PUBLIC IMPROVEMENT REQUEST FOR PROPOSAL

RFP# 24-27

2024 ON-CALL SEWER SYSTEM SERVICES

City of Ann Arbor
Public Services Area / Public Works Unit

Due Date: April 23, 2024 by 3:00 p.m. (local time)

Issued By:

City of Ann Arbor
Procurement Unit
301 E. Huron Street
Ann Arbor, MI 48104

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SECTION I - GENERAL INFORMATION

A. OBJECTIVE

The purpose of this Request for Proposal (RFP) is to select a firm or firms to provide as-needed and emergency services for the maintenance, repair, and improvement of existing sanitary and storm sewer infrastructure within the City of Ann Arbor. Specific services to be performed by the Contractor include, but are not limited to, video inspection of sewers, cleaning of sewers, full length and spot repair cured-in-place pipe rehabilitation, manhole rehabilitation, and sanitary sewer joint testing and grouting. It is anticipated that there will be approximately $600,000 of work for each year of the contract ($400,000 of sanitary work and $200,000 of storm work). Actual amounts will be dependent on service needs and funding availability.

B. BID SECURITY

Each bid must be accompanied by a certified check or Bid Bond by a surety licensed and authorized to do business within the State of Michigan, in the amount of 5% of the total of the bid price.

Proposals that fail to provide a bid security upon proposal opening will be deemed non-responsive and will not be considered for award.

C. QUESTIONS AND CLARIFICATIONS / DESIGNATED CITY CONTACTS

All questions regarding this Request for Proposal (RFP) shall be submitted via e-mail. Questions will be accepted and answered in accordance with the terms and conditions of this RFP.

All questions shall be submitted on or before April 9, 2024 at 5:00 p.m. (local time), and should be addressed as follows:

Scope of Work/Proposal Content questions shall be e-mailed to **Kyle Pettibone, Public Works Engineer – kpettibone@a2gov.org**

RFP Process and Compliance questions shall be e-mailed to **Colin Spencer, Buyer - CSpencer@a2gov.org**

Should any prospective bidder be in doubt as to the true meaning of any portion of this RFP, or should the prospective bidder find any ambiguity, inconsistency, or omission therein, the prospective bidder shall make a written request for an official interpretation or correction by the due date for questions above.

All interpretations, corrections, or additions to this RFP will be made only as an official addendum that will be posted to a2gov.org and MITN.info and it shall be the prospective bidder's responsibility to ensure they have received all addenda before

submitting a proposal. Any addendum issued by the City shall become part of the RFP and must be incorporated in the proposal where applicable.

D. PRE-PROPOSAL MEETING

A pre-proposal conference for this project will be held on **Friday, April 5th at 1:00pm at the City of Ann Arbor W.R. Wheeler Service Center (4251 Stone School Rd, Ann Arbor, MI 48108).**

Attendance at this conference is highly recommended. Administrative and technical questions regarding this project will be answered at this time. The pre-proposal conference is for information only. Any answers furnished will not be official until verified in writing by the Financial Service Area, Procurement Unit. Answers that change or substantially clarify the proposal will be affirmed in an addendum.

E. PROPOSAL FORMAT

To be considered, each firm must submit a response to this RFP using the format provided in Section III. No other distribution of proposals is to be made by the prospective bidder. An official authorized to bind the bidder to its provisions must sign the proposal. Each proposal must remain valid for at least one hundred and twenty (120) days from the due date of this RFP.

Proposals should be prepared simply and economically providing a straightforward, concise description of the bidder's ability to meet the requirements of the RFP. No erasures are permitted. Mistakes may be crossed out and corrected and must be initialed in ink by the person signing the proposal. Maximum proposal length shall be 100 pages.

F. SELECTION CRITERIA

Responses to this RFP will be evaluated using a point system as shown in Section III. A selection committee comprised primarily of staff from the City will complete the evaluation.

If interviews are desired by the City, the selected firms will be given the opportunity to discuss their proposal, qualifications, past experience, and their fee proposal in more detail. The City further reserves the right to interview the key personnel assigned by the selected bidder to this project.

All proposals submitted may be subject to clarifications and further negotiation. All agreements resulting from negotiations that differ from what is represented within the RFP or in the proposal response shall be documented and included as part of the final contract.

G. SEALED PROPOSAL SUBMISSION

All proposals are due and must be delivered to the City on or April 23, 2024 by 3:00 p.m. (local time). Proposals submitted late or via oral, telephonic, telegraphic, electronic mail or facsimile **will not** be considered or accepted.

Each respondent should submit in a sealed envelope

- **one (1) original proposal**
- **two (2) additional proposal copy**
- **one (1) digital copy of the proposal preferably on a USB/flash drive as one file in PDF format**

Proposals submitted should be clearly marked: **"RFP No. 24-27 – 2024 ON-CALL SEWER SYSTEM SERVICES"** and list the bidder's name and address.

Proposals must be addressed and delivered to:
City of Ann Arbor
c/o Customer Service
301 East Huron Street
Ann Arbor, MI 48107

All proposals received on or before the due date will be publicly opened and recorded on the due date. No immediate decisions will be rendered.

Hand delivered proposals may be dropped off in the Purchasing drop box located in the Ann Street (north) vestibule/entrance of City Hall which is open to the public Monday through Friday from 8am to 5pm (except holidays). The City will not be liable to any prospective bidder for any unforeseen circumstances, delivery, or postal delays. Postmarking on the due date will not substitute for receipt of the proposal.

Bidders are responsible for submission of their proposal. Additional time will not be granted to a single prospective bidder. However, additional time may be granted to all prospective bidders at the discretion of the City.

A proposal may be disqualified if the following required forms are not included with the proposal:

- **Attachment B – General Conditions**
- **Attachment D - Prevailing Wage Declaration of Compliance**
- **Attachment E - Living Wage Declaration of Compliance**
- **Attachment G - Vendor Conflict of Interest Disclosure Form**
- **Attachment H - Non-Discrimination Declaration of Compliance**

Proposals that fail to provide these forms listed above upon proposal opening may be deemed non-responsive and may not be considered for award.

H. DISCLOSURES

Under the Freedom of Information Act (Public Act 442), the City is obligated to permit review of its files, if requested by others. All information in a proposal is subject to disclosure under this provision. This act also provides for a complete disclosure of contracts and attachments thereto.

I. TYPE OF CONTRACT

A sample of the Construction Agreement is included as Attachment A. Those who wish to submit a proposal to the City are required to review this sample agreement carefully. **The City will not entertain changes to its Construction Agreement.**

For all construction work, the respondent must further adhere to the City of Ann Arbor General Conditions. The General Conditions are included herein. Retainage will be held as necessary based on individual tasks and not on the total contract value. The Contractor shall provide the required bonds included in the Contract Documents for the duration of the Contract.

The City reserves the right to award the total proposal, to reject any or all proposals in whole or in part, and to waive any informality or technical defects if, in the City's sole judgment, the best interests of the City will be so served.

This RFP and the selected bidder's response thereto, shall constitute the basis of the scope of services in the contract by reference.

J. NONDISCRIMINATION

All bidders proposing to do business with the City shall satisfy the contract compliance administrative policy adopted by the City Administrator in accordance with the Section 9:158 of the Ann Arbor City Code. Breach of the obligation not to discriminate as outlined in Attachment G shall be a material breach of the contract. Contractors are required to post a copy of Ann Arbor's Non-Discrimination Ordinance attached at all work locations where its employees provide services under a contract with the City.

K. WAGE REQUIREMENTS

The Attachments provided herein outline the requirements for payment of prevailing wages or of a "living wage" to employees providing service to the City under this contract. The successful bidder must comply with all applicable requirements and provide documentary proof of compliance when requested.

Pursuant to Resolution R-16-469 all public improvement contractors are subject to prevailing wage and will be required to provide to the City payroll records sufficient to demonstrate compliance with the prevailing wage requirements. Use of Michigan

Department of Transportation Prevailing Wage Forms (sample attached hereto) or a City-approved equivalent will be required along with wage rate interviews.

For laborers whose wage level are subject to federal, state and/or local prevailing wage law the appropriate Davis-Bacon wage rate classification is identified based upon the work including within this contract. **The wage determination(s) current on the date 10 days before proposals are due shall apply to this contract.** The U.S. Department of Labor (DOL) has provided explanations to assist with classification in the following resource link: www.wdol.gov.

For the purposes of this RFP the Construction Type of **Heavy** will apply.

L. CONFLICT OF INTEREST DISCLOSURE

The City of Ann Arbor Purchasing Policy requires that the consultant complete a Conflict of Interest Disclosure form. A contract may not be awarded to the selected bidder unless and until the Procurement Unit and the City Administrator have reviewed the Disclosure form and determined that no conflict exists under applicable federal, state, or local law or administrative regulation. Not every relationship or situation disclosed on the Disclosure Form may be a disqualifying conflict. Depending on applicable law and regulations, some contracts may awarded on the recommendation of the City Administrator after full disclosure, where such action is allowed by law, if demonstrated competitive pricing exists and/or it is determined the award is in the best interest of the City. A copy of the Conflict of Interest Disclosure Form is attached.

M. COST LIABILITY

The City of Ann Arbor assumes no responsibility or liability for costs incurred by the bidder prior to the execution of an Agreement. The liability of the City is limited to the terms and conditions outlined in the Agreement. By submitting a proposal, bidder agrees to bear all costs incurred or related to the preparation, submission, and selection process for the proposal.

N. DEBARMENT

Submission of a proposal in response to this RFP is certification that the Respondent is not currently debarred, suspended, proposed for debarment, and declared ineligible or voluntarily excluded from participation in this transaction by any State or Federal departments or agency. Submission is also agreement that the City will be notified of any changes in this status.

O. PROPOSAL PROTEST

All proposal protests must be in writing and filed with the Purchasing Manager within five (5) business days of any notices of intent, including, but not exclusively, divisions on prequalification of bidders, shortlisting of bidders, or a notice of intent to award. Only bidders who responded to the solicitation may file a bid protest. The bidder must clearly state the reasons for the protest. If any bidder contacts a City Service Area/Unit and indicates a desire to protest an award, the Service Area/Unit shall refer the bidder to the Purchasing Manager. The Purchasing Manager will provide the bidder with the appropriate instructions for filing the protest. The protest shall be reviewed by the City Administrator or designee, whose decision shall be final.

Any inquiries or requests regarding this procurement should be only submitted in writing to the Designated City Contacts provided herein. Attempts by the bidder to initiate contact with anyone other than the Designated City Contacts provided herein that the bidder believes can influence the procurement decision, e.g., Elected Officials, City Administrator, Selection Committee Members, Appointed Committee Members, etc., may lead to immediate elimination from further consideration.

P. SCHEDULE

The following is the schedule for this RFP process.

Activity/Event	**Anticipated Date**
Pre-Proposal Conference	April 5, 2024, 1:00 p.m. (Local Time)
Written Question Deadline	April 9, 2024, 5:00 p.m. (Local Time)
Addenda Published (if needed)	On or before April 12, 2024
Proposal Due Date	April 23, 2024, 3:00 p.m. (Local Time)
Selection/Negotiations	April/May 2024
Expected City Council Authorizations	June 2024

The above schedule is for information purposes only and is subject to change at the City's discretion.

Q. IRS FORM W-9

The selected bidder will be required to provide the City of Ann Arbor an IRS form W-9.

R. RESERVATION OF RIGHTS

1. The City reserves the right in its sole and absolute discretion to accept or reject any or all proposals, or alternative proposals, in whole or in part, with or without cause.

2. The City reserves the right to waive, or not waive, informalities or irregularities in terms or conditions of any proposal if determined by the City to be in its best interest.
3. The City reserves the right to request additional information from any or all bidders.
4. The City reserves the right to reject any proposal that it determines to be unresponsive and deficient in any of the information requested within RFP.
5. The City reserves the right to determine whether the scope of the project will be entirely as described in the RFP, a portion of the scope, or a revised scope be implemented.
6. The City reserves the right to select one or more contractors or service providers to perform services.
7. The City reserves the right to retain all proposals submitted and to use any ideas in a proposal regardless of whether that proposal is selected. Submission of a proposal indicates acceptance by the firm of the conditions contained in this RFP, unless clearly and specifically noted in the proposal submitted.
8. The City reserves the right to disqualify proposals that fail to respond to any requirements outlined in the RFP, or failure to enclose copies of the required documents outlined within the RFP.

S. IDLEFREE ORDINANCE

The City of Ann Arbor adopted an idling reduction Ordinance that went into effect July 1, 2017. The full text of the ordinance (including exemptions) can be found at: www.a2gov.org/idlefree.

Under the ordinance, No Operator of a Commercial Vehicle shall cause or permit the Commercial Vehicle to Idle:

(a) For any period of time while the Commercial Vehicle is unoccupied; or

(b) For more than 5 minutes in any 60-minute period while the Commercial Vehicle is occupied.

In addition, generators and other internal combustion engines are covered

(1) Excluding Motor Vehicle engines, no internal combustion engine shall be operated except when it is providing power or electrical energy to equipment or a tool that is actively in use.

T. ENVIRONMENTAL COMMITMENT

The City of Ann Arbor recognizes its responsibility to minimize negative impacts on human health and the environment while supporting a vibrant community and economy. The City further recognizes that the products and services the City buys have inherent environmental and economic impacts and that the City should make procurement decisions that embody, promote, and encourage the City's commitment to the environment.

The City encourages potential vendors to bring forward emerging and progressive products and services that are best suited to the City's environmental principles.

U. MAJOR SUBCONTRACTORS

The Bidder shall identify each major subcontractor it expects to engage for this Contract if the work to be subcontracted is 15% or more of the bid sum or over $50,000, whichever is less. The Bidder also shall identify the work to be subcontracted to each major subcontractor. The Bidder shall not change or replace a subcontractor without approval by the City.

N. LIQUIDATED DAMAGES

A liquidated damages clause, as given on page C-2, Article III of the Contract, provides that the Contractor shall pay the City as liquidated damages, and not as a penalty, a sum certain per day for each and every day that the Contractor may be in default of completion of the specified work, within the time(s) stated in the Contract, or written extensions.

Liquidated damages clauses, as given in the General Conditions, provide further that the City shall be entitled to impose and recover liquidated damages for breach of the obligations under Chapter 112 of the City Code.

The liquidated damages are for the non-quantifiable aspects of any of the previously identified events and do not cover actual damages that can be shown or quantified nor are they intended to preclude recovery of actual damages in addition to the recovery of liquidated damages.

SECTION II - SCOPE OF WORK

A. Objective

The City of Ann Arbor, Michigan maintains approximately 370 miles of sanitary sewer and 293 miles of storm sewer. To effectively maintain this infrastructure and respond to emergency sewer issues, the City is requesting proposals from qualified contractors to provide sewer cleaning, inspection, and rehabilitation services as required by the City's Department of Public Works Unit on an as-needed basis.

The scope of services will consist of individual tasks to be determined and assigned during the contract period. Examples of potential type of work may include, but is not limited to the following:

- Cleaning of sewers ranging in size from 8 to 42 inches in diameter. This work includes flushing, debris removal, grease removal, root cutting, deposit cutting, and grinding protruding break-in service connections.

- Internal video inspection of sewers via Closed Circuit Television (CCTV) of sewers ranging from 8 to 42 inches in diameter. The inspections shall include providing the City with digital videos, images, and reports that include condition and other descriptive data related to the sewer in accordance with NASSCO's Pipeline Assessment Certification Program.

