contain not less than three-(3) percent organic material by weight. The topsoil shall be screened so that the maximum particle size is $\frac{3}{4}$ inch and a maximum of three (3) percent is retained on a $\frac{1}{4}$ inch screen.

CONCRETE

Mix, mixing and delivery shall be in accordance with the 2012 MDOT Standard Specification Section 601 Portland Cement Concrete for Pavements.

Concrete Grade shall be P1, with a maximum slump of four (4) inches, and show an entrained air content of not less than five (5) percent nor more than seven (7) percent.

When requested by the Engineer, the Contractor prior to actual delivery of concrete shall furnish a statement, giving the dry weight of cement and saturated surface-dry weights of fine and coarse aggregate and quantities, type and name of admixture (if any) and of water per cubic yard that will be used in the manufacture of the concrete. The Contractor shall also furnish evidence satisfactory to the Engineer that the materials to be used and proportions selected will produce concrete of the quality specified. Whatever strengths are attained, the quantity of cement used shall not be less than the minimum specified. The ratio of the fine to coarse aggregates may be altered in accordance with the instructions of the Engineer when he finds such changes necessary to obtain proper workability and a smooth, dense, plastic mixture free from segregation, amounts will be so adjusted that each batch contains the quantity of cement specified.

When delivered, the concrete shall be thoroughly mixed and of uniform consistency, and shall have a slump not greater than that specified. The Engineer may reject concrete having a slump

greater than that specified. Water shall not be added at the project site without approval of the Engineer.

The concrete shall be delivered to the site of work and shall be discharged from the mixer within a period of one (1) hour after the introduction of the mixing water with the dry materials, unless otherwise approved or directed by the Engineer.

Concrete shall not be placed when the temperature of the concrete at point of placement is above 90 F.

TESTING AND SAMPLING

All sampling and testing shall be done in accordance with the methods outlined in the current MDOT Materials Quality Assurance Procedures Manual. Whenever requested by the Engineer, the Contractor shall furnish samples of materials for testing.

EQUIPMENT

The Contractor shall furnish and maintain such equipment as necessary to complete the work in accordance with the 2012 MDOT Standard Specification Section 602.03.A. Sufficient equipment shall be assigned to the job to satisfy the Engineer that the delivery of the mixed concrete will be such that concrete placement will be carried on as a continuous operation until the placing of the section is complete.

CONSTRUCTION METHODS

Preparation of Base - The base shall be smoothed, trimmed and compacted substantially to the required line, grade and cross section to receive the pavement. Base preparation shall be in accordance with the 2012 MDOT Standard Specifications Sections 302.01 thru 302.03, and 602.3.B.

Placing Forms - Forms shall be constructed in accordance with the 2012 MDOT Standard Specification Section 602.03.C.

Placing Concrete - Concrete shall be placed in accordance with the 2012 MDOT Standard Specification Section 602.03.D.

Manholes, inlets and other structures shall be set to grade and alignment prior to or during placement of concrete. All structures shall be cleaned thoroughly to permit adhesion of the concrete. All utility structures within the area to be paved shall have a filter fabric installed over and completely around the cover.

Whenever the placing of the concrete is interrupted for 30 minutes or more on account of an unavoidable breakdown, or upon order of the Engineer to suspend work, a Type B transverse joint shall be formed to close the section as directed by the Engineer. Excess concrete not needed to close the section shall not be used in the pavement section.

Placing Pavement Reinforcement - Pavement reinforcement shall comply with the requirements of the 2012 MDOT Standard Specification 602.03.E. Where reinforcement is required, the mats, anchors or dowel assemblies shall be placed at the depth shown on the plans, or as specified herein.

Joints - All joints shall be placed and constructed as shown on the plans and details and in accordance with the 2012 MDOT Standard Specification 602.03.F.

Screeding - Screeding shall comply with the 2012 MDOT Standard Specification 602.03.G.

Finishing - After screeding, the surface shall be made uniform by floating. When mechanical methods are not used, as approved by the Engineer, hand floating will be required following the initial straightedging of the pavement.

Straightedge Testing, Surface Correction, and Edging - Shall comply with the 2012 MDOT Standard Specification 602.03.I.

Gutters shall be water tested as soon as possible after finishing and any low spots shall be immediately corrected.

Texturing - Texturing shall comply with the 2012 MDOT Standard Specification 602.03.K.

Integral Curb (where required) - Integral curb shall be constructed monolithic with the pavement slab. The curb material shall be placed before the pavement has started its initial set, and shall be of the same mix and shall conform in all respects to the requirements for concrete in the pavement.

Immediately following the final floating of the pavement, the area where the curb material is to be placed shall be roughened so as to secure a good bond between the pavement and the curb.

Unless otherwise approved by the Engineer both face and back forms will be required when constructing curb. The curb concrete shall be vibrated sufficiently to eliminate all voids, and tamped to bring the mortar to the surface. The face and top of the curb shall be finished smooth and true to line, grade and cross section. No more troweling than necessary to obtain the desired result shall be done.

The top of drop curbs for sidewalk ramp, driveway and alley approaches shall be installed at locations as directed by the Engineer to a height of 1/2" above the gutter, or the proposed gutter in the case of pavement to receive an HMA overlay. The top of drop curbs for sidewalk ramps shall be installed as shown on the detail drawings.

Immediately after the removal of the forms, any visible areas of honeycomb or minor defects shall be filled with mortar, composed of one part Portland cement and two parts of fine aggregate from the same source as used in the pavement, applied with a wooden float. Immediate steps shall be taken by the Contractor to correct the conditions contributing to these defects.

Curing - Curing operations shall comply with the 2012 MDOT Standard Specification 602.03.M.

Immediately after the forms are removed, the entire area of the sides of the slab shall be coated with curing compound at the rate specified for the pavement surface, except as specified in section on Removal of Forms.

The Contractor shall provide on the project sufficient burlap or cotton coverings for the protection of the pavement in case of rain or breakdown of the spray equipment.

Failure to provide proper curing will be considered as sufficient cause for immediate suspension of the concreting operations.

Removal of Forms - Forms shall not be removed from freshly placed concrete until it has set for at least 12 hours. They shall be carefully removed and in such manner that no damage will be done to the edge of the pavement.

After the forms have been removed, the ends of all joints shall be cleaned and all honeycombed areas pointed as specified. The sides of the pavement shall be covered with curing material, wet straw or other suitable curing agent except where honeycombed areas are to be pointed. Such areas shall be covered with wetted burlap until the pointing has been completed, at which time they shall be cured as specified above.

Hot Poured Joint Filler and Sealer - Hot poured joint sealant shall be applied in accordance with the 2012 MDOT Standard Specification 602.03.S.

Weather Protection – Protect freshly placed concrete pavement from weather conditions in accordance with the 2012 MDOT Standard Specification 602.03.T.