- Manhole video inspection in accordance with NASSCO's Manhole Assessment Certification Program Level 2 using 360-degree scanning technology. Full length manhole to manhole Cured-in-Place Pipe (CIPP) rehabilitation of sewers ranging in size from 8 to 42 inches in diameter.

- Spot repair CIPP rehabilitation of sewers ranging in size from 8 to 30 inches in diameter.

- Spray lining large diameter pipes and culverts.

- Manhole rehabilitation including the application of a cementitious or calcium aluminate manhole lining system, sealing active leaks, and bench/channel reconstruction.

- Sewer joint and lateral connection testing and packer injection grouting to locate and seal joints and connections that are not watertight. Maintenance of traffic services, including developing plans for traffic control as needed, reviewing with City Staff for Right-of-Way permits and advance lane closure notifications and obeying all City restrictions and requirements for the given location.

- Bypass pumping for the above listed work or as-needed for other situations.

The City may award up to two (2) construction contracts. The term of the contracts will be 2 years from the Notice to Proceed with an optional extension for up to one (1) additional year. It shall be understood that the submitted hourly rates are to be honored over the term of the contract. If the contract is extended, a onetime cost escalator of no greater than 3% may be added to the submitted rates. A written request from the Contractor at the end original contract period from will be required to consider any rate adjustments. There will be no minimum value of services committed by the City for each awarded service contract. The total available budget for the term of the contract is approximately $600,000 annually and will be divided amongst the selected firms in the City's best interest. The contract amounts are subject to the availability of funds and approval of annual budgets.

B. Contract Implementation

As non-emergency sewer maintenance and rehabilitation projects develop within the Public Works Unit, the City will prepare a scope of work on each project, including a proposed schedule. The selected on-call contractor(s) shall provide the City with a price proposal to complete the project work including:

- Total costs for self-performed work with a breakdown of the total labor cost.
- Material costs, if provided by the Contractor.
- Subcontractor names and costs with allotted mark-up percentages.
- Schedule or date by which the work can be completed.
- Names and contact information of assigned Foreman or Superintendent.

For emergency work, or work with an indeterminate scope, the Contractor shall provide written confirmation of anticipated labor, material, and equipment necessary to perform the work. Final costs shall be paid on a time and materials basis using the rates and information provided in the Fee Proposal Form.

The City will assign specific tasks to a Contractor based on availability, turnaround time for completion of tasks, experience and other factors relevant to the task. The City does not guarantee either a minimum volume of work or a specific volume of work under this Contract.

The Contractor will be contractually obligated to use the fees included in their proposal to generate costs for individual tasks solicited by the City under this Contract. Proposals shall be structured with hourly or weekly estimates of equipment usage and labor (whichever is appropriate for the duration of the task) and a list of materials and associated pricing.

The Contractor shall be entitled no greater than a 5% markup on subcontractor costs. The Contractor shall be entitled no greater than a 15% markup on material and equipment rental costs. Back-up documentation for material and equipment rental costs shall be provided with all proposals and submitted invoices. The City may decide to complete any task on a Time and Materials basis using the fee schedule

included as part of the Contractor's proposal.

The desired response time for emergency tasks is 48 to 72 hours including equipment mobilization. The respondent should identify the typical anticipated emergency response time and if there are any stipulations or constraints in responding to emergency tasks.

C. Scope of Work

A typical project performed under the proposed contract will involve the following process:

1. City will contact Contractor and indicate work as emergency or non-emergency work and agree to engage in work.

2. Visit the project site with City staff and identify a preliminary scope of construction. Confirm work that is out of scope and not covered by the unit prices.

3. Review any drawings, specifications, reports, etc. provided by City staff on the proposed project.

4. Develop and agree on a final scope of construction. Submit letter proposal for out-of-scope work not covered by the unit prices to City staff for review and approval.

5. Provide schedule and quote for labor, material and equipment. Submit to City staff for review and approval.

6. Obtain written approval from the City for implementation of the task.

7. Apply for and obtain all necessary permits. Cost of City-issued permits to be covered by the City, all other permits are to be obtained at the Contactor's expense.

8. Perform all work necessary.

9. City staff will review all work prior to final sign off. Contractor to address all identified deficiencies in the work.

10. Contractor to provide final documentation for all time and materials. City will release any retainage held on the individual task.

D. Requirements

1. Ability to work effectively with the City's Public Works Unit staff with respect to any of the construction services required by the City.

2. Ability to work effectively with other City units and regulatory agencies.

3. The ability to function in a support role to the Public Works Unit. The contractor's services will be utilized for activities that exceed the staffing level or expertise of the Public Works Unit.

4. The ability to respond to emergency service requests by City Public Works staff within 72 hours.

5. The ability to respond to non-emergency service requests by City Public Works staff within 45 days unless written approval is obtained from the Owner.

6. The ability to complete work at any given site continuously without unwarranted delays until the work is completed. Includes immediate restoration of drivable surfaces.

7. The ability to work effectively with the City's Engineering staff with respect to furnishing and managing temporary traffic control operations as required by the City.

8. It is the responsibility of the Contractor to provide an up-to-date list of names and contact numbers of on-call personnel. The City will contact the Contractor by phone as emergencies occur and will provide as much information as available about the emergency work assignment, including the location(s), type of work and sit condition(s).

E. Standard Specifications

All work performed under this Contract shall be performed in accordance with the Public Services Department Standard Specifications in effect at the date of availability of the contract documents stipulated in the Advertisement. All work under this Contract which is not included in these Standard Specifications, or which is performed using modifications to these Standard Specifications, shall be performed in accordance with the Detailed Specifications provided during the implementation of individual tasks under this Contract.

Copies of the Standard Specifications can be downloaded from the following web link.

https://www.a2gov.org/departments/engineering/Pages/Engineering-and-Contractor-Resources.aspx

SECTION III - MINIMUM INFORMATION REQUIRED

PROPOSAL FORMAT

The following describes the elements that should be included in each of the proposal sections and the weighted point system that will be used for evaluation of the proposals.

Bidders should organize Proposals into the following Sections:

A. Qualifications, Experience and Accountability
B. Workplace Safety
C. Workforce Development
D. Social Equity and Sustainability
E. Schedule of Pricing/Cost
F. Authorized Negotiator
G. Attachments

Bidders are strongly encouraged to provided details for all of the information requested below within initial proposals. Backup documentation may be requested at the sole discretion of the City to validate all of the responses provided herein by bidders. False statements by bidders to any of the criteria provided herein will result in the proposal being considered non-responsive and will not be considered for award.

Pursuant to Sec 1:325 of the City Code which sets forth requirements for evaluating public improvement bids, Bidders should submit the following:

A. Qualifications, Experience and Accountability - 20 Points

1. Qualifications and experience of the bidder and of key persons, management, and supervisory personnel to be assigned by the bidder.

2. References from individuals or entities the bidder has worked for within the last five (5) years including information regarding records of performance and job site cooperation.

3. Evidence of any quality control program used by the bidder and the results of any such program on the bidder's previous projects.

4. A statement from the bidder as to any major subcontractors it expects to engage including the name, work, and amount.

B. Workplace Safety – 20 Points

1. Provide a copy of the bidder's safety program, and evidence of a safety-training program for employees addressing potential hazards of the proposed job site. Bidder must identify a designated qualified safety representative responsible for bidder's safety program who serves as a contact for safety related matters.

2. Provide the bidder's Experience Modification Rating ("EMR") for the last three consecutive years. Preference within this criterion will be given to an EMR of 1.0 or less based on a three-year average.

3. Evidence that all craft labor that will be employed by the bidder for the project has, or will have prior to project commencement, completed at least an authorized 10-hour OSHA Construction Safety Course.

4. For the last three years provide a copy of any documented violations and the bidder's corrective actions as a result of inspections conducted by the Michigan Occupational Safety & Health Administration (MIOSHA), U.S. Department of Labor – Occupational Safety and Health Administration (OSHA), or any other applicable safety agency.

C. Workforce Development – 20 Points

1. Documentation as to bidder's pay rates, health insurance, pension or other retirement benefits, paid leave, or other fringe benefits to its employees.

2.. Documentation that the bidder participates in a Registered Apprenticeship Program that is registered with the United States Department of Labor Office of Apprenticeship or by a State Apprenticeship Agency recognized by the USDOL Office of Apprenticeship. USDOL apprenticeship agreements shall be disclosed to the City in the solicitation response.

3. Bidders shall disclose the number of non-craft employees who will work on the project on a 1099 basis, and the bidders shall be awarded points based on their relative reliance on 1099 work arrangements with more points assigned to companies with fewer 1099 arrangements. Bidders will acknowledge that the City may ask them to produce payroll records at points during the project to verify compliance with this section.

D. Social Equity and Sustainability – 20 Points

1. A statement from the bidder as to what percentage of its workforce resides in the City of Ann Arbor and in Washtenaw County, Michigan. The City will consider in

evaluating which bids best serve its interests, the extent to which responsible and qualified bidders employ individuals in either the city of the county. Washtenaw County jurisdiction is prioritized for evaluation purposes for this solicitation.

2. Evidence of Equal Employment Opportunity Programs for minorities, women, veterans, returning citizens, and small businesses.

3. Evidence that the bidder is an equal opportunity employer and does not discriminate on the basis of race, sex, pregnancy, age, religion, national origin, marital status, sexual orientation, gender identity or expression, height, weight, or disability.

4. The bidder's proposed use of sustainable products, technologies, or practices for the project, which reduce the impact on human health and the environment, including raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance, and waste management.

5. The bidder's environmental record, including findings of violations and penalties imposed by government agencies.

E. Schedule of Pricing/Cost – 20 Points

City of Ann Arbor – RFP #24-27
2024 On-Call Sewer System Services

Company: _____

Bid Item	Description	Unit	Unit Price
Section 1 - Sewer Cleaning and Inspection			
OB	Sewer Cleaning, 8" to 23" Dia.	LF	$
OB	Sewer Cleaning, 24" to 60" Dia.	LF	$
OB	Sewer Video Inspection, 8" to 23" Dia.	LF	$
OB	Sewer Video Inspection, 24" to 60" Dia.	LF	$
20-21	Cutting Protruding Service Leads	EA	$
TT	Manhole MACP Level 2 Inspection	EA	$
OB	Sewer Flow Control, 1,000 GPM	DAY	$
OB	Sewer Flow Control, 2,000 GPM	DAY	$
OB	Sewer Flow Control, 4,000 GPM	DAY	$
Section 2 - Styrene-Free Cured-in-Place Pipe Lining, Manhole to Manhole			
OB	Styrene-Free CIPP Sewer Lining, 8" Dia.	LF	$
OB	Styrene-Free CIPP Sewer Lining, 10" Dia.	LF	$
OB	Styrene-Free CIPP Sewer Lining, 12" Dia.	LF	$
OB	Styrene-Free CIPP Sewer Lining, 15" Dia.	LF	$
OB	Styrene-Free CIPP Sewer Lining, 18" Dia.	LF	$
OB	Styrene-Free CIPP Sewer Lining, 21" Dia.	LF	$
OB	Styrene-Free CIPP Sewer Lining, 24" Dia.	LF	$
OB	Styrene-Free CIPP Sewer Lining, 30" Dia.	LF	$
OB	Styrene-Free CIPP Sewer Lining, 36" Dia.	LF	$
Section 3 - Cured-in-Place Pipe Spot Repair, Up to 10' in Length			
JT	CIPP Spot Repair, 8" Dia.	EA	$
JT	CIPP Spot Repair, 10" Dia.	EA	$
JT	CIPP Spot Repair, 12" Dia.	EA	$
JT	CIPP Spot Repair, 15" Dia.	EA	$
JT	CIPP Spot Repair, 18" Dia.	EA	$
JT	CIPP Spot Repair, 21" Dia.	EA	$
JT	CIPP Lateral Liner, up to 18” in Length	EA	$

Section 4 - Manhole Rehabilitation			
OBIC	Multi-Layer Polyurea Manhole Liner	VF	$
OB	Epoxy Manhole Liner	VF	$
OB	Internal Chimney Seal	VF	$
OB	External Chimney Seal	VF	$
OB	Reconstruct Bench/Flow Channel	EA	$
Section 5 - Joint and Manhole Grouting			
NASSCO	Packer Injection Joint Grouting, 8" to 36"	EA	$
OB	Manhole Chemical Grouting	GAL	$
Section 6 – Traffic Control			
OB	Minor Traffic Control	DAY	$
OB	Major Traffic Control	DAY	$
Section 7 – Mobilization			
NRCS	Mobilization, Non-Emergency	EA	$
NRCS	Mobilization, Emergency	EA	$

F. AUTHORIZED NEGOTIATOR / NEGOTIATIBLE ELEMENTS (ALTERNATES)

Include the name, phone number, and e-mail address of persons(s) in your organization authorized to negotiate the agreement with the City.

The proposal price shall include materials and equipment selected from the designated items and manufacturers listed in the bidding documents. This is done to establish uniformity in bidding and to establish standards of quality for the items named.

If the bidder wishes to quote alternate items for consideration by the City, it may do so under this Section. A complete description of the item and the proposed price differential must be provided. Unless approved at the time of award, substitutions where items are specifically named will be considered only as a negotiated change in Contract Sum.

If the Bidder takes exception to the time stipulated in Article III of the Contract, Time of Completion, page C-2, it is requested to stipulate its proposed time for performance of the work.

Consideration for any proposed alternative items or time may be negotiated at the discretion of the City.

G. ATTACHMENTS

General Declaration, Legal Status of Bidder, Conflict of Interest Form, Living Wage Compliance Form, Prevailing Wage Compliance Form and the Non-Discrimination Form should be completed and returned with the proposal. These elements should be included as attachments to the proposal submission.

PROPOSAL EVALUATION

1. The selection committee will evaluate each proposal by the above-described criteria and point system. The City reserves the right to reject any proposal that it determines to be unresponsive and deficient in any of the information requested for evaluation. A proposal with all the requested information does not guarantee the proposing firm to be a candidate for an interview if interviews are selected to be held by the City. The committee may contact references to verify material submitted by the bidder.

2. The committee then will schedule interviews with the selected firms if necessary. The selected firms will be given the opportunity to discuss in more detail their qualifications, past experience, proposed work plan (if applicable) and pricing.

3. The interview should include the project team members expected to work on the project, but no more than six members total. The interview shall consist of a presentation of up to thirty minutes (or the length provided by the committee) by the

bidder, including the person who will be the project manager on this contract, followed by approximately thirty minutes of questions and answers. Audiovisual aids may be used during the oral interviews. The committee may record the oral interviews.

4. The firms interviewed will then be re-evaluated by the above criteria and adjustments to scoring will be made as appropriate. After evaluation of the proposals, further negotiation with the selected firm may be pursued leading to the award of a contract by City Council, if suitable proposals are received.

The City reserves the right to waive the interview process and evaluate the bidder based on their proposal and pricing schedules alone.

The City will determine whether the final scope of the project to be negotiated will be entirely as described in this RFP, a portion of the scope, or a revised scope.

Work to be done under this contract is generally described through the detailed specifications and must be completed fully in accordance with the contract documents.

Any proposal that does not conform fully to these instructions may be rejected.

PREPARATION OF PROPOSALS

Proposals should have no plastic bindings but will not be rejected as non-responsive for being bound. Staples or binder clips are acceptable. Proposals should be printed double sided on recycled paper.

Each person signing the proposal certifies that they are a person in the bidder's firm/organization responsible for the decisions regarding the fees being offered in the Proposal and has not and will not participate in any action contrary to the terms of this provision.