Finish Grading - The Contractor shall make all fills necessary between the pavement edge and the limit of disturbed area with topsoil as specified herein. The topsoil shall be raked smoothed, leveled between the pavement edge and disturbed area, and compacted prior to spreading seed or placing sod.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

"Concrete Pavement" of the thickness specified on the plans will be measured in the unit for the type as specified, including integral curb, reinforcement and/or dowel assemblies and shall be paid for at the contract unit price per unit which shall be payment in full for all labor, material and equipment for constructing the concrete complete, including all joints as specified.

CONCRETE PAVEMENT REPAIR

DESCRIPTION

This work shall be in accordance with Concrete Pavement, of these Specifications; Section 603. Concrete Pavement Restoration, of the MDOT 2012 Standard Specifications for Construction, the Pavement Repair Joint & Bar Detail and the Curb Cap & Pavement Repair Detail as shown on Details, of the Plans. The work shall consist of saw cutting as necessary for removal of existing concrete pavement, regardless of overall thickness, preparation of sub base, placing horizontal dowels, placing concrete, joints, finishing, and curing, for the purpose of constructing a patch or replacing sections in the existing pavement on hot mixed asphalt (HMA) resurfacing or concrete pavement repair projects with or without HMA overlay.

The pavement areas to be removed will be as designated by the Engineer. Where multi-lane patches are required, they shall be constructed on a lane-at-a-time basis so that traffic may be maintained. When the approaches on both ends of an alley require repair, only one approach shall be repaired at a time.

NOTIFICATION

The contractor shall be responsible for notification of residents occupying dwellings and businesses along the line of the work. Forty eight (48) hours prior to the start of work, the Contractor shall give notice to each dwelling, business or address, in writing, of the work to be preformed. This notification shall consist of; name of project; anticipated start date; estimated duration including final cleanup and restoration; brief explanation of work to be performed; explanation of and request for cooperation with respect to traffic flow and parking; company name, address, contact person and phone number; and thank you for cooperation.

The Contractor shall also post the street in front of each dwelling or address where construction will take place the day prior to the start of such work. The notification shall: advise of impending work the following day; request to clear the street; notify of loss of access for period of time.

REMOVAL METHODS

When removing pavement, whether finished concrete pavement or concrete base course with a HMA surface, the pavement shall be removed to an existing joint, or saw cut to a true line with a vertical face along the lines as marked by the Engineer. The pavement shall be saw cut full depth into existing concrete or as directed by the Engineer. Intermediate saw cuts shall be made as required by Section 603, referenced above. The removal shall be such that there will be no disturbance and/or damage to sections of pavement which are to remain in place. All damaged or undermined pavement caused by the Contractors operations shall be removed and replaced at the Contractor's expense.

The use of a crane and ball type breaking equipment will not be allowed. Pavement removal shall be accomplished as specified in Section 603 of the MDOT 2012 Standard Specifications.

Where the area to be repaired includes curbing, the Contractor shall remove the curbing adjacent to the repair and in line with the joints of the repair.

SUBGRADE PREPARATION

This work shall include excavation and preparation of the subgrade, including furnishing and placing the necessary fill to restore the proper cross-section for the new pavement in accordance with the Section "Excavating and Preparing Pavement Foundation" of these Specifications.

When adjacent existing concrete pavement measures seven (7) inches or less in thickness, the subgrade shall be excavated and prepared to an elevation one (1) inch below the bottom of the adjacent concrete.

CONCRETE

Mix, mixing and delivery shall be in accordance with the 2012 MDOT Standard Specification Section 601 Portland Cement Concrete for Pavements. Material and construction methods shall conform to the requirements of the specification titled "Concrete Pavement" unless otherwise noted herein.

Concrete Grade shall be MDOT P1, with a slump of four (4) inches, and show an entrained air content of not less than five (5) percent nor more than seven (7) percent.

Concrete pavement repair shall be constructed to a thickness of seven (7) inches minimum, and no additional compensation shall be allowed due to variable pavement thickness. No concrete shall be placed until the subgrade has been approved by the Engineer.

All replacement concrete pavements shall be anchored to the existing concrete pavement as set forth herein and shown on the Pavement Repair Joint & Bar Detail and Curb Cap & Pavement Repair Detail. The anchors shall be epoxy coated No. 5 deformed bars grouted into one (1) inch diameter holes drilled four (4) inches into the existing pavement at a point one half the depth of the pavement. The anchors shall be spaced at thirty-six (36) inches on center, beginning twelve (12) inches from corners or edges.

All expansion and longitudinal joints shall be restored. Transverse joints within partial width cuts shall be restored to match the joint in other lanes. Longitudinal and transverse joints shall be restored by saw cutting and filling with hot poured rubber asphalt per MDOT Specification Section 603.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

"Concrete Pavement Repair" or "Concrete Base Repair" will be measured in place by area in square yards, and shall be paid for at the contract unit price per square yard which shall be payment in full for furnishing all materials, labor and equipment to complete the work as specified including, saw cutting, removing existing concrete with or without HMA surface, subgrade preparation, installation of epoxy coated anchors, replacing the removed pavement

with concrete pavement with or without integral curb to match existing pavement, joint restoration as specified and removal of all debris and foreign material.

"Subgrade Undercutting" and "Undercutting Backfill" will be measured and paid for as described in the specification titled "Excavation and Preparing Pavement Foundation".

CONCRETE SIDEWALK, SIDEWALK RAMPS,
DRIVEWAY AND ALLEY APPROACHES, AND CONCRETE CURB

DESCRIPTION

The work shall include all labor, equipment and materials required to construct or remove and replace Portland cement concrete sidewalks, sidewalk ramps, driveway approaches, header curb and curb cap on a prepared base. The work shall be as shown on the plans and details and as specified herein.

All concrete shall be ready-mixed concrete, prepared by an approved mixing method. The concrete shall consist of Portland cement, fine aggregate, coarse aggregate, admixture (if any) and water combined.

MATERIALS

Portland Cement

Cement shall be Portland Cement and shall conform to ASTM C 150 "Portland Cement", and 2012 MDOT Standard Specification Section 601.02. The Contractor shall, if required, submit at his own expense, to the Engineer, a certified analysis, by a competent laboratory of the cement to be used.

Aggregates

Fine aggregate shall consist of clean, hard, durable, uncoated particles of sand, free from clay lumps and soft or flaky material. The sand shall conform to the requirements of the 2012 MDOT Standard Specifications Section 902.08 for 2NS Sand.

Coarse aggregate shall consist of crushed stone or concrete and shall conform to the requirements of the 2012 MDOT Standard Specifications Section 902.03 for 6A Coarse Aggregates.

Water

Water shall conform to the requirements of the 2012 MDOT Standard Specifications Section 911 for Water.

Curing Material

White membrane curing compound for curing concrete shall conform to the requirements of the 2012 MDOT Standard Specification Section 903.06.A Concrete Curing Materials for Pavements.

Backfill Material

Topsoil shall conform to ASTM D 5268, pH range of 5.5 to 7.4 percent organic material minimum, free of stones 1 inch or larger in any dimension, and other extraneous materials harmful to plant growth. Topsoil shall be a dark, organic, natural surface soil consisting of clay, sand, and silt, exclusive of any peat or muck, and shall contain not less than three-(3) percent organic material by weight. The topsoil shall be screened so that the maximum particle size is ¾ inch and a maximum of three (3) percent is retained on a ¼ inch screen.

Straw Mulch Blankets and Wood Anchors

Straw mulch blankets and wood anchors shall conform to the 2012 MDOT Standard Specification Section 917.15 Mulch for Seed..

Grass Seed

Seed shall be Kentucky Bluegrass mixture as set forth in the Michigan Department of Transportation 2012 Standard Specifications for Construction, Section 917.12 Seed, and Table 917.1.

MIXING CONCRETE

Mix, mixing and delivery shall be in accordance with the 2012 MDOT Standard Specification Section 601 Portland Cement Concrete for Pavements.

Concrete Grade shall be MDOT P1, with a slump of four (4) inches, and show an entrained air content of not less than five (5) percent nor more than seven (7) percent.

When requested by the Engineer, the Contractor prior to actual delivery of concrete shall furnish a statement, giving the dry weight of cement and saturated surface-dry weights of fine and coarse aggregate and quantities, type and name of admixture (if any) and of water per cubic yard that will be used in the manufacture of the concrete. The Contractor shall also furnish evidence satisfactory to the Engineer that the materials to be used and proportions selected will produce concrete of the quality specified. Whatever strengths are attained, the quantity of cement used shall not be less than the minimum specified. The ratio of the fine to coarse aggregates may be altered in accordance with the instructions of the Engineer when he finds such changes necessary to obtain proper workability and a smooth, dense, plastic mixture free from segregation, amounts will be so adjusted that each batch contains the quantity of cement specified.

When delivered, the concrete shall be thoroughly mixed and of uniform consistency, and shall have a slump not greater than that specified. The Engineer may reject concrete having a slump greater than that specified. Water shall not be added at the project site without approval of the Engineer.

The concrete shall be delivered to the site of work and shall be discharged from the mixer within a period of one (1) hour after the introduction of the mixing water with the dry materials, unless otherwise approved or directed by the Engineer.

Concrete shall not be placed when the temperature of the concrete at point of placement is above 90 F.

TESTING AND SAMPLING

All sampling and testing shall be done in accordance with the methods outlined in the current MDOT Materials Quality Assurance Procedures Manual. Whenever requested by the Engineer, the Contractor shall furnish samples of materials for testing.

MATERIAL ON THE ROADWAY

Removed or delivered material shall not be placed or stored on private property without written permission of the owner. Material may be placed within the paved right-of-way only when approved by the Engineer, but not in open, traveled lane of a street for more than twenty-four (24) hours.

Filter fabric shall be placed over the covers of all utility structures located downstream from the stored material as described in the section titled General Construction Procedures.

Excess material shall become the property of the Contractor and shall be properly disposed of at his expense and liability, except the Engineer has the right to direct the Contractor to haul any portion of said material to points not exceeding one mile from place of excavation. Cost of such haul shall be included in this item of work.

REMOVAL OF EXISTING SIDEWALKS, DRIVEWAYS AND ALLEY APPROACHES

The Contractor shall remove existing concrete sidewalks, sidewalk ramps, driveway and alley approaches with or without HMA overlay, at the locations marked by the Engineer. Sections to be removed not falling at an expansion joint shall be saw cut at the Contractors expense. Any adjacent curbs, sidewalks, service walks, streets, etc. damaged in the removal process shall be removed and replaced at the Contractors expense.

CONSTRUCTION OF SIDEWALKS, SIDEWALK RAMPS, DRIVEWAY & ALLEY APPROACHES

Sidewalks, sidewalks ramps, driveway and alley approaches shall be constructed in accordance with 2012 MDOT Standard Specification Sections 801.03 and 803.03. Sidewalk ramps shall be constructed in accordance with MDOT Detail R-28-J.

Sidewalks shall not be less than four (4) inches thick, except where the sidewalk abuts a part of a residential driveway, in which case it shall not be less than six (6) inches thick. Residential driveway approaches shall not be less than six (6) inches thick. Alley and commercial approaches, and abutting sidewalks, shall be a minimum eight (8) inches thick.

An ADA compliant warning surface shall be provided and installed as set forth in the specification section titled "ADA Detectable Warning Surface.

REMOVAL AND CONSTRUCTION OF CURBS FOR CURB CAPPING

The Contractor shall remove existing concrete curbs at the locations marked by the Engineer. Sections to be removed not falling at an expansion joint shall be saw cut at the Contractors expense.

Any adjacent curbs, sidewalks, service walks, streets, etc. damaged in the removal process shall be removed and replaced at the Contractors expense.

The existing curb top shall be broken off and removed or ground down to a point one (1) inch below the surface of the existing, or proposed, pavement. Existing curb that is disintegrated shall be removed to sound concrete but not less than one (1) inch below the pavement surface. Reinforcing epoxy coated steel dowels shall be installed in accordance with the details shown on the plans. The surface of the existing curb, which is to be a base for the concrete curb cap, shall be cleaned of all loose material with a jet of compressed air or other approved means.

Where curbs are removed by a “grinding” or “crushing” method or similar practice, the concrete debris shall be cleaned-up by the end of the day. A “vacator” or “vacuum” shall be used to remove the debris from where it is deposited by the curb removal operation. The equipment used shall be capable of using water to control dust and be equipped with filters to prevent dust escaping into the air. The curb debris shall not be swept or moved onto the street surface prior to removal from the job site. The adjacent lawns shall be similarly cleaned at this time.

When the existing curb cap has been prepared to the satisfaction of the Engineer and before placing concrete thereon, it shall be thoroughly wetted. The forms shall be of metal or wood, straight and free from warp, and of sufficient strength to resist springing and shall be firmly staked to the required line and grade. Concrete curb cap shall be single course construction, and the concrete shall be tamped and spaded thoroughly until voids are removed to prevent honeycombing along forms.

New curb cap shall be constructed such that the top of the curb is six (6) inches above, and follows the proposed grade of the street. The new curb shall be tapered/transitioned to meet abutting existing curb over a distance of one (1) foot. The curb cap shall be anchored to the existing remaining header curb or concrete base pavement in accordance with the details shown in the Plans. The inside face of the curb shall be formed or finished plumb to a minimum depth of four (4) inches below the street surface. The Contractor shall give twenty-four (24) hours notice to the Engineer before placing concrete.

REMOVAL AND CONSTRUCTION OF CURBS FOR SIDEWALK RAMP, ALLEY AND DRIVEWAY APPROACH

The Contractor shall remove concrete header curb, or concrete integral curb and gutter, with or without asphalt overlay, at sidewalk ramp, alley and driveway approach locations as marked by the Engineer.