ADDENDA

If it becomes necessary to revise any part of the RFP, notice of the addendum will be posted to Michigan Inter-governmental Trade Network (MITN) www.mitn.info and/or the City of Ann Arbor web site www.A2gov.org for all parties to download.

Each bidder should acknowledge in its proposal all addenda it has received on the General Declarations form provided in the Attachments section herein. The failure of a bidder to receive or acknowledge receipt of any addenda shall not relieve the bidder of the responsibility for complying with the terms thereof. The City will not be bound by oral responses to inquiries or written responses other than official written addenda.

SECTION IV - ATTACHMENTS

Attachment A – Sample Standard Contract

Attachment B – General Declarations

Attachment C - Legal Status of Bidder

Attachment D – Prevailing Wage Declaration of Compliance Form

Attachment E – Living Wage Declaration of Compliance Form

Attachment F – Living Wage Ordinance Poster

Attachment G – Vendor Conflict of Interest Disclosure Form

Attachment H – Non-Discrimination Ordinance Declaration of Compliance Form

Attachment I – Non-Discrimination Ordinance Poster

Sample Certified Payroll Report Template

ATTACHMENT A
SAMPLE STANDARD CONTRACT

If a contract is awarded, the selected contractor will be required to adhere to a set of general contract provisions which will become a part of any formal agreement. These provisions are general principles which apply to all contractors of service to the City of Ann Arbor such as the following:

Administrative Use Only
Contract Date: _____

CONTRACT

THIS CONTRACT is between the CITY OF ANN ARBOR, a Michigan Municipal Corporation, 301 East Huron Street, Ann Arbor, Michigan 48104 ("City") and _____ _____("Contractor")

_____

(An individual/partnership/corporation, include state of incorporation) (Address)

Based upon the mutual promises below, the Contractor and the City agree as follows:

ARTICLE I - Scope of Work

The Contractor agrees to furnish all of the materials, equipment and labor necessary; and to abide by all the duties and responsibilities applicable to it for the project titled **[Insert Title of Bid and Bid Number**] in accordance with the requirements and provisions of the following documents, including all written modifications incorporated into any of the documents, all of which are incorporated as part of this Contract:

Non-discrimination and Living Wage Declaration of Compliance Forms (if applicable)
Vendor Conflict of Interest Form
Prevailing Wage Declaration of Compliance Form (if applicable)
Bid Forms
Contract and Exhibits
Bonds
General Conditions
Standard Specifications
Detailed Specifications
Plans
Addenda

ARTICLE II - Definitions

Administering Service Area/Unit means Public Services Area/**Public Works**
Project means **[Insert Title of Bid and Bid Number]**

Supervising Professional means the person acting under the authorization of the manager of the Administering Service Area/Unit. At the time this Contract is executed, the Supervising Professional is: [**Insert the person's name**] whose job title is [**Insert job**

title]. If there is any question concerning who the Supervising Professional is, Contractor shall confirm with the manager of the Administering Service Area/Unit.

Contractor's Representative means _____ [**Insert name**] whose job title is [**Insert job title**].

ARTICLE III - Time of Completion

(A) The work to be completed under this Contract shall begin immediately on the date specified in the Notice to Proceed issued by the City.

(B) The entire work for this Contract shall be completed within _____ ( ) consecutive calendar days.

(C) Failure to complete all the work within the time specified above, including any extension granted in writing by the Supervising Professional, shall obligate the Contractor to pay the City, as liquidated damages and not as a penalty, an amount equal to $_____ for each calendar day of delay in the completion of all the work. If any liquidated damages are unpaid by the Contractor, the City shall be entitled to deduct these unpaid liquidated damages from the monies due the Contractor.

The liquidated damages are for the non-quantifiable aspects of any of the previously identified events and do not cover actual damages that can be shown or quantified nor are they intended to preclude recovery of actual damages in addition to the recovery of liquidated damages.

ARTICLE IV - The Contract Sum

Choose one only.

(A) The City shall pay to the Contractor for the performance of the Contract, the lump sum price as given in the Bid Form in the amount of:

_____Dollars ($_____)

Or

(A) The City shall pay to the Contractor for the performance of the Contract, the unit prices as given in the Bid Form for the estimated bid total of:

_____Dollars ($_____)

(B) The amount paid shall be equitably adjusted to cover changes in the work ordered by the Supervising Professional but not required by the Contract Documents. Increases or decreases shall be determined only by written agreement between the City and Contractor.

ARTICLE V - Assignment

This Contract may not be assigned or subcontracted any portion of any right or obligation under this contract without the written consent of the City. Notwithstanding any consent by the City to any assignment, Contractor shall at all times remain bound to all warranties, certifications, indemnifications, promises and performances, however described, as are required of it under this contract unless specifically released from the requirement, in writing, by the City.

ARTICLE VI - Choice of Law

This Contract shall be construed, governed, and enforced in accordance with the laws of the State of Michigan. By executing this Contract, the Contractor and the City agree to venue in a court of appropriate jurisdiction sitting within Washtenaw County for purposes of any action arising under this Contract. The parties stipulate that the venue referenced in this Contract is for convenience and waive any claim of non-convenience.

Whenever possible, each provision of the Contract will be interpreted in a manner as to be effective and valid under applicable law. The prohibition or invalidity, under applicable law, of any provision will not invalidate the remainder of the Contract.

ARTICLE VII - Relationship of the Parties

The parties of the Contract agree that it is not a Contract of employment but is a Contract to accomplish a specific result. Contractor is an independent Contractor performing services for the City. Nothing contained in this Contract shall be deemed to constitute any other relationship between the City and the Contractor.

Contractor certifies that it has no personal or financial interest in the project other than the compensation it is to receive under the Contract. Contractor certifies that it is not, and shall not become, overdue or in default to the City for any Contract, debt, or any other obligation to the City including real or personal property taxes. City shall have the right to set off any such debt against compensation awarded for services under this Contract.

ARTICLE VIII - Notice

All notices given under this Contract shall be in writing, and shall be by personal delivery or by certified mail with return receipt requested to the parties at their respective addresses as specified in the Contract Documents or other address the Contractor may specify in writing. Notice will be deemed given on the date when one of the following first occur: (1) the date of actual receipt; or (2) three days after mailing certified U.S. mail.

ARTICLE IX - Indemnification

To the fullest extent permitted by law, Contractor shall indemnify, defend and hold the City, its officers, employees and agents harmless from all suits, claims, judgments and expenses including attorney's fees resulting or alleged to result, in whole or in part, from any act or omission, which is in any way connected or associated with this Contract, by the Contractor or anyone acting on the Contractor's behalf under this Contract. Contractor shall not be responsible to indemnify the City for losses or damages caused by or resulting from the City's sole negligence. The provisions of this Article shall survive the expiration or earlier termination of this contract for any reason.

ARTICLE X - Entire Agreement

This Contract represents the entire understanding between the City and the Contractor and it supersedes all prior representations, negotiations, agreements, or understandings whether written or oral. Neither party has relied on any prior representations in entering into this Contract. No terms or conditions of either party's invoice, purchase order or other administrative document shall modify the terms and conditions of this Contract, regardless of the other party's failure to object to such form. This Contract shall be binding on and shall inure to the benefit of the parties to this Contract and their permitted successors and permitted assigns and nothing in this Contract, express or implied, is intended to or shall confer on any other person or entity any legal or equitable right, benefit, or remedy of any nature whatsoever under or by reason of this Contract. This Contract may be altered, amended or modified only by written amendment signed by the City and the Contractor.

ARTICLE XI – Electronic Transactions

The City and Contractor agree that signatures on this Contract may be delivered electronically in lieu of an original signature and agree to treat electronic signatures as original signatures that bind them to this Contract. This Contract may be executed and delivered by facsimile and upon such delivery, the facsimile signature will be deemed to have the same effect as if the original signature had been delivered to the other party.

FOR CONTRACTOR

By_____

Its:_____

FOR THE CITY OF ANN ARBOR

By_____
Christopher Taylor, Mayor

By_____
Jacqueline Beaudry, City Clerk

Approved as to substance

By_____

City Administrator

By_____

Services Area Administrator

Approved as to form and content

_____
Atleen Kaur, City Attorney

PERFORMANCE BOND

(1) _____ of _____ (referred to as "Principal"), and _____, a corporation duly authorized to do business in the State of Michigan (referred to as "Surety"), are bound to the City of Ann Arbor, Michigan (referred to as "City"), for $, the payment of which Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, by this bond.

(2) The Principal has entered a written Contract with the City entitled _____ _____, for RFP No. _____ and this bond is given for that Contract in compliance with Act No. 213 of the Michigan Public Acts of 1963, as amended, being MCL 129.201 et seq.

(3) Whenever the Principal is declared by the City to be in default under the Contract, the Surety may promptly remedy the default or shall promptly:

(a) complete the Contract in accordance with its terms and conditions; or

(b) obtain a bid or bids for submission to the City for completing the Contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, arrange for a Contract between such bidder and the City, and make available, as work progresses, sufficient funds to pay the cost of completion less the balance of the Contract price; but not exceeding, including other costs and damages for which Surety may be liable hereunder, the amount set forth in paragraph 1.

(4) Surety shall have no obligation to the City if the Principal fully and promptly performs under the Contract.

(5) Surety 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 it shall in any way affect its obligations on this bond, and waives 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.

(6) Principal, Surety, and the City agree that signatures on this bond may be delivered electronically in lieu of an original signature and agree to treat electronic signatures as original signatures that bind them to this bond. This bond may be executed and delivered by facsimile and upon such delivery, the facsimile signature will be deemed to have the same effect as if the original signature had been delivered to the other party.

SIGNED AND SEALED this _____ day of _____, 202_.

_____	_____
(Name of Surety Company)	(Name of Principal)
By _____	By _____
(Signature)	(Signature)
Its _____	Its _____
(Title of Office)	(Title of Office)
Approved as to form:	Name and address of agent:
_____	_____
Atleen Kaur, City Attorney	

LABOR AND MATERIAL BOND

(1) _____ of _____ (referred to as "Principal"), and _____, a corporation duly authorized to do business in the State of Michigan, (referred to as "Surety"), are bound to the City of Ann Arbor, Michigan (referred to as "City"), for the use and benefit of claimants as defined in Act 213 of Michigan Public Acts of 1963, as amended, being MCL 129.201 et seq., in the amount of $ _____, for the payment of which Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, by this bond.

(2) The Principal has entered a written Contract with the City entitled _____ _____ _____, for RFP No. _____; and this bond is given for that Contract in compliance with Act No. 213 of the Michigan Public Acts of 1963 as amended;

(3) If the Principal fails to promptly and fully repay claimants for labor and material reasonably required under the Contract, the Surety shall pay those claimants.

(4) Surety's obligations shall not exceed the amount stated in paragraph 1, and Surety shall have no obligation if the Principal promptly and fully pays the claimants.

(5) Principal, Surety, and the City agree that signatures on this bond may be delivered electronically in lieu of an original signature and agree to treat electronic signatures as original signatures that bind them to this bond. This bond may be executed and delivered by facsimile and upon such delivery, the facsimile signature will be deemed to have the same effect as if the original signature had been delivered to the other party.

SIGNED AND SEALED this _____ day of _____, 202_

_____
(Name of Surety Company)

By _____
(Signature)

Its _____
(Title of Office)

_____
(Name of Principal)

By _____
(Signature)

Its _____
(Title of Office)

Approved as to form:

_____
Atleen Kaur, City Attorney

Name and address of agent:

_____

_____

_____

GENERAL CONDITIONS

Section 1 - Execution, Correlation and Intent of Documents

The contract documents shall be signed in 2 copies by the City and the Contractor.

The contract documents are complementary and what is called for by any one shall be binding. The intention of the documents is to include all labor and materials, equipment and transportation necessary for the proper execution of the work. Materials or work described in words which so applied have a well-known technical or trade meaning have the meaning of those recognized standards.

In case of a conflict among the contract documents listed below in any requirement(s), the requirement(s) of the document listed first shall prevail over any conflicting requirement(s) of a document listed later.

(1) Addenda in reverse chronological order; (2) Detailed Specifications; (3) Standard Specifications; (4) Plans; (5) General Conditions; (6) Contract; (7) Bid Forms; (8) Bond Forms; (9) Bid.

Section 2 - Order of Completion

The Contractor shall submit with each invoice, and at other times reasonably requested by the Supervising Professional, schedules showing the order in which the Contractor proposes to carry on the work. They shall include the dates at which the Contractor will start the several parts of the work, the estimated dates of completion of the several parts, and important milestones within the several parts.

Section 3 - Familiarity with Work

The Bidder or its representative shall make personal investigations of the site of the work and of existing structures and shall determine to its own satisfaction the conditions to be encountered, the nature of the ground, the difficulties involved, and all other factors affecting the work proposed under this Contract. The Bidder to whom this Contract is awarded will not be entitled to any additional compensation unless conditions are clearly different from those which could reasonably have been anticipated by a person making diligent and thorough investigation of the site.

The Bidder shall immediately notify the City upon discovery, and in every case prior to submitting its Bid, of every error or omission in the bidding documents that would be identified by a reasonably competent, diligent Bidder. In no case will a Bidder be allowed the benefit of extra compensation or time to complete the work under this Contract for extra expenses or time spent as a result of the error or omission.

Section 4 - Wage Requirements

Under this Contract, the Contractor shall conform to Chapter 14 of Title I of the Code of the City of Ann Arbor as amended; which in part states "...that all craftsmen, mechanics and laborers employed directly on the site in connection with said improvements, including said employees of

subcontractors, shall receive the prevailing wage for the corresponding classes of craftsmen, mechanics and laborers, as determined by statistics for the Ann Arbor area compiled by the United States Department of Labor. At the request of the City, any contractor or subcontractor shall provide satisfactory proof of compliance with the contract provisions required by the Section.

Pursuant to Resolution R-16-469 all public improvement contractors are subject to prevailing wage and will be required to provide to the City payroll records sufficient to demonstrate compliance with the prevailing wage requirements. A sample Prevailing Wage Form is provided in the Appendix herein for reference as to what will be expected from contractors. Use of the Prevailing Wage Form provided in the Appendix section or a City-approved equivalent will be required along with wage rate interviews.

Where the Contract and the Ann Arbor City Ordinance are silent as to definitions of terms required in determining contract compliance with regard to prevailing wages, the definitions provided in the Davis-Bacon Act as amended (40 U.S.C. 278-a to 276-a-7) for the terms shall be used.

If the Contractor is a “covered employer” as defined in Chapter 23 of the Ann Arbor City Code, the Contractor agrees to comply with the living wage provisions of Chapter 23 of the Ann Arbor City Code. The Contractor agrees to pay those employees providing Services to the City under this Contract a “living wage,” as defined in Section 1:815 of the Ann Arbor City Code, as adjusted in accordance with Section 1:815(3); to post a notice approved by the City of the applicability of Chapter 23 in every location in which regular or contract employees providing services under this Contract are working; to maintain records of compliance; if requested by the City, to provide documentation to verify compliance; to take no action that would reduce the compensation, wages, fringe benefits, or leave available to any employee or person contracted for employment in order to pay the living wage required by Section 1:815; and otherwise to comply with the requirements of Chapter 23.

Contractor agrees that all subcontracts entered into by the Contractor shall contain similar wage provision covering subcontractor’s employees who perform work on this contract.

Section 5 - Non-Discrimination

The Contractor agrees to comply, and to require its subcontractor(s) to comply, with the nondiscrimination provisions of MCL 37.2209. The Contractor further agrees to comply with the provisions of Section 9:158 of Chapter 112 of Title IX of the Ann Arbor City Code, and to assure that applicants are employed and that employees are treated during employment in a manner which provides equal employment opportunity.

Section 6 - Materials, Appliances, Employees

Unless otherwise stipulated, the Contractor shall provide and pay for all materials, labor, water, tools, equipment, light, power, transportation, and other facilities necessary or used for the execution and completion of the work. Unless otherwise specified, all materials incorporated in the permanent work shall be new, and both workmanship and materials shall be of the highest quality. The Contractor shall, if required, furnish satisfactory evidence as to the kind and quality of materials.

The Contractor shall at all times enforce strict discipline and good order among its employees, and shall seek to avoid employing on the work any unfit person or anyone not skilled in the work assigned.

Adequate sanitary facilities shall be provided by the Contractor.

Section 7 - Qualifications for Employment

The Contractor shall employ competent laborers and mechanics for the work under this Contract. For work performed under this Contract, employment preference shall be given to qualified local residents.

Section 8 - Royalties and Patents

The Contractor shall pay all royalties and license fees. It shall defend all suits or claims for infringements of any patent rights and shall hold the City harmless from loss on account of infringement except that the City shall be responsible for all infringement loss when a particular process or the product of a particular manufacturer or manufacturers is specified, unless the City has notified the Contractor prior to the signing of the Contract that the particular process or product is patented or is believed to be patented.

Section 9 - Permits and Regulations

The Contractor must secure and pay for all permits, permit or plan review fees and licenses necessary for the prosecution of the work. These include but are not limited to City building permits, right-of-way permits, lane closure permits, right-of-way occupancy permits, and the like. The City shall secure and pay for easements shown on the plans unless otherwise specified.

The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified. If the Contractor observes that the contract documents are at variance with those requirements, it shall promptly notify the Supervising Professional in writing, and any necessary changes shall be adjusted as provided in the Contract for changes in the work.

Section 10 - Protection of the Public and of Work and Property

The Contractor is responsible for the means, methods, sequences, techniques and procedures of construction and safety programs associated with the work contemplated by this contract. The Contractor, its agents or sub-contractors, shall comply with the "General Rules and Regulations for the Construction Industry" as published by the Construction Safety Commission of the State of Michigan and to all other local, State and National laws, ordinances, rules and regulations pertaining to safety of persons and property.

The Contractor shall take all necessary and reasonable precautions to protect the safety of the public. It shall continuously maintain adequate protection of all work from damage, and shall take all necessary and reasonable precautions to adequately protect all public and private property from injury or loss arising in connection with this Contract. It shall make good any damage, injury or loss to its work and to public and private property resulting from lack of reasonable protective precautions, except as may be due to errors in the contract documents, or caused by agents or

employees of the City. The Contractor shall obtain and maintain sufficient insurance to cover damage to any City property at the site by any cause.

In an emergency affecting the safety of life, or the work, or of adjoining property, the Contractor is, without special instructions or authorization from the Supervising Professional, permitted to act at its discretion to prevent the threatened loss or injury. It shall also so act, without appeal, if authorized or instructed by the Supervising Professional.

Any compensation claimed by the Contractor for emergency work shall be determined by agreement or in accordance with the terms of Claims for Extra Cost - Section 15.

Section 11 - Inspection of Work

The City shall provide sufficient competent personnel for the inspection of the work.

The Supervising Professional shall at all times have access to the work whenever it is in preparation or progress, and the Contractor shall provide proper facilities for access and for inspection.

If the specifications, the Supervising Professional's instructions, laws, ordinances, or any public authority require any work to be specially tested or approved, the Contractor shall give the Supervising Professional timely notice of its readiness for inspection, and if the inspection is by an authority other than the Supervising Professional, of the date fixed for the inspection. Inspections by the Supervising Professional shall be made promptly, and where practicable at the source of supply. If any work should be covered up without approval or consent of the Supervising Professional, it must, if required by the Supervising Professional, be uncovered for examination and properly restored at the Contractor's expense.

Re-examination of any work may be ordered by the Supervising Professional, and, if so ordered, the work must be uncovered by the Contractor. If the work is found to be in accordance with the contract documents, the City shall pay the cost of re-examination and replacement. If the work is not in accordance with the contract documents, the Contractor shall pay the cost.

Section 12 - Superintendence

The Contractor shall keep on the work site, during its progress, a competent superintendent and any necessary assistants, all satisfactory to the Supervising Professional. The superintendent will be responsible to perform all on-site project management for the Contractor. The superintendent shall be experienced in the work required for this Contract. The superintendent shall represent the Contractor and all direction given to the superintendent shall be binding as if given to the Contractor. Important directions shall immediately be confirmed in writing to the Contractor. Other directions will be confirmed on written request. The Contractor shall give efficient superintendence to the work, using its best skill and attention.

Section 13 - Changes in the Work

The City may make changes to the quantities of work within the general scope of the Contract at any time by a written order and without notice to the sureties. If the changes add to or deduct from the extent of the work, the Contract Sum shall be adjusted accordingly. All the changes shall be

executed under the conditions of the original Contract except that any claim for extension of time caused by the change shall be adjusted at the time of ordering the change.

In giving instructions, the Supervising Professional shall have authority to make minor changes in the work not involving extra cost and not inconsistent with the purposes of the work, but otherwise, except in an emergency endangering life or property, no extra work or change shall be made unless in pursuance of a written order by the Supervising Professional, and no claim for an addition to the Contract Sum shall be valid unless the additional work was ordered in writing.

The Contractor shall proceed with the work as changed and the value of the work shall be determined as provided in Claims for Extra Cost - Section 15.

Section 14 - Extension of Time

Extension of time stipulated in the Contract for completion of the work will be made if and as the Supervising Professional may deem proper under any of the following circumstances:

(1) When work under an extra work order is added to the work under this Contract;

(2) When the work is suspended as provided in Section 20;

(3) When the work of the Contractor is delayed on account of conditions which could not have been foreseen, or which were beyond the control of the Contractor, and which were not the result of its fault or negligence;

(4) Delays in the progress of the work caused by any act or neglect of the City or of its employees or by other Contractors employed by the City;

(5) Delay due to an act of Government;

(6) Delay by the Supervising Professional in the furnishing of plans and necessary information;

(7) Other cause which in the opinion of the Supervising Professional entitles the Contractor to an extension of time.

The Contractor shall notify the Supervising Professional within 7 days of an occurrence or conditions which, in the Contractor's opinion, entitle it to an extension of time. The notice shall be in writing and submitted in ample time to permit full investigation and evaluation of the Contractor's claim. The Supervising Professional shall acknowledge receipt of the Contractor's notice within 7 days of its receipt. Failure to timely provide the written notice shall constitute a waiver by the Contractor of any claim.

In situations where an extension of time in contract completion is appropriate under this or any other section of the contract, the Contractor understands and agrees that the only available adjustment for events that cause any delays in contract completion shall be extension of the required time for contract completion and that there shall be no adjustments in the money due the Contractor on account of the delay.

Section 15 - Claims for Extra Cost

If the Contractor claims that any instructions by drawings or other media issued after the date of the Contract involved extra cost under this Contract, it shall give the Supervising Professional written notice within 7 days after the receipt of the instructions, and in any event before proceeding to execute the work, except in emergency endangering life or property. The procedure shall then be as provided for Changes in the Work-Section l3. No claim shall be valid unless so made.

If the Supervising Professional orders, in writing, the performance of any work not covered by the contract documents, and for which no item of work is provided in the Contract, and for which no unit price or lump sum basis can be agreed upon, then the extra work shall be done on a Cost-Plus-Percentage basis of payment as follows:

(1) The Contractor shall be reimbursed for all reasonable costs incurred in doing the work, and shall receive an additional payment of 15% of all the reasonable costs to cover both its indirect overhead costs and profit;

(2) The term "Cost" shall cover all payroll charges for employees and supervision required under the specific order, together with all worker's compensation, Social Security, pension and retirement allowances and social insurance, or other regular payroll charges on same; the cost of all material and supplies required of either temporary or permanent character; rental of all power-driven equipment at agreed upon rates, together with cost of fuel and supply charges for the equipment; and any costs incurred by the Contractor as a direct result of executing the order, if approved by the Supervising Professional;

(3) If the extra is performed under subcontract, the subcontractor shall be allowed to compute its charges as described above. The Contractor shall be permitted to add an additional charge of 5% percent to that of the subcontractor for the Contractor's supervision and contractual responsibility;

(4) The quantities and items of work done each day shall be submitted to the Supervising Professional in a satisfactory form on the succeeding day, and shall be approved by the Supervising Professional and the Contractor or adjusted at once;

(5) Payments of all charges for work under this Section in any one month shall be made along with normal progress payments. Retainage shall be in accordance with Progress Payments-Section 16.

No additional compensation will be provided for additional equipment, materials, personnel, overtime or special charges required to perform the work within the time requirements of the Contract.

When extra work is required and no suitable price for machinery and equipment can be determined in accordance with this Section, the hourly rate paid shall be 1/40 of the basic weekly rate listed in the Rental Rate Blue Book published by Dataquest Incorporated and applicable to the time period the equipment was first used for the extra work. The hourly rate will be deemed to include all costs of operation such as bucket or blade, fuel, maintenance, "regional factors", insurance, taxes, and the like, but not the costs of the operator.

Section 16 - Progress Payments

The Contractor shall submit each month, or at longer intervals, if it so desires, an invoice covering work performed for which it believes payment, under the Contract terms, is due. The submission shall be to the City's Finance Department - Accounting Division. The Supervising Professional will, within 10 days following submission of the invoice, prepare a certificate for payment for the work in an amount to be determined by the Supervising Professional as fairly representing the acceptable work performed during the period covered by the Contractor's invoice. To insure the proper performance of this Contract, the City will retain a percentage of the estimate in accordance with Act 524, Public Acts of 1980. The City will then, following the receipt of the Supervising Professional's Certificate, make payment to the Contractor as soon as feasible, which is anticipated will be within 15 days.

An allowance may be made in progress payments if substantial quantities of permanent material have been delivered to the site but not incorporated in the completed work if the Contractor, in the opinion of the Supervising Professional, is diligently pursuing the work under this Contract. Such materials shall be properly stored and adequately protected. Allowance in the estimate shall be at the invoice price value of the items. Notwithstanding any payment of any allowance, all risk of loss due to vandalism or any damages to the stored materials remains with the Contractor.

In the case of Contracts which include only the Furnishing and Delivering of Equipment, the payments shall be; 60% of the Contract Sum upon the delivery of all equipment to be furnished, or in the case of delivery of a usable portion of the equipment in advance of the total equipment delivery, 60% of the estimated value of the portion of the equipment may be paid upon its delivery in advance of the time of the remainder of the equipment to be furnished; 30% of the Contract Sum upon completion of erection of all equipment furnished, but not later than 60 days after the date of delivery of all of the equipment to be furnished; and payment of the final 10% on final completion of erection, testing and acceptance of all the equipment to be furnished; but not later than l80 days after the date of delivery of all of the equipment to be furnished, unless testing has been completed and shows the equipment to be unacceptable.

With each invoice for periodic payment, the Contractor shall enclose a Contractor's Declaration - Section 43, and an updated project schedule per Order of Completion - Section 2.

Section 17 - Deductions for Uncorrected Work

If the Supervising Professional decides it is inexpedient to correct work that has been damaged or that was not done in accordance with the Contract, an equitable deduction from the Contract price shall be made.

Section 18 - Correction of Work Before Final Payment

The Contractor shall promptly remove from the premises all materials condemned by the Supervising Professional as failing to meet Contract requirements, whether incorporated in the work or not, and the Contractor shall promptly replace and re-execute the work in accordance with the Contract and without expense to the City and shall bear the expense of making good all work of other contractors destroyed or damaged by the removal or replacement.

If the Contractor does not remove the condemned work and materials within l0 days after written notice, the City may remove them and, if the removed material has value, may store the material

at the expense of the Contractor. If the Contractor does not pay the expense of the removal within 10 days thereafter, the City may, upon 10 days written notice, sell the removed materials at auction or private sale and shall pay to the Contractor the net proceeds, after deducting all costs and expenses that should have been borne by the Contractor. If the removed material has no value, the Contractor must pay the City the expenses for disposal within 10 days of invoice for the disposal costs.

The inspection or lack of inspection of any material or work pertaining to this Contract shall not relieve the Contractor of its obligation to fulfill this Contract and defective work shall be made good. Unsuitable materials may be rejected by the Supervising Professional notwithstanding that the work and materials have been previously overlooked by the Supervising Professional and accepted or estimated for payment or paid for. If the work or any part shall be found defective at any time before the final acceptance of the whole work, the Contractor shall forthwith make good the defect in a manner satisfactory to the Supervising Professional. The judgment and the decision of the Supervising Professional as to whether the materials supplied and the work done under this Contract comply with the requirements of the Contract shall be conclusive and final.

Section 19 - Acceptance and Final Payment

Upon receipt of written notice that the work is ready for final inspection and acceptance, the Supervising Professional will promptly make the inspection. When the Supervising Professional finds the work acceptable under the Contract and the Contract fully performed, the Supervising Professional will promptly sign and issue a final certificate stating that the work required by this Contract has been completed and is accepted by the City under the terms and conditions of the Contract. The entire balance found to be due the Contractor, including the retained percentage, shall be paid to the Contractor by the City within 30 days after the date of the final certificate.

Before issuance of final certificates, the Contractor shall file with the City:

(1) The consent of the surety to payment of the final estimate;
(2) The Contractor's Affidavit in the form required by Section 44.

In case the Affidavit or consent is not furnished, the City may retain out of any amount due the Contractor, sums sufficient to cover all lienable claims.

The making and acceptance of the final payment shall constitute a waiver of all claims by the City except those arising from:

(1) unsettled liens;
(2) faulty work appearing within 12 months after final payment;
(3) hidden defects in meeting the requirements of the plans and specifications;
(4) manufacturer's guarantees.

It shall also constitute a waiver of all claims by the Contractor, except those previously made and still unsettled.

Section 20 - Suspension of Work

The City may at any time suspend the work, or any part by giving 5 days notice to the Contractor in writing. The work shall be resumed by the Contractor within 10 days after the date fixed in the

written notice from the City to the Contractor to do so. The City shall reimburse the Contractor for expense incurred by the Contractor in connection with the work under this Contract as a result of the suspension.

If the work, or any part, shall be stopped by the notice in writing, and if the City does not give notice in writing to the Contractor to resume work at a date within 90 days of the date fixed in the written notice to suspend, then the Contractor may abandon that portion of the work suspended and will be entitled to the estimates and payments for all work done on the portions abandoned, if any, plus 10% of the value of the work abandoned, to compensate for loss of overhead, plant expense, and anticipated profit.

Section 21 - Delays and the City's Right to Terminate Contract

If the Contractor refuses or fails to prosecute the work, or any separate part of it, with the diligence required to insure completion, ready for operation, within the allowable number of consecutive calendar days specified plus extensions, or fails to complete the work within the required time, the City may, by written notice to the Contractor, terminate its right to proceed with the work or any part of the work as to which there has been delay. After providing the notice the City may take over the work and prosecute it to completion, by contract or otherwise, and the Contractor and its sureties shall be liable to the City for any excess cost to the City. If the Contractor's right to proceed is terminated, the City may take possession of and utilize in completing the work, any materials, appliances and plant as may be on the site of the work and useful for completing the work. The right of the Contractor to proceed shall not be terminated or the Contractor charged with liquidated damages where an extension of time is granted under Extension of Time - Section 14.