Where header curbs are required to be removed for the construction of a sidewalk ramp, alley or driveway approach drop curb, the header curb shall be completely removed to their full depth and disposed of.

Existing integral curbs that are to be removed for construction of a sidewalk ramp, alley or driveway approach drop curb shall be saw cut twenty four (24) inches wide, or along the flow line of the curb/street, as per the Plans, and removed to the full depth of the concrete pavement. The new header drop curb shall be installed to a depth of at least equal to the depth of the adjacent street pavement. The new integral drop curb and gutter, or new integral ADA drop curb, shall be constructed in accordance with the "Curb and Gutter Detail" of the Plans.

The surface of the sidewalk ramp drop curb shall be finished flush with the surface of the street flow line, with a finished elevation of one half (1/2) inch above the street flow line at the back of the curb.

Where integral drop curb and gutter with asphalt overlay is constructed, the asphalt shall be restored in accordance with "Placing and Compacting Bituminous Leveling and Wearing Course Mixtures" of these Specifications.

FINISHING CURB

After concrete has set up, face forms shall be pulled and curb finished to produce a smooth, dense surface free from irregularities. The back top edge of the curb and all transverse joints shall be rounded with an approved edger having a radius of 1/4 inch.

The face of the curb shall be shaped with an approved edger having the radius as shown on the plans. The curb shall be finished with a moistened wood float, and final finish shall be by a light brushing.

Immediately after the removal of the forms, any visible areas of honeycomb or minor defects shall be filled with mortar, composed of one part Portland cement and two parts of fine aggregate from the same source as used in the pavement, applied with a wooden float. Immediate steps shall be taken by the Contractor to correct the conditions contributing to these defects.

The inside face of the curb shall be finished smooth and all excess concrete and spillage shall be immediately removed from the area behind the curb.

CURB JOINTS

All concrete curb shall have expansion joints placed over the existing street or curb expansion joints or at the end points of the replaced curb. Expansion joints shall be made with 1/2" premolded fiber filler at right angles to the forms and extending to the bottom of the concrete. After installation, the fiber filler shall be flush with the finished surface. Plane of weakness joints shall be placed in line with similar joints in the existing curb but spaced not less than 10' apart between joints unless otherwise directed by the Engineer.

CURING

Curing operations shall comply with the 2012 MDOT Standard Specification 602.03.M.

Immediately after the forms are removed, the entire area of the sides of the slab or curb shall be coated with curing compound at the rate specified for the pavement surface, except as specified in section on Removal of Forms.

The Contractor shall provide on the project sufficient burlap or cotton coverings for the protection of the pavement in case of rain or breakdown of the spray equipment.

Failure to provide proper curing will be considered as sufficient cause for immediate suspension of the concreting operations.

BACKFILLING SIDEWALK, DRIVEWAY AND ALLEY APPROACH

After the concrete has hardened, the side forms shall be removed, all overspill of concrete and other debris shall be removed prior to backfilling. All disturbed areas shall then be backfilled. The backfill shall be topsoil, compacted and graded as specified herein and shall be completed within 5 days after placement of sidewalk, driveway or alley approach.

BACKFILLING CURB

After finishing the curb as specified, the existing adjacent lawn will be cleaned of debris and all overspill of concrete and other debris shall be removed from the void behind the new curb prior to backfilling. Topsoil shall be filled in and compacted to produce a slope down to the top of the curb from the existing sidewalk or undisturbed lawn. Backfilling shall be completed within 5 days after placement of curb.

PLACING OF TOPSOIL AND GRASS SEED

Topsoil shall be placed and spread over the area backfilled to a depth sufficiently greater than that of the finished grade so that after natural settlement or compacting, the completed work will conform to the required lines and elevations. After spreading the topsoil, all large lumps, rocks, roots, debris, or other foreign matter shall be raked and removed from the area and disposed of by the Contractor.

Grass seed shall be installed in accordance with Michigan Department of Transportation 2012 Standard Specifications for Construction Section 917.12. Straw mulch blankets shall be furnished and installed in accordance with MDOT Section 917.15.

The area shall be left in a neat condition.

The cost for placing topsoil and grass seed shall be part of the unit rate for concrete sidewalk or curb unless otherwise specified on the Plans.

CLEANUP

Any concrete spilled on the pavement or structures shall be removed and the pavement or structures thoroughly cleaned before such concrete becomes set. Washing of spilled concrete into sewers or drains will not be permitted.

The work will not be considered as completed nor will final payment be made until the project has been restored to a neat and slightly appearance satisfactory to the Engineer.

Signs, mailboxes, or other necessary appurtenances, which may have been temporarily removed, shall be replaced.

Equipment, excess materials, temporary structures, rubbish, debris, broken concrete, brush, stumps, and exposed fieldstones shall be removed from the right-of-way or from any ground occupied by the Contractor in connection with the work.

The Contractor shall thoroughly clean all sewers, manholes, catch basins, and other structures affected by his operations whether within or outside of the limits of his work.

PROTECTION OF WORK

All completed sidewalks, driveway and alley approaches, and curbs must be protected by suitable barricades of a type approved by the City Engineer. All barricades must be properly protected by yellow lights during darkness. In no case shall anyone be allowed to walk on the surface of the pavement or curb before the concrete is thoroughly set.

ENGINEERS STAKES

The Engineer and the party of the first part shall not be held liable to errors made in layout work where said errors could have been detected before performing work by the use of ordinary intelligent checking of marks by the Contractor or his responsible help.

The Contractor shall give twenty-four (24) hours notice when he needs the services of the Engineer to layout work.

PATENTS

The Contractor shall protect the City of Wyandotte from all claims for patented articles, processes, material, inventions and appliances used on the work.

INSPECTION

The City Engineer shall at all times have access for inspection to all branches of the work, and the Contractor shall furnish from time to time such samples of each separate ingredient, or ingredients in combination, giving kind and proportion of the materials to be used in the improvement as may be requested by the City Engineer.

WEATHER

The Contractor shall suspend all work under this contract when notified by the City Engineer that the weather is unsuitable for continuing work. If work is allowed during cold or freezing weather the Contractor shall take such additional precaution as the City Engineer shall require, without additional expense, and under no circumstances shall materials which have been affected by the weather be used. No work shall be done between November 15th and April 15th, without special permission of the City Engineer.

DEFECTS

All settlements, defects or damages, in any portion of the sidewalk, driveway or alley approach, or curb by general travel, rain, snow, ice, frost, or other causes, before the final acceptance of the work by the City, shall be repaired and made good at the Contractor's expense.

NAME AND DATE

All concrete sidewalks, driveway and alley approaches must have the name of the Contractor or person constructing such walks, together with the year the same is constructed, stamped in the surface of the walk near each end thereof.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

"Concrete Removed" and "Concrete Placed" of the type, thickness and finish specified on the plans and in the proposal for sidewalks, sidewalk ramps, driveway approaches and alley approaches will be measured, in place, by area in square feet or square yard. The contract unit price per square foot or yard shall be payment in full for furnishing all materials, labor and equipment required to complete the work as herein specified, including saw cutting, existing pavement removal, concrete placement, finishing, curing, jointing, disposal of all debris and foreign material, backfilling and seeding.