If the Contractor is adjudged a bankrupt, or if it makes a general assignment for the benefit of creditors, or if a receiver is appointed on account of its insolvency, or if it persistently or repeatedly refuses or fails except in cases for which extension of time is provided, to supply enough properly skilled workers or proper materials, or if it fails to make prompt payments to subcontractors or for material or labor, or persistently disregards laws, ordinances or the instructions of the Supervising Professional, or otherwise is guilty of a substantial violation of any provision of the Contract, then the City, upon the certificate of the Supervising Professional that sufficient cause exists to justify such action, may, without prejudice to any other right or remedy and after giving the Contractor 3 days written notice, terminate this Contract. The City may then take possession of the premises and of all materials, tools and appliances thereon and without prejudice to any other remedy it may have, make good the deficiencies or finish the work by whatever method it may deem expedient, and deduct the cost from the payment due the Contractor. The Contractor shall not be entitled to receive any further payment until the work is finished. If the expense of finishing the work, including compensation for additional managerial and administrative services exceeds the unpaid balance of the Contract Sum, the Contractor and its surety are liable to the City for any excess cost incurred. The expense incurred by the City, and the damage incurred through the Contractor's default, shall be certified by the Supervising Professional.

Section 22 - Contractor's Right to Terminate Contract

If the work should be stopped under an order of any court, or other public authority, for a period of 3 months, through no act or fault of the Contractor or of anyone employed by it, then the Contractor may, upon 7 days written notice to the City, terminate this Contract and recover from the City payment for all acceptable work executed plus reasonable profit.

Section 23 - City's Right To Do Work

If the Contractor should neglect to prosecute the work properly or fail to perform any provision of this Contract, the City, 3 days after giving written notice to the Contractor and its surety may, without prejudice to any other remedy the City may have, make good the deficiencies and may deduct the cost from the payment due to the Contractor.

Section 24 - Removal of Equipment and Supplies

In case of termination of this Contract before completion, from any or no cause, the Contractor, if notified to do so by the City, shall promptly remove any part or all of its equipment and supplies from the property of the City, failing which the City shall have the right to remove the equipment and supplies at the expense of the Contractor.

The removed equipment and supplies may be stored by the City and, if all costs of removal and storage are not paid by the Contractor within 10 days of invoicing, the City upon 10 days written notice may sell the equipment and supplies at auction or private sale, and shall pay the Contractor the net proceeds after deducting all costs and expenses that should have been borne by the Contractor and after deducting all amounts claimed due by any lien holder of the equipment or supplies.

Section 25 - Responsibility for Work and Warranties

The Contractor assumes full responsibility for any and all materials and equipment used in the construction of the work and may not make claims against the City for damages to materials and equipment from any cause except negligence or willful act of the City. Until its final acceptance, the Contractor shall be responsible for damage to or destruction of the project (except for any part covered by Partial Completion and Acceptance - Section 26). The Contractor shall make good all work damaged or destroyed before acceptance. All risk of loss remains with the Contractor until final acceptance of the work (Section 19) or partial acceptance (Section 26). The Contractor is advised to investigate obtaining its own builders risk insurance.

The Contractor shall guarantee the quality of the work for a period of one year. The Contractor shall also unconditionally guarantee the quality of all equipment and materials that are furnished and installed under the contract for a period of one year. At the end of one year after the Contractor's receipt of final payment, the complete work, including equipment and materials furnished and installed under the contract, shall be inspected by the Contractor and the Supervising Professional. Any defects shall be corrected by the Contractor at its expense as soon as practicable but in all cases within 60 days. Any defects that are identified prior to the end of one year shall also be inspected by the Contractor and the Supervising Professional and shall be corrected by the Contractor at its expense as soon as practicable but in all cases within 60 days. The Contractor shall assign all manufacturer or material supplier warranties to the City prior to final payment. The assignment shall not relieve the Contractor of its obligations under this paragraph to correct defects.

Section 26 - Partial Completion and Acceptance

If at any time prior to the issuance of the final certificate referred to in Acceptance and Final Payment - Section 19, any portion of the permanent construction has been satisfactorily completed, and if the Supervising Professional determines that portion of the permanent construction is not required for the operations of the Contractor but is needed by the City, the Supervising Professional shall issue to the Contractor a certificate of partial completion, and immediately the City may take over and use the portion of the permanent construction described in the certificate, and exclude the Contractor from that portion.

The issuance of a certificate of partial completion shall not constitute an extension of the Contractor's time to complete the portion of the permanent construction to which it relates if the Contractor has failed to complete it in accordance with the terms of this Contract. The issuance of the certificate shall not release the Contractor or its sureties from any obligations under this Contract including bonds.

If prior use increases the cost of, or delays the work, the Contractor shall be entitled to extra compensation, or extension of time, or both, as the Supervising Professional may determine.

Section 27 - Payments Withheld Prior to Final Acceptance of Work

The City may withhold or, on account of subsequently discovered evidence, nullify the whole or part of any certificate to the extent reasonably appropriate to protect the City from loss on account of:

(1) Defective work not remedied;

(2) Claims filed or reasonable evidence indicating probable filing of claims by other parties against the Contractor;

(3) Failure of the Contractor to make payments properly to subcontractors or for material or labor;

(4) Damage to another Contractor.

When the above grounds are removed or the Contractor provides a Surety Bond satisfactory to the City which will protect the City in the amount withheld, payment shall be made for amounts withheld under this section.

Section 28 - Contractor's Insurance

(1) The Contractor shall procure and maintain during the life of this Contract, including the guarantee period and during any warranty work, such insurance policies, including those set forth below, as will protect itself and the City from all claims for bodily injuries, death or property damage that may arise under this Contract; whether the act(s) or omission(s) giving rise to the claim were made by the Contractor, any subcontractor, or anyone employed by them directly or indirectly. Prior to commencement of any work under this contract, Contractor shall provide to the City documentation satisfactory to the City, through City-approved means (currently myCOI), demonstrating it has obtained the required policies and endorsements. The certificates of insurance endorsements and/or copies of

policy language shall document that the Contractor satisfies the following minimum requirements. Contractor shall add registration@mycoitracking.com to its safe sender's list so that it will receive necessary communication from myCOI. When requested, Contractor shall provide the same documentation for its subcontractor(s) (if any).

Required insurance policies include:

(a) Worker's Compensation Insurance in accordance with all applicable state and federal statutes. Further, Employers Liability Coverage shall be obtained in the following minimum amounts:

Bodily Injury by Accident - $500,000 each accident
Bodily Injury by Disease - $500,000 each employee
Bodily Injury by Disease - $500,000 each policy limit

(b) Commercial General Liability Insurance equivalent to, as a minimum, Insurance Services Office form CG 00 01 04 13 or current equivalent. The City of Ann Arbor shall be named as an additional insured. There shall be no added exclusions or limiting endorsements specifically for the following coverages: Products and Completed Operations, Explosion, Collapse and Underground coverage or Pollution. Further there shall be no added exclusions or limiting endorsements that diminish the City's protections as an additional insured under the policy. The following minimum limits of liability are required:

$1,000,000	Each occurrence as respect Bodily Injury Liability or Property Damage Liability, or both combined.
$2,000,000	Per Project General Aggregate
$1,000,000	Personal and Advertising Injury
$2,000,000	Products and Completed Operations Aggregate, which, notwithstanding anything to the contrary herein, shall be maintained for three years from the date the Project is completed.

(c) Motor Vehicle Liability Insurance, including Michigan No-Fault Coverages, equivalent to, as a minimum, Insurance Services Office form CA 00 01 10 13 or current equivalent. Coverage shall include all owned vehicles, all non-owned vehicles and all hired vehicles. The City of Ann Arbor shall be named as an additional insured. There shall be no added exclusions or limiting endorsements that diminish the City's protections as an additional insured under the policy. Further, the limits of liability shall be $1,000,000 for each occurrence as respects Bodily Injury Liability or Property Damage Liability, or both combined.

(d) Umbrella/Excess Liability Insurance shall be provided to apply excess of the Commercial General Liability, Employers Liability and the Motor Vehicle coverage enumerated above, for each occurrence and for aggregate in the amount of $1,000,000.

(2) Insurance required under subsection (1)(b) and (1)(c) above shall be considered primary as respects any other valid or collectible insurance that the City may possess, including any self-insured retentions the City may have; and any other insurance the City does possess shall be considered excess insurance only and shall not be required to contribute

with this insurance. Further, the Contractor agrees to waive any right of recovery by its insurer against the City for any insurance listed herein.

(3) Insurance companies and policy forms are subject to approval of the City Attorney, which approval shall not be unreasonably withheld. Documentation must provide and demonstrate an unconditional and un-qualified 30-day written notice of cancellation in favor of the City of Ann Arbor. Further, the documentation must explicitly state the following: (a) the policy number(s); name of insurance company(s); name and address of the agent(s) or authorized representative(s); name(s), email address(es), and address of insured; project name; policy expiration date; and specific coverage amounts; (b) any deductibles or self-insured retentions which may be approved by the City, in its sole discretion; (c) that the policy conforms to the requirements specified Contractor shall furnish the City with satisfactory certificates of insurance and endorsements prior to commencement of any work. Upon request, the Contractor shall provide within 30 days a copy of the policy(ies) and all required endorsements to the City. If any of the above coverages expire by their terms during the term of this Contract, the Contractor shall deliver proof of renewal and/or new policies and endorsements to the Administering Service Area/Unit at least ten days prior to the expiration date.

(4) Any Insurance provider of Contractor shall be authorized to do business in the State of Michigan and shall carry and maintain a minimum rating assigned by A.M. Best & Company's Key Rating Guide of "A-" Overall and a minimum Financial Size Category of "V". Insurance policies and certificates issued by non-authorized insurance companies are not acceptable unless approved in writing by the City.

(5) City reserves the right to require additional coverage and/or coverage amounts as may be included from time to time in the Detailed Specifications for the Project.

(6) The provisions of General Condition 28 shall survive the expiration or earlier termination of this contract for any reason.

Section 29 - Surety Bonds

Bonds will be required from the successful bidder as follows:

(1) A Performance Bond to the City of Ann Arbor for the amount of the bid(s) accepted;
(2) A Labor and Material Bond to the City of Ann Arbor for the amount of the bid(s) accepted.

Bonds shall be executed on forms supplied by the City in a manner and by a Surety Company authorized to transact business in Michigan and satisfactory to the City Attorney.

Section 30 - Damage Claims

The Contractor shall be held responsible for all damages to property of the City or others, caused by or resulting from the negligence of the Contractor, its employees, or agents during the progress of or connected with the prosecution of the work, whether within the limits of the work or elsewhere. The Contractor must restore all property injured including sidewalks, curbing, sodding, pipes, conduit, sewers or other public or private property to not less than its original condition with new work.

Section 31 - Refusal to Obey Instructions

If the Contractor refuses to obey the instructions of the Supervising Professional, the Supervising Professional shall withdraw inspection from the work, and no payments will be made for work performed thereafter nor may work be performed thereafter until the Supervising Professional shall have again authorized the work to proceed.

Section 32 - Assignment

Neither party to the Contract shall assign the Contract without the written consent of the other. The Contractor may assign any monies due to it to a third party acceptable to the City.

Section 33 - Rights of Various Interests

Whenever work being done by the City's forces or by other contractors is contiguous to work covered by this Contract, the respective rights of the various interests involved shall be established by the Supervising Professional, to secure the completion of the various portions of the work in general harmony.

The Contractor is responsible to coordinate all aspects of the work, including coordination of, and with, utility companies and other contractors whose work impacts this project.

Section 34 - Subcontracts

The Contractor shall not award any work to any subcontractor without prior written approval of the City. The approval will not be given until the Contractor submits to the City a written statement concerning the proposed award to the subcontractor. The statement shall contain all information the City may require.

The Contractor shall be as fully responsible to the City for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by it.

The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of the General Conditions and all other contract documents applicable to the work of the subcontractors and to give the Contractor the same power to terminate any subcontract that the City may exercise over the Contractor under any provision of the contract documents.

Nothing contained in the contract documents shall create any contractual relation between any subcontractor and the City.

Section 35 - Supervising Professional's Status

The Supervising Professional has the right to inspect any or all work. The Supervising Professional has authority to stop the work whenever stoppage may be appropriate to insure the proper execution of the Contract. The Supervising Professional has the authority to reject all work and materials which do not conform to the Contract and to decide questions which arise in the execution of the work.

The Supervising Professional shall make all measurements and determinations of quantities. Those measurements and determinations are final and conclusive between the parties.

Section 36 - Supervising Professional's Decisions

The Supervising Professional shall, within a reasonable time after their presentation to the Supervising Professional, make decisions in writing on all claims of the City or the Contractor and on all other matters relating to the execution and progress of the work or the interpretation of the contract documents.

Section 37 - Storing Materials and Supplies

Materials and supplies may be stored at the site of the work at locations agreeable to the City unless specific exception is listed elsewhere in these documents. Ample way for foot traffic and drainage must be provided, and gutters must, at all times, be kept free from obstruction. Traffic on streets shall be interfered with as little as possible. The Contractor may not enter or occupy with agents, employees, tools, or material any private property without first obtaining written permission from its owner. A copy of the permission shall be furnished to the Supervising Professional.

Section 38 - Lands for Work

The Contractor shall provide, at its own expense and without liability to the City, any additional land and access that may be required for temporary construction facilities or for storage of materials.

Section 39 - Cleaning Up

The Contractor shall, as directed by the Supervising Professional, remove at its own expense from the City's property and from all public and private property all temporary structures, rubbish and waste materials resulting from its operations unless otherwise specifically approved, in writing, by the Supervising Professional.

Section 40 - Salvage

The Supervising Professional may designate for salvage any materials from existing structures or underground services. Materials so designated remain City property and shall be transported or stored at a location as the Supervising Professional may direct.

Section 41 - Night, Saturday or Sunday Work

No night or Sunday work (without prior written City approval) will be permitted except in the case of an emergency and then only to the extent absolutely necessary. The City may allow night work which, in the opinion of the Supervising Professional, can be satisfactorily performed at night. Night work is any work between 8:00 p.m. and 7:00 a.m. No Saturday work will be permitted unless the Contractor gives the Supervising Professional at least 48 hours but not more than 5 days notice of the Contractor's intention to work the upcoming Saturday.

Section 42 - Sales Taxes

Under State law the City is exempt from the assessment of State Sales Tax on its direct purchases. Contractors who acquire materials, equipment, supplies, etc. for incorporation in City projects are not likewise exempt. State Law shall prevail. The Bidder shall familiarize itself with the State Law and prepare its Bid accordingly. No extra payment will be allowed under this Contract for failure of the Contractor to make proper allowance in this bid for taxes it must pay.

Section 43

CONTRACTOR'S DECLARATION

I hereby declare that I have not, during the period _____, 20___, to _____, 20 , performed any work, furnished any materials, sustained any loss, damage or delay, or otherwise done anything in addition to the regular items (or executed change orders) set forth in the Contract titled _____, for which I shall ask, demand, sue for, or claim compensation or extension of time from the City, except as I hereby make claim for additional compensation or extension of time as set forth on the attached itemized statement. I further declare that I have paid all payroll obligations related to this Contract that have become due during the above period and that all invoices related to this Contract received more than 30 days prior to this declaration have been paid in full except as listed below.