"Remove and Replace Curb" will be measured in place by length in linear feet. The contract unit price per linear foot shall be payment in full for furnishing all materials, labor and equipment required to complete the work as herein specified, including saw cutting, curb removal or grinding, forming, epoxy coated dowels, concrete placement, disposal of all debris and foreign materials, backfilling and seeding.

"Remove and Replace Curb and Gutter" will be measured in place by length in linear feet. The contract unit price per linear foot shall be payment in full for furnishing all materials, labor and equipment required to complete the work as herein specified and as shown on the Plans and Details, including saw cutting, removal of existing pavement and curb, forming, epoxy coated dowels, concrete placement, disposal of all debris and foreign materials, backfilling and seeding.

ADA DETECTABLE WARNING SURFACE

DESCRIPTION

This work shall consist of all labor, material, tools, and equipment necessary to install detectable warning surfaces in accordance with the Americans with Disabilities Act (ADA), MDOT Standard Plan R-28-J Series, and as specified herein and shown on the plans and details.

MATERIALS

The detectable/tactile warning surface and all components thereof shall comply with ADA requirements and be manufactured by Engineered Plastics Inc., 300 International Drive, Suite 100, Williamsville, NY 14221, or, ADA Solutions, Inc., P.O. Box 3, North Billerica, Massachusetts 01862, or approved equal.

The material shall be a vitrified polymer composite tile with an epoxy polymer composition with aluminum oxide for wear and resistance. The detectable/tactile warning surface shall be 24" X 60", unless otherwise noted on the plans, and shall have a system of truncated domes having a diameter of 0.9 inch at the bottom, a diameter of 0.45-0.50 inch at the top, a height of 0.2 inch and a center to center grid spacing of 2.35 inches. The domes shall be aligned on a square grid in the direction of travel to allow wheeled mobility aids to roll between the domes. The panel depth shall be a minimum 1.375 inches with a surface thickness of 0.25 inches. The unit shall have embedment flanges spaced 3.0 inches on center, with a minimum thickness of 0.1875 inches and have 0.625 inch diameter vent holes equally spaced in the flanges. The detectable/tactile warning surface shall be "safety yellow" (Federal Color No. 33538).

SUBMITTALS

The contractor shall submit manufactures product information for the detectable/tactile warning surface to be used. The information shall consist of fabrication details, surface profile fastener locations, material specifications, installation instructions and maintenance instructions.

WARRANTY

The contractor shall provide a manufactures warranty for the detectable/tactile warning surface that the surface will be free from defects for a period of five (5) years from the date of installation.

The contractor shall also warrant the installation of the detectable/tactile warning surface for a period of five (5) years from defects.

CONSTRUCTION METHODS

The detectable/tactile warning surface shall be 24 inches in the direction of travel, 5'-0" in width, placed no less than six (6) inches from the edge of the curb, and installed flush with the surface of the concrete.

The detectable/tactile warning surfaces shall be installed in accordance with the supplier's installation instructions.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

“ADA Detectable Warning Surface” of the type and size specified will be measured by length in linear feet and shall be paid for at the contract unit price per linear foot which shall be payment in full for furnishing the detectable/tactile warning surface and all labor and equipment used to install the surface.

STORM SEWER AND DRAINAGE STRUCTURE SPECIFICATIONS

DESCRIPTION

Scope of work: The work shall consist of installing lines of storm sewer pipe, of the type and size specified, including excavation and backfill, and constructing manhole and catch basin structures of Portland cement concrete block masonry, brick masonry or precast concrete units (with or without steel reinforcement as provided); furnishing and placing metal frames and covers; removal of existing drainage structures; plugging of sewer lines to be abandoned; removal and replacement of street pavement and approaches; and shall include complete restoration of any disturbed lawns or grassy areas.

MATERIALS

a. The materials used for storm sewer pipe shall be Class A smooth lined corrugated plastic pipe meeting the requirements of the 2012 MDOT Standard Specifications Section 402. Storm Sewers, and, Section 909.06 Plastic Pipe Products.

b. The materials used for the construction, replacement or repair of storm sewer manholes and catch basins shall conform to the requirements of the 2012 MDOT Standard Specifications Section 403.02 Materials, unless otherwise specified herein.

c. Castings - All frames, covers and gratings specified shall be constructed of a good grade of close grained, gray cast iron and be of the types, or equals, as follows:

Catch basin: E.J.I.W. #5080 frame with grate as specified on Drawing D-1.

Manhole: E.J.I.W. #1040 frame with Type A solid flat cover.

d. Steps and Rungs - Steps and rungs shall be reinforced plastic or galvanized wrought iron as specified on the plans and details.

e. Sewer trench and structure backfill for storm sewer piping, manholes and drainage structures shall be Class IIIA granular material as specified in Table 902.3 of the 2012 MDOT Standard Specifications.

d. "Pavement subgrade backfill" shall be Class II or 21A aggregate and shall conform to the Michigan Department of Transportation 2012 Standard Specifications for Construction, Section 902.05

f. External Sealing System - The external sealing system shall be of a material that effectively bonds the casting to the precast concrete, block or brick structure, creating a barrier eliminating water and soil infiltration. The system shall be as follows:

"WrapidSeal Manhole Encapsulation System" as manufactured by CANUSA

"Infi-Shield" as manufactured by Sealing Systems Incorporated, or approved equals.

CONSTRUCTION METHODS

Storm Sewer:

Construction of storm sewers shall conform to Section 402.03 Construction of the 2012 MDOT Standard Specifications unless otherwise specified herein.

The Contractor shall comply with all Federal, State, and local laws and regulations governing construction methods and the furnishing and use of all safeguards, safety devices, protective equipment, and pollution controls. It shall be the Contractor's responsibility to protect, as reasonably necessary, the life and health of all personnel on the job, the safety and health of the public, and to protect property during the construction of the project.

The Contractor shall inform the local Fire and Police Departments 48 hours in advance of his program of street obstruction and detours, so that the Fire and Police Departments can set up plans for servicing the area in case of an emergency.

Excavation shall be made in such a manner, utilizing a trench box or temporarily banked along the line of work, so as to protect the side walls from caving in, and so as not to incur damage to either private or public property. Excavated material shall be hauled away from the trench area continually as part of the trenching operation.

Whenever pavement has to be removed, it shall be sawed in straight lines parallel or perpendicular to the line of work or removed to the nearest joint as specified in sections titled "Concrete Pavement" and "Concrete Pavement Repair".

House connections, sewer mains, water mains, gas mains, conduits and drains, when encountered in the sewer trench, shall be supported and protected. If they are damaged in any way, they shall be immediately repaired or replaced as directed by the Engineer at the Contractor expense.