There is/is not (Contractor please circle one and strike one as appropriate) an itemized statement attached regarding a request for additional compensation or extension of time.

_____ _____
Contractor Date

By _____
(Signature)

Its _____
(Title of Office)

Past due invoices, if any, are listed below.

Section 44

CONTRACTOR'S AFFIDAVIT

The undersigned Contractor,_____, represents that on _____, 20___, it was awarded a contract by the City of Ann Arbor, Michigan to_____ under the terms and conditions of a Contract titled _____. The Contractor represents that all work has now been accomplished and the Contract is complete.

The Contractor warrants and certifies that all of its indebtedness arising by reason of the Contract has been fully paid or satisfactorily secured; and that all claims from subcontractors and others for labor and material used in accomplishing the project, as well as all other claims arising from the performance of the Contract, have been fully paid or satisfactorily settled. The Contractor agrees that, if any claim should hereafter arise, it shall assume responsibility for it immediately upon request to do so by the City of Ann Arbor.

The Contractor, for valuable consideration received, does further waive, release and relinquish any and all claims or right of lien which the Contractor now has or may acquire upon the subject premises for labor and material used in the project owned by the City of Ann Arbor.

This affidavit is freely and voluntarily given with full knowledge of the facts.

_____ _____
Contractor Date

By _____
(Signature)

Its _____
(Title of Office)

Subscribed and sworn to before me, on this _____ day of _____, 20__
_____ , _____ County, Michigan
Notary Public
_____ County, MI
My commission expires on:

STANDARD SPECIFICATIONS

All work under this contract shall be performed in accordance with the Public Services Department Standard Specifications in effect at the date of availability of the contract documents stipulated in the Bid. All work under this Contract which is not included in these Standard Specifications, or which is performed using modifications to these Standard Specifications, shall be performed in accordance with the Detailed Specifications included in these contract documents.

Standard Specifications are available online:

http://www.a2gov.org/departments/engineering/Pages/Engineering-and-Contractor-Resources.aspx

DETAILED SPECIFICATIONS

DETAILED SPECIFICATION
FOR
SEWER CLEANING AND SEWER VIDEO INSPECTION

DESCRIPTION

A. CLEANING AND TELEVISING SEWER - GENERAL

1. The Contractor shall provide a detailed sewer cleaning and televising plan to the PSAA for review and acceptance prior to beginning the work. This plan must include descriptions outlining all provisions and precautions to be taken by the Contractor regarding the handling of existing flow.

2. The cleaning plan and televising must be specific, including such items as schedules, locations, type of equipment, details on water source, plans for disposal, and all other incidental items necessary and/or required to ensure proper protection of the facilities and surroundings, including protection of the access locations from damage, and compliance with the requirements and permit conditions specified in Contract Documents.

3. No work shall begin until all provisions and requirements have been reviewed and accepted by the PSAA.

4. The PSAA's comments shall be incorporated into the resubmitted plans, calculations, and descriptions. The PSAA's acceptance of the plan is required before beginning the work. Resubmittals shall be reviewed and returned to the Contractor within 14 calendar days. Required revisions will not be a basis of payment for additional compensation, extra work, or an extension of contract time. The Contractor shall include time for this entire review process in their schedule.

5. Sewer cleaning and televising plan and submittals shall include at a minimum:
   a. Copy of PACP/MACP Certifications for sewer televising personnel and manhole inspection personnel;
   b. Proof of PACP/MACP certified software;
   c. Safety program for confined space entry;
   d. Information on equipment, trucks, tanks, etc., including, but not limited to, dimensions, required turning radius, fuel type, any special requirements, etc.;
   e. Staging areas for equipment, trucks, tankers, etc.;
   f. Schedule for cleaning and televising of pipe lines, manholes, and chambers;
   g. Planned hours of operation, including equipment idling, etc.;
   h. Number, size, material, and location of hose/piping;
   i. Information on cleaning equipment;
   j. Siphon dewatering plan;
   k. Sludge and debris dewatering, transportation, and disposal procedure and location;
   l. Environment protection including equipment and pipe containment, leak detection, and/or remediation plan; and,
   m. Method of noise control for all equipment.

6. The Contractor shall carry out their operations in strict accordance with all MIOSHA and manufacturer's safety requirements.

7. The Contractor shall be solely responsible for safety of all those involved with the work during the performance of all work. The Contractor shall not enter into any sewer segment where hazardous conditions may exist until such time as the source of those conditions is identified and eliminated by the Contractor. The Contractor shall perform all work in accordance with the latest OSHA confined space entry regulations. The Contractor shall coordinate their work with local fire, police, and emergency rescue unit.

8. The Contractor shall be responsible for any damage to public or private property resulting from their televising and cleaning activities and shall repair or otherwise make whole such damage at no cost to City and owner of the property.

9. The Contractor shall provide for the transfer of main line flow around the section or sections of pipe that are to be cleaned and televised, as required to complete cleaning, televising, and inspection work. The diverting and lateral bypass pumping work shall be performed in accordance with this Article and as directed by the PSAA.

10. If the Contractor chooses to only divert part of the flow during their sewer cleaning operations, the Contractor must indicate that in their submittal, including which plugs would be installed. Contractor to note that all plugs, level sensors, and lateral bypass pumping system shall be in operation for the new sewer televising, manhole inspections, and chamber inspections.

B. SEWER CLEANING

1. Each sewer section shall be cleaned to a degree sufficient to allow video inspection The Contractor shall take precautions to protect the sewer lines from damage. The Contractor shall assume the sewer will require heavy cleaning with unlimited passes to achieve a clean sewer and that rodding and root cutting shall be required and the costs are included in the Work.

2. For CIPP pipe, the Contractor must adhere to the requirements of ASTM F1216 (Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube), or ASTM F1606 (Standard Practice for Rehabilitation of Existing Sewers and Conduits with Deformed Polyethylene (PE) Liner), for the following types of cleaning: hydraulic cleaning, high velocity hydro-cleaning, and mechanical cleaning.

3. Dirt, grease, rocks, sand, roots, and other solid or semisolid materials and obstructions shall be removed from the sewer line and manholes. Cleaning shall be of the entire reach between manholes and/or chambers.

4. It shall be the responsibility of the Contractor to clear the line of obstructions such as solids, dropped joints, debris from collapsed pipe, sediment deposits, mineral deposits, stalactites, and all major blockages that would prevent sewer rehabilitation work from being performed.

5. The sewers shall be cleaned by using a high-pressure water cleaning machine with minimum capability of 5,000 pounds per square inch (psi) at 80 gallons per minute (gpm).

6. A high-pressure hose with a jet nozzle shall be introduced into the sewer so that a spray shall scour and clean the sewer line without applying internal pressure and damaging the pipe.

7. This will require an unlimited number of passes of the jet nozzle, or other cleaning measures, to remove all debris. The hose shall be self- propelled by a minimum water pressure of 1,000 psi. Cleaning pressures to 5,000 psi may be required to remove heavy tuberculation and adhered debris from the pipe interior.

8. The jet nozzle hose, upon withdrawal, will scour the pipe (invert, walls, and crown), flushing all materials into the downstream manhole for removal.

9. For major blockages where cleaning cannot be completed, the Contractor shall notify the PSAA for review and approval before proceeding.
10. Material removal shall be performed at the manholes identified for access for the cleaning operation. At no time during cleaning shall material be allowed to enter or flow in the sewer past the downstream access manhole. Passing material from manhole section to manhole section shall not be permitted. All debris and waste material shall be completely removed from the sanitary sewer system and shall be disposed of by the Contractor in accordance with federal, state and local requirements.

11. Mechanical root cutting shall be performed with powered equipment. The Contractor shall furnish suitable power machinery which shall be used to remove tree roots and deposits remaining after jet cleaning that prevent passage of television inspection equipment or prevent the lining of the sewer.

12. The Contractor shall provide high quality digital video in a digital format approved by the PSAA that verifies that the sewer is clean and free of sediment and debris to the satisfaction of the PSAA. If any sewer is not satisfactorily cleaned, it shall be promptly cleaned and reinspected by closed circuit television camera and video provided to the PSAA for review and approval.

13. If the sewer has material and debris that prevents the proper installation of the CIPP, prohibits video inspection, or is not cleaned to the satisfaction of the PSAA, the sewer shall be re cleaned and re-televised at the Contractor's sole expense.

14. The sewer shall not be lined until such time as the cleaning operations have been approved in writing by the PSAA. Field Inspection personnel shall not be allowed to authorize the Contractor to begin installation of the CIPP sewer liner.

15. Extensions of contract time will not be granted for delays associated with recleaning and re-televising the sewer.

16. Fire hydrants used, when permitted by the PSAA as additional source of water during the cleaning operation shall be provided with PSAA-approved device to meter water usage and prevent backflow into the potable water system. The backflow and metering equipment shall be furnished Public Works. Hydrant meter applications are available from Customer Service and requests must be made a minimum of 7 business days prior to the requested use date.

C. MANHOLE CLEANING

1. Manhole cleaning shall not be considered a separate pay item but shall be included within the scope of work necessary to perform the prescribed work assigned under the contract.

2. The manhole structures shall be cleaned below their invert elevations with a power vacuum, or other PSAA approved method, to remove all sediment to allow for the inspection of the bottom of the structures.

3. The Contractor shall assume the manholes and chambers require heavy cleaning with multiple passes to achieve a clean manhole. Manhole and chamber cleaning shall be incidental to the sewer cleaning and no additional payment shall be provided.

4. If the preliminary inspection of walls determines that any additional work in the manhole will compromise the integrity of the walls or structure, all cleaning of the manhole or chamber shall immediately stop. The PSAA will instruct the Contractor on how to proceed.

5. If the preliminary inspection determines cleaning of the walls may proceed, the structure cleaning shall remove all sediment, sand, grease, debris and unsound or loose material, old coatings, and other deleterious materials from the floor, walls, and roof. Cleaning equipment may include high pressure water (3,500 psi or greater), abrasive blasting, grinding, or acid etching. Use of detergents and/or hot water may be required to remove fats, oils, and grease. The removal of the spalling on the walls shall be performed as directed by the PSAA during the inspection. The Contractor shall take care as not to damage the steel reinforcement in the walls.

6. It shall be the responsibility of the Contractor to clear the line of obstructions such as solids, protruding branch connections or broken pipe. If video inspection reveals an obstruction that cannot be removed by conventional cleaning equipment, then the Contractor shall immediately notify the City.

7. The Contractor shall identify any surface material that cannot be removed using conventional equipment or methods listed above and submit to the PSAA for review.

8. The Contractor is to note the chambers may also contain weirs and internal walls that need to be cleaned as well.

D. TELEVISION INSPECTION OF SEWER

1. All sewer television inspections shall conform to NASSCO CCTV inspection performance specifications published at the time of Contract award unless otherwise specified herein.

2. The Contractor shall furnish all labor, equipment and materials necessary for the television inspection. The PSAA shall be given 24-hour notice so that an Inspector may witness the television inspection. All sewer lines are to be thoroughly cleaned prior to television inspection by jetting of the lines or other approved methods.

3. Television inspection shall consist of wetting the invert of the section by pouring clean water in the upstream manhole until it appears in the downstream manhole, and then, after the water has stopped

flowing, passing a television camera through the section of sewer. The television camera shall be passed through the section of pipe from the downstream to upstream end. Any runs of sewer not televised in this manner shall be re-televised at the Contractor's expense.

4. Lighting for the camera shall be adequate to allow a clear picture of the entire periphery of the sewer and shall be varied as required to be effective for all pipe diameters inspected. Remote control of lighting brilliance, camera focus, and camera movement shall be from a control panel inside the mobile recording studio. Cables and equipment used to propel the camera shall not obstruct the camera view or interfere with the documentation of the sewer conditions.

5. The camera shall be moved through the sewer line at a uniform rate, maximum 30 feet per minute. Whenever possible, the camera shall move in an upstream direction. The camera shall be stopped for no less than 10 seconds at the manhole entrances, each service lateral, exit manholes, and at all points where the sewer is damaged or deficient. The camera shall pan and tilt to provide full view of each service lateral, and at all points where the sewer is damaged or
6. deficient.

7. If the camera fails to pass through a pipe section, the Contractor shall reset the equipment and attempt to perform the inspection coming back from the next upstream, identified for access, manhole. If the inspection cannot be completed from the next manhole, the inspection shall be considered complete and the PSAA will provide written instructions to the Contractor describing how to proceed with the work in that reach of sewer.

8. The camera shall be connected to a monitor and a digital video recorder capable of generating high quality digital format video on a video format approved by the PSAA. The video inspection record shall indicate the date, the section tested, and the actual distance from the beginning manhole to the ending manhole and shall note any and all visible defects, tees and wyes and their direction, and any other features; with a distance measurement to the nearest ⅒ foot. Defect coding shall be the most recent NASSCO version or that published at the time of contract award as approved by the PSAA.

9. The Contractor shall supply the PSAA with two electronic copies of the entire and final televised program conforming to NASSCO guidelines, including PACP database, MACP database, video pipe recordings, defect photos, and reports in a format approved by the PSAA. The submittal format may be physical (e.g., external hard drive, flash drive) or digital (e.g., a shared folder accessible by the PSAA). Digitals submittals shall remain accessible at least three years after the end of the Contract. The data shall be provided within 15 working days of completion of field work. The information for individual databases, sewer segments, and recordings shall not be split into several drives. The flash drives or portable hard drives and information within it shall become the property of the City. All videos shall be submitted in *.mp4 format.

10. The Contractor shall provide to the City inspection reports listing the location in relation to adjacent manholes of each infiltration point; service leads; unusual conditions; roots; sewer connections; collapsed sections; presence of scale and corrosion; cracked pipe; wide joints; and other discernible features.

11. The reports shall indicate size and type of pipe material, length of line from manhole, and direction of sewage flow, if present. The reports shall also indicate the time and date of recording. Each report shall be named with the pipe inspections from starting manhole to terminus manhole for each stretch of sewer. All reports shall be in accordance with NASSCO, PACP, and MACP standards, outlined above.

12. The Contractor shall provide color photographs of sewer laterals and all problem areas.

13. The television inspection will be deemed satisfactory if no visible defects, including, but not limited to, dips or low spots, high spots, deviations in horizontal or vertical alignment, offset joints, leaks, cracks, standing water greater than ¼ inch, or debris are present. Only after all tests have been successfully completed and acknowledged by the PSAA in writing, may the sewer be placed into service.

MEASUREMENT AND PAYMENT

The completed work as measured for this item of work will be paid for at the contract unit price for the following contract item:

Pay Item	Pay Unit
Sewer Cleaning, 8" to 23" Dia.	Linear Foot
Sewer Cleaning, 24" to 60" Dia.	Linear Foot
Sewer Video Inspection, 8” to 23” Diameter	Linear Foot
Sewer Video Inspection, 24” to 60” Diameter	Linear Foot

Payment for “Clean Sanitary Sewer, ___In. Dia.” includes provisions outlined in the detailed specification, including but not limited to, accessing the manhole, cutting and removing roots and mineral deposits, cleaning and removing all deposits, and removal and disposal of all debris. Payment for “Television Inspection, Sanitary Sewer, ___In. Dia.” includes provisions outlined in the detailed specification, including but not limited to, closed circuit television inspection of sewer from manhole to manhole including reverse setup when required due to obstruction. Measurements shall be from manhole to manhole, and shall take place with both the Engineer and the Contractor (or their agents) present. Measurements shall be recorded and logged on a daily basis.