All excavated material shall become the property of the Contractor, removed from the site and properly disposed of.

Service and Storm Connections - All existing service and storm connections shall be carefully protected during removal/installation of sewer mains. Service and storm connections shall be connected to the main through the use of an appropriately sized wye fitting. The wye shall be angled upward so that the invert of the service line is equal to or higher than the inside crown of the main. The connection of drainage structure service lines to the main sewer lines shall be considered incidental to the work.

Saddle connections to mains shall be machine tapped and made with a Romac Industries Style "CB" saddle or approved equal.

Where bulkheading of a service or storm line is required as shown on the plans, the contractor shall neatly cut, or remove a section of pipe, and plug the end of the line with mortar of the type

specified herein. Bulkheading of service and storm lines shall be considered incidental to the work.

Backfill work in areas of concrete paving shall be brought to the final subgrade elevation required for the depth of concrete to be placed with six (6) inches of “pavement subgrade backfill”.

Drainage Structures:

Drainage structures shall be constructed in accordance with Section 403.03 Construction, of the 2012 MDOT Standard Specifications unless otherwise specified herein.

Bottoms for drainage structures may be of precast units or poured in place concrete. Precast units shall be supported by a compacted six (6) inch granular base. If the bottoms are poured in place, they shall be allowed to set for 24 hours before placing masonry or otherwise working on top of it.

Steps shall be placed at not less than 15” on centers and so that the lowest step is 15” above the springing line of the sewer and the topmost step is 15” below the top of the manhole cover. The legs of the steps, or rungs, shall be imbedded to a depth of 8” in masonry.

Castings shall be set to the grades as established by the Engineer; catch basin or inlet casting within pavement areas shall be set so that the top surface of the cover shall lay 1/2” below the established grade of the surface of the contiguous pavement, the pavement shall be warped from the top edge of the cast iron frame to the established grade and contour of the pavement one foot from the frame; where a curb inlet frame is used the casting shall be set to the exact line and grade established for the curb.

External Sealing System – The external sealing system shall be installed as shown on the plans, adhering to the structure casting and the precast concrete, block or brick of the structure. Installation shall be in conformance with the manufactures specifications and procedures.

Backfilling for drainage structures shall be as specified in Section 401.03.D of the 2012 MDOT Standard Specifications. The Backfilling around structures shall not begin any sooner than 12 hours after the structure has been completed, except precast structures which may be backfilled immediately.

Ground Surfaces - All ground surfaces shall be left by the Contractor in essentially as good condition as before sewer construction started and any pavements, sidewalks, trees, or other things damaged or destroyed on account of sewer construction shall be repaired, replaced, or settled for at the Contractor’s expense unless otherwise noted on the plans.

TEST FOR WATERTIGHTNESS

The following testing procedure will be required.

The City Engineer shall be notified one working day in advance of all testing. The following tests shall be performed by qualified personnel approved by the City Engineer with a written report or video documentation completed and furnished to the City. Costs for said testing shall be the responsibility of the Contractor. Tests must be completed prior to final approval for the work.

Visible and audible checks shall be made of the sewer lines, appurtenances, manholes and drainage structures. All leaks shall be repaired prior to any testing required.

All sewer lines that are not inspected by walking or crawling through the sewer shall be televised for misalignment, infiltration, defective pipe or joints, and debris.

All sewers as specified herein shall be subjected to air, infiltration or exfiltration tests, or a combination of, prior to acceptance by the Engineer. All storm sewers over 24" diameter shall be subjected to infiltration tests. All sewers of 24" diameter or smaller, where the ground water level above the top of the sewer is over 7 feet, shall be subjected to infiltration tests. All sewers of 24" diameter or less, where the ground water level above the top of the sewer is 7 feet or less, shall be subjected to air tests or exfiltration tests. If an exfiltration test is performed, the maximum exfiltration rate shall be the same as that permitted from infiltration. For the purpose of exfiltration testing, the internal water level shall be equal to the external water level plus seven feet as measured from the top of pipe, and the elevation must be at least as high as the highest house service.

Maximum allowable infiltration shall not exceed 200 gallons per inch of diameter per mile of pipe between manholes per 24 hours for any section of the system and shall include the infiltration from all manholes and other appurtenances. See "Water Test Table" at the end of this section.

The procedure for air testing of sewers shall be as follows:

All house leads shall be properly plugged and blocked to withstand the air pressure. The sewer line shall be tested in increments between manholes. The line shall be cleaned and plugged at each manhole. Such plugs shall be designed to hold against the test pressure and shall provide an airtight seal. One of the plugs shall have an orifice through which air can be introduced into the sewer. An air supply line shall be connected to the orifice. The air supply line shall be fitted with suitable control valves and a pressure gauge for continually measuring the air pressure in the sewer. The pressure gauge shall have a minimum diameter of 3-1/2 inches and range of 0-10 PSIG. The gauge shall have minimum divisions of 0.10 PSIG and an accuracy of + 0.04 PSIG.

The sewer shall be pressurized to 4.0 PSIG greater than the greatest back-pressure caused by ground water over the top of the sewer pipe. At least 2 minutes shall be allowed for the air pressure to stabilize between 3.5 and 4.0 PSIG. If necessary, air shall be added to the sewer to maintain a pressure of 3.5 PSIG or greater.

After the stabilization period, the air supply control valve shall be closed so that no more air will enter the sewer. The sewer air pressure shall be noted and timing for the test shall begin. The

test shall not begin if the air pressure is less than 3.5 PSIG or such other pressure as is necessary to compensate for ground water level.

The time required for the air pressure to decrease 1.0 PSIG during the test shall not be less than the time shown in the table in Appendix A, “Air Test – Based on Formulas from ASTM C 828.”

Manholes on sewers to be subjected to air tests shall be equipped with a ½ inch diameter galvanized capped pipe nipple extending through the manhole wall, 3” into the manhole and at an elevation equal to the top of the sewer pipe. Prior to the air test the ground water elevation shall be determined by blowing air through the pipe nipple to clear it and then connecting a clear plastic tube to the pipe nipple. The tube shall be suspended vertically in the manhole and the ground water elevation determined by observing the water level in the tube. The air test pressure shall be adjusted to compensate for the maximum ground water level above the top of the sewer pipe to be tested. After all tests are performed and the sewer is ready for final acceptance, the pipe nipple shall be removed and the hole in the manhole wall shall be plugged with hydraulic cement.

If a sewer fails to pass any of the previously described tests, the contractor shall determine the location of the leaks, repair them and retest the sewer. The tests shall be repeated until satisfactory results are obtained.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

“Sewer Pipe” of the size and type specified, will be measured in place, by length in linear feet, from center to center of drainage structures and will be paid for at the contract unit price per linear foot which shall be payment in full for all labor, materials and equipment required to complete the work as specified.

“Manholes”, “Catch Basins”, and “Inlets”, will be measured as units and will be paid for at the contract unit price per unit which shall be payment in full for all labor, materials and equipment required to complete the work as specified including the application of the external sealing system.

“Remove Catch Basin”, “Remove Manhole”, and “Remove Existing Structure” will be measured as units and will be paid for at the contract unit price per unit which shall be payment in full for all labor, materials and equipment required to complete the work as specified.

Frames and covers will not be paid for separately but shall be included in the cost of the drainage structure.

All unit prices shall include removal of all items as necessary, sawcuts, earth excavation, backfill, bulkheading or plugging of abandoned lines or openings, tunneling of trees, seed/mulch and restoration complete and ready for service as per specifications.

ADJUSTING STRUCTURES

DESCRIPTION

This item of work shall include all drainage and other public utility structures encountered during concrete street pavement repair or reconstruction, or HMA resurfacing projects whose covers are raised or lowered to meet the required elevation. All adjustments shall be made prior to placing the concrete or HMA surface. Adjusting structure covers shall provide for a change in elevation and repairs to the structure within the top twelve (12) inches as measured vertically from top of the masonry or concrete structure and the application of an external sealing system.

CONSTRUCTION METHODS

When encountered during concrete street pavement repair, reconstruction or HMA resurfacing, existing structures and covers shall be adjusted to the proper elevations by removing adjacent pavement and curb required to remove the casting. Repairs shall be performed on the top twelve (12) inches of block or brick to provide a sound, secure base for the casting. The inside of block or brick structures shall be parged as shown on the plans. Castings shall be set to the required elevation by supporting them on masonry in a full mortar bed, so constructed that they will be held firmly in place and essentially conform to the details on the plans for standard structures. Adjacent pavement and curb shall be replaced to the required elevation as specified herein. All resultant debris and deposits from the Contractors work shall be removed from the structure by the Contractor.

An external sealing system shall be installed as shown on the plans, adhering to the structures casting and the precast concrete, block or brick of the structure. Installation shall be in conformance with the manufactures specifications and procedures. The external sealing system shall be of a material that effectively bonds the casting to the precast concrete, block or brick structure, creating a barrier eliminating water and soil infiltration. The system shall be as follows:

“WrapidSeal Manhole Encapsulation System” as manufactured by CANUSA
“Infi-Shield” as manufactured by Sealing Systems Incorporated, or approved equals.

New frame and covers will be supplied by the City of Wyandotte DPS, if necessary. Any frames or covers broken through the negligence of the Contractor shall be replaced at the Contractor’s expense.

Equipment will not be permitted to operate over adjusted structures until 24 hours after their completion, unless otherwise directed by the Engineer.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

"Adjust and Seal Structures" of the type specified will be measured as units and will be paid for at the contract unit price each, which shall be payment in full for furnishing all materials, excavation, backfilling, repairs, adjusting the structure to the required elevation as specified,

application of an external sealing system, removal of debris and foreign material from the structure and disposal of all surplus material.

Removal and replacement of concrete pavement surrounding the structure shall be paid for as specified under Concrete Pavement Repair.

REBUILD STRUCTURES

DESCRIPTION

This item of work shall include all drainage or public utility structures encountered during concrete street pavement repair or reconstruction, or HMA resurfacing, that are in need of repair or re-corbelling as determined by the Engineer in excess of the 12 inches provided for under "Adjusting Structures".

CONSTRUCTION METHODS

Where authorized by the Engineer, existing structures shall be broken down and rebuilt with new materials as specified in the specification section titled "Sewer and Drainage Structure Specification" to the line and required elevation, and essentially conform to the details on the plans for standard structures. All structures shall be kept thoroughly clean of all debris and foreign matter.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

"Rebuild Structures" will be measured and paid for by vertical height in linear feet, or fraction thereof, for that portion of the structure reconstructed between the lowest elevation of masonry removed and the final top of masonry or concrete in excess of the 12 inches provided for under "Adjusting Structures" and shall be payment in full for furnishing all materials, except castings, all necessary excavation, backfill, reconstruction as specified, removal of debris and foreign material from the structure and disposal of all surplus material.

PROJECT RESTORATION

DESCRIPTION

The Contractor, at his expense, shall restore the lawn and any existing landscaping and appurtenances that exist between the sidewalk and curb or in other areas that have been disturbed by the Contractor during the prosecution of the work in accordance with these specifications. All disturbed lawn areas shall be restored by hydro-seeding or laying of sod. Areas of existing lawn may need to be removed to provide neat and continuous lines of restoration.

Where it is called out on the Plans “Regrade and Sod”, “Backfill and Seed” or “Hydroseed”, these Specifications shall apply.

MATERIALS

Topsoil: ASTM D 5268, pH range of 5.5 to 7.4 percent organic material minimum, free of stones 1-inch or larger in any dimension, and other extraneous materials harmful to plant growth. Topsoil shall be a dark, organic, natural surface soil consisting of clay, sand, and silt, exclusive of any peat or muck, and shall contain not less than three-(3) percent organic material by weight. The topsoil shall be screened so that the maximum particle size is $\frac{3}{4}$ inch and a maximum of three (3) percent is retained on a $\frac{1}{4}$ inch screen.

Sod: Certified turf grass sod complying with ASPA specifications for machine-cut thickness, size, strength, moisture content, and mowed height, and free of weeds and undesirable native grasses. Provide sod of uniform density, color, and texture, strongly rooted, and capable of vigorous growth and development when planted. The sod shall consist of at KentuckyBluegrass with 15 to 30 percent creeping red fescue and conform to the 2012 MDOT Standard Specification Section 917.13 Sod.

Seed: Seed shall be Kentucky Bluegrass mixture as set forth in the 2012 MDOT Standard Specification Section 917.12 Seed, and Table 917.1.

INSTALLATION

Perform restoration of three (3) inches of topsoil, sod or hydroseed in accordance with 2012 MDOT Standard Specification Section 816.03, unless otherwise specified herein.

Trim areas of existing lawn to provide neat continuous areas of new planting at the width called for on the Plans. The new planting area shall be graded level from the existing lawn to the top of the new curb or concrete surface.

Before the topsoil is placed, the subsurface shall be cleaned of all miscellaneous concrete, stones or other debris. Topsoil shall be placed to a compacted depth of not less than three (3) inches thick in the areas to receive seed or sod. The topsoil shall be placed so as to provide a level subgrade for the seed or sod. For seeded areas the topsoil shall be compacted so that the surface is at or just below the top of the abutting concrete surfaces or curbs.

For sodded areas, the topsoil shall be compacted so that the sod root system is level with the abutting concrete surfaces or curbs.

In areas called out on the Plans as Backfilled and Seed or Hydroseed, the area to be filled with topsoil shall be the same depth as the concrete removed and shall be graded level with adjacent lawn areas.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

The cost of the restoration will not be paid for separately, but shall be included in the various unit prices bid for the contract items of work unless otherwise noted on the plans.