DETAILED SPECIFICATION
FOR
CUTTING PROTRUDING SERVICE LEADS

DESCRIPTION

Services which protrude more than 3/4-inch into the sewer lines shall be ground down as flush as possible with the wall of the sewer. Grinding shall be done with equipment operating inside of the sewer and shall not cause damage to the sewer or the service being ground. If the protruding service is in such condition that grinding is not possible or if the condition of the sewer is such that repairs cannot be performed from inside the sewer, then the Contractor shall immediately notify the City of the condition.

MEASUREMENT AND PAYMENT

Pay Item	Pay Unit
Cutting Protruding Service Leads	Each

Cutting Protruding Service Leads will be paid for at the Contract Unit Price per each service lead cut. This item of work shall include all labor, equipment and material necessary to cut protruding laterals and remove roots and/or mineral deposits in laterals that intrude into the sewer main. Contractor shall cut back any size service lead protrusions and remove roots/mineral deposits to a maximum protrusion of 1/4". This work shall be accomplished with video monitored remote controlled cutting devices, or other approved method. Use of video monitoring shall be included in this item of work.

DETAILED SPECIFICATION
FOR
MANHOLE MACP LEVEL 2 INSPECTION

DESCRIPTION

14. The Contractor shall perform visual inspections of the existing manholes and record any defects discovered. National Association of Sewer Service Companies (NASSCO) standards shall be followed for all inspections per the requirements herein. The inspections shall be NASSCO Manhole Assessment Certification Program (MACP) Level 2.

15. The nature of the inspections shall be to verify the physical condition of the manhole and to provide a permanent record of the existing condition as it relates to dimensions, materials, obstructions, breakage, connections, and deterioration. Inspections may be performed by personnel entry or from the surface utilizing equipment acceptable under NASSCO guidelines to visually inspect the chimney, cone, wall, bench, pipe seals and invert conditions, and conditions of connecting pipes. All safety requirements under the Public Service Standard Specifications, OSHA (including Confined Spaces), and other regulatory entities shall be followed during the inspection process.

16. The inspection photographs, report documents, and inspection database shall be in accordance with the Public Service Standard Specifications and NASSCO MACP. Where discrepancies exist between MACP and the Public Service Standard Specifications standards, the PSAA shall be consulted for direction as to which standards shall be used. Contractor shall be responsible for modifications to equipment and/or inspection procedures to achieve PSAA requirements.

17. All inspections shall be recorded, and all inspection forms shall be submitted as *.PDF files. All inspection data shall be entered into a NASSCO MACP compliant database. The *.MDB database file shall be submitted along with the scanned *.PDF files and all digital photographs in *.JPG format and all videos in *.MP4 format.

18. Digital submittals shall be furnished on a USB flash drive, portable hard drive, cloud-based file sharing service, or in another format acceptable to the PSAA. Resubmittal may be required if the files are not accessible by the PSAA.

19. Contractor shall maintain a copy of all report materials accessible to the PSAA a minimum of three (3) years after the termination of the Contract.

20. Inspection crews shall immediately notify the PSAA and/or on-site inspector of any defects posing imminent danger to the public (missing lids, covers broken during inspection, sink holes, etc.) and any observed pipe blockages or potential overflow conditions.

21. Once the inspection is complete the Contractor shall make certain the ring is clean and does not have any debris preventing a proper cover fit. The manhole lid shall be replaced, and any displaced items moved back into place. All incidental debris shall be removed from the flow channel and bench of the manhole. If any existing manholes are buried and subsequently exposed, the site shall be restored to equal or better condition.

MEASUREMENT AND PAYMENT

The completed work as measured for this item of work will be paid for at the contract unit price for the following contract item:

Pay Item	Pay Unit
Manhole MACP Level 2 Inspection	Each

Manhole MACP Level 2 Inspection will be paid for at the Contract Unit Price per each manhole inspected. Price paid shall be payment in full for all labor, material, and equipment required for MACP Level 2 inspection of existing manholes and shall include, but is not limited to, all minor traffic control, water, electrical bills, temporary plugging, disposal of debris, cleanup and any other applicable item required to successfully complete the inspection and assessment of the designated manholes, as well as the required reporting and deliverables. Payment shall not be made for incomplete inspections including omission of the required fields for a MACP Level 2 inspection.

DETAILED SPECIFICATION
FOR
SEWER FLOW CONTROL

DESCRIPTION

1. The work covered by this Section shall consist of furnishing all labor, supervision, tools, equipment, appliances, materials, incidental items, and the installation, operation, and maintenance needed to perform all operations in connection with the diversion of flow and bypass pumping of sanitary sewage for cleaning and inspecting of sewers and manholes, and sewer repairs, and sewer rehabilitation. The purpose is to provide uninterrupted sewerage service and to prevent sewage overflows.

2. The design, installation, and operation of the temporary sewer flow control system shall be the Contractor's sole responsibility.

3. When working inside manholes or sewer, the Contractor shall exercise caution and comply with OSHA and City requirements for working in confined spaces.

4. The Contractor shall manage, plan, and execute their operations such that there will be no backups, leaks, or unauthorized discharges of sewerage. The Contractor shall be completely responsible for the proper clean up and any environmental remediation as may be required by the City or the Michigan Department of Environment, Great Lakes, and Energy (EGLE) for any backup, leak, spill, or sanitary sewerage overflow.

5. The Contractor shall provide a detailed Sewer Flow Control Plan to the PSAA for review and acceptance prior to the start of any flow control work. This plan must include descriptions outlining all provisions and precautions to be taken by the Contractor regarding the handling of existing flow.

6. The Sewer Flow Control Plan must be specific, including such items as schedules, locations, elevations, capacities of the equipment, materials, and all other incidental items necessary and/or required to ensure proper protection of the facilities, including protection of existing structures and pipes, and compliance with the requirements and conditions specified in these Contract Documents.

7. No construction shall begin until all provisions and requirements have been reviewed and accepted by the PSAA.

8. For each submittal and resubmittal, the Contractor shall allow at least 14 calendar days from the date of the submittal to receive the PSAA's acceptance or request for revisions. The PSAA's comments shall be incorporated into the resubmitted plans, calculations, and descriptions.

9. Resubmittals shall be reviewed and returned to the Contractor within 14 calendar days. Required revisions will not be a basis of payment for additional compensation, extra work, or an extension of contract time. The Contractor shall include time for this entire review process in their schedule.

10. Sewer Flow Control Plan submittal shall include at a minimum:
    a. Overall flow control plan and sequence of construction;
    b. Flow control schedule including times when the flow control system shall be temporarily shut down and flow allowed to return to normal operations;
    c. Overall plan for removal of flow control system during wet weather events and/or emergency situations;
    d. Plan for providing redundancy for all aspects of the system especially the plugs;
    e. Safety Program for confined space entry and procedure for entering manholes and installing plugs under live flow conditions;
    f. Emergency clean-up plan should a spill occur or backups in the system occur. The plan should include contact names and 24-hour phone numbers;
    g. Procedure for continuous (24 hour) monitoring of system, including verifying that plugs are sealed, and lateral bypass pumping system is operating. The plan is to include type and location of level sensors, method of installation, set elevations of sensors, and continuous monitoring system;
    h. Maintenance of traffic plan for plug installation and removal in public roadways;
    i. Sewer plug types, method of installation and removal, anchors and restraints, and hydraulic head limits;
    j. Lateral bypass pump sizes, capacities, power requirements, and number of each size to be provided at each manhole including redundancy;
    k. Calculations giving flow capacity provided by each pump given the system's Total Dynamic Head (TDH), including the calculations that are used to derive the system TDH. This data should also include the calculations determining what the Net Positive Suction Head available is in comparison to the Net Positive Suction Head required by each pump.
    l. Pump curves;
    m. Number, size, material, and location of lateral bypass pumping suction and discharge piping, procedure for protecting lines, and location of bypass pumping discharge manhole;
    n. Lateral bypass pumping system flushing and drainage plan;
    o. Buried bypass pipe locations and details;
    p. Environment protection including pump containment and leak detection;
    q. Method of protecting discharge manholes or structures from erosion and damage;
    r. Method of noise control for each pump; and,
    s. Design plans for access to bypass pumping locations indicated on the Drawings.

1. Contractor shall provide materials and equipment suitable for, and known to be reliable to meet, the flow diversion requirements as shown on the Drawings and as needed for the Contractor's operations. Equipment used for bypass pumping shall be sufficient to handle anticipated average and peak flows from each sewer. The Contractor shall maintain sanitary sewer flows within their bypass pumping system, including all wet weather flows. Specific equipment requirements include:
    a. Pipe plugs shall be a temporary plug that allows for quick removal in case of emergency or wet weather situation and reinstallation after wet weather event has passed. Plugs shall be capable of withstanding minimum static head pressure of 15 feet. Plugs shall include form or

bracing, anchoring, or restraint to keep plugs properly installed. Plugs should be of the type capable of being installed under live flow conditions and in depths as shown on the Drawings. Plugs should be able to be installed in either the incoming or outgoing pipe in a manhole and allow for quick removal under surcharged conditions.

b. Pressure gauges shall be installed with the plugs to continuously monitor the plugs and adjust the air pressure as needed to maintain full blockage of flow.
c. Ultrasonic level sensors shall be installed, at a minimum, at the locations as necessary to monitor the head conditions in the sewer. The Contractor shall be responsible for the installation and maintenance of the sensors. The level sensors shall provide continuous level readings that the Contractor shall be able to review remotely to monitor the level in the system during flow diversion. The level sensors shall provide notifications and alarms to allow the Contractor time to remove the plugs should an emergency or a wet weather event occur.
d. The pumps must be capable of passing a minimum of a 3-inch solid. All pumps must be constructed to allow dry running for long periods of time to accommodate the cyclical nature of effluent flows.
e. The Contractor shall take into account seasonal variations and include a safety factor above the indicated peak flow values in sizing pumping equipment.
f. For sanitary sewerage, bypass piping shall be PVC Schedule 80, or equivalent, with solvent welded joints, or HDPE with butt fused joints. The Contractor shall perform hydrostatic testing of bypass pump discharge pipes in accordance with ASTM F2164 (Standard Practice for Field Leak Testing of Polyethylene (PE) and Crosslinked Polyethylene (PEX) Pressure Piping Systems Using Hydrostatic Pressure), latest addition, for HDPE or ASTM F2261 (Standard Test Method for Pressure Rating Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40 and 80 Socket-Type), for PVC pipe, prior to operating bypass pumping system to ensure structural integrity of pipeline. Any defects or leaks found during testing shall be repaired and the pipeline shall be re tested until results are satisfactory in accordance with the ASTM standard, and as acceptable to the PSAA.

1. The Contractor shall have redundant flow diversion equipment including, but not limited to, plugs and level sensors, available for immediate use at the job site at all times in the event of a failure.

2. Any damage to the Contractor's equipment, sewer system, or delays to the Contractor's operations due to equipment or plug failure/leakage shall be the Contractor's sole responsibility and no additional payment shall be made for these occurrences. The Contractor shall take all necessary precautions to verify that the plugs and flow diversion plan is operational prior to performing the work.

3. The Contractor shall have redundant lateral bypass pumping equipment installed and ready for immediate operation and use in the event of an emergency or primary system breakdown or failure. The standby system shall be capable of pumping dry weather and peak flow.

4. The standby pump(s) shall not be considered as any part of the primary system as designed for peak flow. The Contractor shall also furnish and have available onsite, and ready for operation, redundant pumping ancillary equipment in case of any failure of the pumping system including piping, electrical equipment, pipe appurtenances, etc. Redundant pumping facilities shall also include having a backup power generator in case the primary power source fails.

5. The Contractor shall not obstruct flows in the sewer unless the primary and redundant equipment is onsite and in operable condition and authorization has been granted by the PSAA.

MEASUREMENT AND PAYMENT

The completed work as measured for this item of work will be paid for at the contract unit price for the following contract item:

Pay Item	Pay Unit
Sewer Flow Control, 1,000 GPM	Day
Sewer Flow Control, 2,000 GPM	Day
Sewer Flow Control, 4,000 GPM	Day

Sewer Flow Control includes all labor, supervision, tools, equipment, appliances, materials, incidental items, and the installation, operation, and maintenance needed to perform all operations in connection with the diversion of flow and bypass pumping of sanitary sewage or storm water for cleaning and inspecting of sewers and manholes, and sewer repairs, and sewer rehabilitation when bypass flow rates exceed 1,000 GPM. Lower flowrate bypass pumping, if required, shall be incidental to the pay item that necessitates sewer flow control. Use of this pay item is subject to prior PSAA approval.

DETAILED SPECIFICATION
FOR
STYRENE-FREE CIPP SEWER LINING

DESCRIPTION

A. OVERVIEW

1. This work shall consist of rehabilitating pipelines by the insertion of a resin impregnated flexible lining and cured in place to form a pipe. The cured in place pipe (CIPP) shall be saturated with a thermosetting resin, styrene free unless otherwise approved by the PSAA, and inserted into the existing pipeline. Curing shall be accomplished by a method approved by the PSAA to harden the resin into a hard, impermeable pipe. When cured, the hardened CIPP shall be a tight-fitting watertight pipe within a pipe. The CIPP shall be continuous from manhole to manhole with no circumferential joints or seams.

2. All work shall be performed in accordance with these Standards and as directed by the PSAA.

3. For a CIPP system to be considered acceptable, the CIPP system must have at least 2,000,000 lineal feet of successful, documented installations, a minimum of 250,000 lineal feet of which shall have been in the Midwestern United States or Canada. Newer CIPP systems may be approved at the discretion of the PSAA.

4. When requested by the PSAA, the Contractor shall submit test results from previous field installations of the same resin system and tube materials as proposed for this installation. The test results must verify that the CIPP physical properties specified in this specification have been achieved in the field.

5. The lining operation shall not begin until the sewer has been cleaned and video inspected in accordance these Standards and authorization to begin by the PSAA has been granted.

6. Cleaning and television inspections of sewers for CIPP Lining shall not be paid for separately but shall be included in the cost for the CIPP Lining.

B. DESIGN CONSIDERATIONS

1. The required structural CIPP wall thickness shall be based, at a minimum, on the physical properties of the cured composite and per the design of the Professional Engineer. The finished liner shall be designed per ASTM F1216 (Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube), Appendix X1, for the following condition:

    Condition ..... Fully deteriorated gravity pipe
    Safety Factor 2
    Ovality ..... As measured by Contractor during sewer inspection;
    assume 2% for bidding purposes
    Soil Density ..... 130 pounds per cubic foot (lbs/cft)

Soil Modulus ..... 700 pounds per square inch (psi) for pipe inverts up to and including 15 feet deep, 1,000 psi for pipe inverts greater than 15 feet deep
Groundwater Depth As field verified
Surcharge Loading HS 20 (Highway) when any part of the sewer is under any major street, county road, or state highway; E 80 (Railroad) when under any railroad

2. The Contractor shall determine the liner thickness and resin quantity for this project per ASTM F1216, Appendix X1. Liner thickness, resin, and resin quantity shall be furnished to the PSAA for review and approval prior to beginning work. The design calculations for wall thickness shall be completed by a Professional Engineer proficient in the design of pipeline systems, licensed in the State of Michigan, with design calculations signed and sealed. The CIPP design shall assume no bonding to the original pipe wall.

3. The Contractor shall submit, prior to installation of the lining materials, certification of compliance with these specifications. Certified material test results shall be included that confirm that all materials conform to these specifications. Materials not complying with these requirements will be rejected.