“Regrade and Sod”, “Backfill and Seed” and “Hydroseed” as set forth above shall be measured in square yards and will be paid for at the contract unit price per square yard which shall be payment in full for all labor, materials, and equipment required.

After completion of installation and acceptance of the work, 5% of the final amount of this work will be held for a period of three (3) months or until growth is established.

PROJECT CLEAN-UP

DESCRIPTION

The Contractor shall provide cleaning/sweeping services on all street, sidewalk, alley and driveway surfaces of the work site, and on all adjoining streets, sidewalks, alleys, driveways within one hundred (100) feet of the work site, to remove all dust, dirt and other debris deposited on the surfaces as a result of the construction activity. The contractor shall remove all dirt and construction debris from the abutting lawn areas. This shall be performed weekly, or more frequently if conditions warrant.

The sweeping of the street and alley surfaces shall be performed with a self-propelled sweeper equipped with pickup attachments and curb brushes. The equipment shall have a dust control filtration system in addition to utilizing water to control the dust and dirt.

Upon completion of portions of work, and before final acceptance of the work, the Contractor shall remove all temporary buildings or other structures built by him, all false work, excavated material, surplus materials, and rubbish of all kinds from the grounds which he has occupied, and shall leave the line of work in a neat, clean condition satisfactory to the Engineer. The Contractor shall remove all machinery and equipment from the right-of-way.

The Contractor shall replace, renew or restore; in an acceptable manner, all property, both public and private, which may have been damaged during the prosecution of the work. The Contractor shall replace fences, signs, mailboxes or other necessary appurtenances, which have been temporarily removed.

The Contractor shall thoroughly clean all sewers, manholes, catch basins, and other structures affected by his operations whether within or outside of the limits of his work upon leaving that particular work site. The Contractor shall use a “vactor” or other similar equipment suited for this work, or subcontract with a contractor specializing in this work, to properly perform the work. A written report shall be submitted to the City upon completion of the cleaning containing, at a minimum, type of structure, location of structure and date of cleaning.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Cleanup shall be bid as a lump sum amount and will be paid for proportionately to the amount of contract work performed.

SAMPLE INSURANCE CERTIFICATE



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER AGENCY NAME HERE	CONTACT NAME: PHONE (A/C No. Ext): FAX (A/C No.): E-MAIL: ADDRESS: PRODUCER CUSTOMER I.D.#:
INSURED CONTRACTORS NAME HERE	INSURER(S) AFFORDING COVERAGE NAIC #: INSURER A: COMPANY NAME HERE INSURER B: INSURER C: INSURER D: INSURER E: INSURER F:

COVERAGES CERTIFICATE NUMBER-CL11112#03178 REVISION NUMBER:
THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR. LTR.	TYPE OF INSURANCE	ADDITIONAL INSURER (MSE, RVD)	POLICY NUMBER	POLICY EFF. (MM/DD/YYYY)	POLICY EXP. (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> GENERAL LIABILITY <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PRO-JECT <input type="checkbox"/> LDC	X X	POLICY #	1/1/2011	1/1/2012	EACH OCCURRENCE DAMAGE TO TERTIARY PREMISES (Ea occurrence) \$ 1,000,000 MED EXP (Any one person) \$ 50,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/PROP AGG \$ 2,000,000 EMPLOYEE BENEFIT LIAB \$ 1,000,000
A	<input checked="" type="checkbox"/> AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input checked="" type="checkbox"/> ALL OWNED AUTOS <input checked="" type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS <input checked="" type="checkbox"/> NON-OWNED AUTOS	X X	POLICY #	1/1/2011	1/1/2012	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ Property Protection Cov. \$ Personal Injury Protection \$
A	<input checked="" type="checkbox"/> UMBRELLA LIAB <input type="checkbox"/> EXCESS LIAB DEDUCTIBLE \$ RETENTION \$	X	POLICY #	1/1/2011	1/1/2012	EACH OCCURRENCE \$ 5,000,000 AGGREGATE \$ 5,000,000
A	<input checked="" type="checkbox"/> WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/OWNER IS EXCLUDED? (Mandatory in MI) if yes, describe under DESCRIPTION OF OPERATIONS below	X	POLICY #	1/1/2010	1/1/2012	<input checked="" type="checkbox"/> WC STATUTE / OTHER LIMITS EL EACH ACCIDENT \$ 1,000,000 EL DISEASE - EA EMPLOYEE \$ 1,000,000 EL DISEASE - POLICY LIMIT \$ 1,000,000 PER PROJECT ALL RISK LIMIT

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)
 The City of Wyandotte included as additionally insured. Policies are endorsed to provide 30 days prior written notice of cancellation or reduction of coverage to the City of Wyandotte. Waiver of Subrogation for personal injury or property damage applies in favor of the City of Wyandotte, its employees and agents, arising from this contract.

CERTIFICATE HOLDER City of Wyandotte 3200 Biddle Wyandotte, MI 48192	CANCELLATION SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE
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APPENDIX A-TITLE VI ASSURANCE

During the performance of this contract, the contractor, for itself, its assignees and successors, in interest (hereinafter referred to as the “contractor”) agrees, as follows:

1. **Compliance with Regulations:** The contractor shall comply with Regulations relative to nondiscrimination in Federally-assisted programs of the Department of Transportation, Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.
2. **Nondiscrimination:** The contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, sex, or national origin in the selection, retention, and treatment of subcontractors, including procurements of materials in the discrimination prohibited by Section 21.5 of the Regulation, including employment practices when the contractor covers a program set for in Appendix B of the Regulations.
3. **Solicitation for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations either by competitive bidding or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor’s obligations under the contract and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.
4. **Information and Reports:** The contractor shall provide all information and reports required by the Regulations, or directives issues pursuant thereto, and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the State Highway Department of the Federal Highway Administration to be pertinent to ascertain compliance with such Regulations or directives. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information, the contractor shall so certify to the State Highway Department or the Federal Highway Administration, as appropriate, and shall set forth what efforts it has made to obtain the information.
5. **Sanctions for Noncompliance:** In the event the contractor’s noncompliance with the nondiscrimination provisions of this contract, the State Highway Department shall impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to:
 - a. Withholding payments to the contractor under the contract until the contractor complies and/or
 - b. Cancellation, termination or suspension of the contract, in whole or in part.
6. **Incorporation of Provisions:** The contractor shall include provisions of paragraphs (1) through (6) in every subcontract, including procurement of material and leases of equipment, unless exempt by the Regulations, or directives issued pursuant thereto.

The contractor shall take such action with respect to any subcontract or procurement as the State Highway Department or the Federal Highway Administration may direct as a means of enforcing such provisions including sanctions for noncompliance: provided, however, that, in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the contractor may request the State Highway Department to enter into such litigation to protect the interests of the State, and, in addition, the contractor may request the United States to enter into such litigation to protect the interests of the United States.