C. MATERIAL

1. All materials shipped to the project site shall be accompanied by test reports certifying that the material conforms to the latest ASTM standards listed herein. Materials shall be shipped, stored, and handled in a manner consistent with written recommendations of the CIPP system manufacturer to avoid damage. Onsite storage locations shall be as indicated on the Drawings and approved by the PSAA.

Preliner Tube:

1. The preliner shall be a polyethylene material compatible with the lining system, and shall be utilized where necessary to accommodate infiltration, damaged, or missing pipe.

Felt Tube Liner:

2. The tube shall consist of one or more layers of absorbent, flexible felt material. The tube shall be capable of carrying the specified resin, constructed to be able to withstand installation pressures and curing process, have sufficient strength to bridge missing pipe and stretch to fit
3. irregular pipe sections at all pipe locations and be compatible with the resin used.
4. The outer tube coating shall consist of an impermeable, flexible membrane that contains the resin and allows for visual inspection and verification of proper resin impregnation (“wet out”) procedure. The coating shall hold the resin inside the tube without leakage, accommodate installation, and stretch to the size and shape of the existing sewer, and shall not
5. delaminate before, during, or after curing.
6. The tube shall have a uniform thickness that when compressed at installation pressures will meet, or exceed, the design thickness.
7. The tube shall be fabricated to a size and length that when installed will fit sufficiently tight within the existing pipe so as to not leak at manholes, at service connections, or through the wall of the installed pipe. The tube shall be properly sized to the diameter of the existing pipe and the length to be rehabilitated and be able to stretch to fit irregular pipe sections and

8. negotiate bends.
9. The Contractor shall determine the minimum tube length necessary to effectively span the designated run between manholes. The Contractor shall verify the lengths in the field prior to impregnation of the tube with resin, to ensure that the tube will have sufficient length to extend the entire length of the run. The Contractor shall also measure the inside diameter of the existing pipelines in the field prior to ordering liner so the liner can be installed in a tight fitted condition. Allowance for circumferential stretching of the tube during insertion shall be made as per manufacturer's recommendations. Overlapped layers of felt in the longitudinal seam that cause lumps in the final product shall not be utilized.
10. The tube shall be homogeneous across the entire wall thickness and contain no intermediate or encapsulated elastomeric layers. No material shall be included in the tube that may cause delamination in the cured CIPP. No dry or unsaturated layers shall be evident.
11. The wall color of the interior pipe surface of the CIPP after installation shall be a light reflective color so that a clear detailed examination with closed circuit television inspection equipment may be made. The hue shall be dark enough to distinguish a contrast between the fully resin saturated felt fabric and dry or resin-lean areas.
12. Seams in the tube shall be stronger than the un-seamed felt and shall meet the requirements of ASTM D5813 (Standard Specification for Cured-In-Place Thermosetting Resin Sewer Piping Systems). Where the length of the tube to be installed requires joining along the circumference of the tube, the sewn joint shall not be perpendicular to the long axis but spirally formed and sewn.
13. The outside of the tube shall be marked for distance at regular intervals along its entire length, not to exceed 5 feet. Such markings shall include the manufacturers name or identifying symbol. The tubes must be manufactured in the USA.
14. The length of the tube shall be that deemed necessary by the Contractor to effectively carry out the insertion and seal the pipe at the inlet and outlet points, plus that amount required to run in and run out for the installation process. The Contractor shall verify the lengths in the field before cutting the tube to length. Lengths of sewer shall be lined over one or more access points as shown on the Plans.

Resin:

1. Thermoset, non-styrene resin shall be a polyester, enhanced polyester, vinyl ester, or epoxy system including all required catalysts, initiators, or hardeners that when cured within the tube creates a composite that satisfies the requirements of ASTM F1216 and ASTM F1743 (Standard
2. Practice for Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe Systems (CIPP)), the physical properties herein, and those which are to be utilized in the design of the CIPP for this project. Resin selected shall be resistant to the chemical composition of the sewage and comply with the structural requirements of this specification.
3. The resin shall be thermosetting resin that is compatible with the lining process and shall meet the requirements of ASTM F1216 except as otherwise specified in this specification. The resin shall be able to cure in water with an initiation temperature for cure as required by the liner manufacturer, but not greater than maximum temperatures required under ASTM F1216. The cured resin/felt system shall be suitable for the expected conditions within the existing sanitary sewer.
4. The Contractor is responsible for choosing a resin system that is capable of meeting the physical and cured-in-place properties and performance requirements as detailed in this specification.

Construction:

1. The completed liner as installed and fully cured-in-place shall meet the minimum physical properties for short term flexural modulus and flexural strength as specified herein.
2. Fiber optic probes shall be installed to monitor the average temperature along the entire length of the tube as it cures. Devices shall be provided by VeriCure or a PSAA-approved equal.
3. The Contractor shall carry out their operations in strict accordance with all OSHA, MIOSHA, and manufacturer's safety requirements. The Contractor shall be solely responsible for safety during the performance of all work. The Contractor shall not enter into any sewer segment where hazardous conditions may exist until such time as the source of those conditions is identified and eliminated by the Contractor and/or the City. The Contractor shall coordinate their work with local fire, police, and emergency rescue unit.
4. The Contractor shall be responsible for any damage to public or private property resulting from their sewer lining or televising activities and shall repair or otherwise make whole such damage at no cost to the City.
5. Prior to rehabilitation of any sewer, it shall be the responsibility of the Contractor to remove all internal deposits from the pipeline. This shall include dirt, debris, mud, bricks, grease or oils, mineral deposits, root masses, pieces of broken pipe, etc.
6. Inspection of pipelines shall be performed after the pipe has been cleaned by experienced personnel trained in locating breaks, obstacles, and service connections by closed circuit television.
7. The interior of the pipeline shall be carefully inspected to determine the location and extent of any structural failures. The location of any conditions which may prevent proper installation of lining materials into the pipelines shall be noted so these conditions can be corrected as specified in this specification.
8. It shall be the responsibility of the Contractor to clear the line of obstructions such as solids, dropped joints, root masses, protruding branch connections, or broken pipe that will prevent proper insertion of the liner in accordance with these Standards.
9. The Contractor shall provide for the transfer of main line and/or lateral flow around the section or sections of pipe that are to be cleaned, televised, and rehabilitated. The work shall consist of diverting, pumping, and bypassing flow in the existing sewers as directed by the PSAA and in accordance with Section II.Y. (Sewer Flow Control) of this Article.

Installation of Resin Impregnated Tube:

1. The Contractor shall designate a location where the uncured resin in the original containers and the unimpregnated liner will be resin impregnated prior to installation. The Contractor shall allow the PSAA to inspect the materials and procedure.
2. A resin and catalyst system compatible with the requirements of this specification shall be used. The quantities of the liquid thermosetting materials shall be provided in accordance with manufacturer's standards to provide the cured liner properties specified. Sufficient resin shall be used to fill the volume of air voids in the liner with additional allowance for polymerization, shrinkage, and loss of resin through cracks and irregularities in host pipe wall. The Contractor shall ensure the proper amount of resin is uniformly distributed throughout the entire length of the tube.
3. The wetting out, installation, and curing of the resin impregnated tube shall be in accordance with ASTM F1216 and per manufacturer’s specifications. The tube shall be inserted through existing manholes by means of an inversion process, the application of a hydrostatic head sufficient to fully extend the liner to the next manhole, or other means as approved by the PSAA.

4. The process will be adjusted as necessary to ensure a complete lining without overstressing or tearing the lining, with sufficient pressure to hold the liner snug to the pipe wall, and to produce dimples at side connections and flared ends at the entrance and exit access points. The use of a lubricant is recommended and, if used, such lubricant shall be compatible with the
5. rehabilitation process.
6. The manufacturer's standards shall be closely followed during the elevated curing temperature so as not to over stress the felt fiber and cause damage or failure of the liner prior to cure.

Curing:

1. Hot water curing is required for full length liners. After installation of the resin impregnated liner is completed, the Contractor shall supply a suitable heat source and water recirculation equipment as necessary to cure the liner. The equipment shall be capable of delivering hot water to the far end of the liner through a hose which has been perforated per manufacturer's recommendations, to uniformly raise the water temperature in the entire pipe above the temperature required to affect a cure of the resin. This temperature shall be determined by the resin/catalyst system employed.
2. All water necessary for the cleaning and lining operations shall be furnished by the City at agreed access places. Hydrants used by the Contractor shall be pumped down by the Contractor to prevent freezing. Frozen hydrants that were used by the Contractor and not properly closed or pumped down shall be repaired by the Contractor at no additional cost.
3. For quality control during the CIPP lining operation, the Contractor shall utilize remote temperature sensing devices placed between the host pipe and the liner to continuously monitor the liner cure incrementally every 18 inches or less to verify that an exothermic reaction has occurred and that a full cure has taken place along the full length of the CIPP liner. Measuring temperatures at the liner endpoints only will not be permitted. The cure information must be taken from the bottom third of the pipe liner. Cure parameter information shall
4. be provided by the resin manufacturer.
5. Liner and/or host pipe interface temperature shall be monitored and logged during curing of the liner. The monitoring system must have the ability to be remotely viewed live by the PSAA. Data collected shall be provided to the PSAA in Excel spreadsheet and graphical viewer formats at the same time as the post-lining inspection videos are provided.
6. Initial cure shall be deemed to be completed when the remote sensing devices reflect that the cure temperature, as recommended by the resin/catalyst system manufacturer, have been achieved. The cure period shall be of a duration recommended by the resin manufacturer, as modified for site specific conditions, during which time the recirculation of the water and cycling of the heat exchanger to maintain the temperature in the liner shall continue.
7. The Contractor shall cool the CIPP in accordance with the CIPP manufacturer’s recommendations to a temperature below 100°F before relieving the static head in the liner. Temperatures and curing data shall be monitored and recorded by the Contractor throughout the installation process to ensure that each phase of the process is achieved in accordance with the CIPP manufacturer’s recommendations.
8. Cool down may be accomplished by the introduction of cool water into the liner to replace water being drained from the downstream end. Care shall be taken in the release of the static head such that a vacuum will not be developed that could damage the newly installed liner. The cooled water shall be released to the existing sanitary sewer at a rate that is approved by the PSAA and the City of Ann Arbor’s Wastewater Treatment Plant (WWTP) superintendent.

Completion of Liner:

1. The cured liner shall be continuous over the entire length of an insertion run and be as free as commercially practicable from visual defects such as foreign inclusions, dry spots, pinholes, and delamination. The lining shall be impervious and free of any leakage.
2. Any defects which will affect the integrity of the liner, or any deficiencies in required strengths or thicknesses, shall be repaired or removed and replaced at the Contractor's expense, in a manner acceptable to the PSAA.
3. A seal, consisting of a hydrophilic sealing gasket compatible with the installed CIPP, shall be installed at each manhole/pipe wall interface. The seal shall be a seamless molded tubular design that swells in the presence of water. The seal shall be secured in place by a retaining ring.
4. The completed liner shall be television inspected and color videotaped, by the Contractor, in accordance with these Standards.
5. After the liner has been cured, the Contractor shall reconnect the existing service connections. This shall generally be done without excavation and, in the case of non-man entry pipes, from the interior of the pipeline by means of a television camera and a cutting device that re-establishes them to operational capacity.
6. Reconnection of services shall begin immediately after curing of the CIPP has been completed. No service shall be interrupted for more than 12 hours unless otherwise approved by the PSAA.
7. Each lateral shall be fully reopened as much as possible without damaging the host pipe. Brushing of all lateral connections shall be completed to remove all rough and burned edges.
8. The Contractor shall have a second robotic cutting device as a backup unit for reinstating the service connections on site prior to commencing the installation of the CIPP.

Acceptance Tests:

1. The PSAA shall perform Acceptance Testing in accordance with ASTM F1216 (including appendices) and ASTM D5813.
2. The Contractor shall prepare plate test samples to be cured with the CIPP operation. The Contractor shall capture and prepare 10 sample specimens of the liner for the Acceptance Testing to be performed by the PSAA for each section of sewer lined in accordance with Section 8 of ASTM F1216, for testing flexural strength and delamination.
3. The Contractor shall prepare the samples for shipment to the laboratory, including cutting samples to proper length and width as described in the applicable ASTM test procedures. Samples shall be labeled for date, diameter, section of sewer, and delivered to the PSAA for testing. The cost of the sample postage, shipping, and testing will be paid for by the City.
4. When tested, each sample shall meet the physical properties for flexural modulus and flexural strength used in the design calculations.
5. Air testing on isolated sections of sewer (minimum of 2 to 3 feet in length) shall be required if post-rehabilitation inspection indicates leaks in the liner. Air testing shall be performed on longer sections or multiple sections of sewer as required to identify the location(s) and full extent of defects. Such testing shall be performed by the Contractor at no additional expense to the project.
6. CIPP wall thickness shall be verified in accordance with Section 8.6 of ASTM F1216 and using test methods consistent with Section 8.1.2 of ASTM D5813.
7. The PSAA will have all flexural and delamination testing performed by an independent, ASTM certified testing laboratory. The testing laboratory shall submit all test results directly back to the PSAA within 14 calendar days. The PSAA will provide a written copy of the test results to the Contractor within 3 business days of receiving them from the laboratory.

8. The Contractor may elect to restore flow in the mainline sanitary sewer during this period of time. However, if the test results indicate that the liner fails to meet the Project requirements and that remedial work is required to be performed, the Contractor shall perform any required cleaning in order to allow the remedial work to be performed at no additional cost to the project.
9. Should the test results indicate that the liner fails to meet the required physical properties as specified herein, the work shall be rejected. The Contractor shall have up to 10 calendar days to propose a repair/replacement plan consistent with the requirements of this specification for the PSAA's review and acceptance. The Contractor's repair/replacement plan shall include the
10. following elements.
11. The Contractor shall outline specific repair or replacement procedures for potential defects that may occur in the installed liner, in accordance with recommendations by the liner system manufacturer.
12. The manufacturer shall provide a detailed step by step repair procedure, resulting in a finished product meeting the estimated life cycle of the component and requirements of these specifications. For the purposes of these Standards, the lifecycle of this rehabilitation shall be considered to be 50 years.
13. Should a potential issue be unrepairable, in the opinion of the PSAA, the Contractor, together with the manufacturer, shall define the best recommended procedure for the total removal and replacement of the system.
14. The Contractor shall receive no additional compensation for the repair or replacement of systems deemed non-conforming to the requirements of the Contract Documents and unacceptable by the City.
15. While repair/replacement work is performed, the Contractor shall continue to be responsible for maintaining flows in the mainline and lateral sanitary sewers in accordance with the requirements of this Section. The Contractor will not be allowed any increase in the contract unit price due to the repair or replacement of defective any materials or faulty workmanship.
16. The Contractor shall remove and replace or repair any defects in the installed liner to the satisfaction of the PSAA at no additional cost to the project. Contract time will continue during the period of time from the receipt of failing test results to the completion of the repairs.

Warranty:

1. The materials used for the project shall be certified by the manufacturer for the specified purpose. The Contractor shall warrant the liner material and installation for a period of 2 years.
2. During the Contractor warranty period, any defect which may materially affect the integrity, strength, function, and/or operation of the pipe, shall be repaired at the Contractor's expense in accordance with procedures described in this specification, and as recommended by the manufacturer.
3. The Contractor shall conduct warranty CCTV inspection of sewers which were lined. This work shall be completed at the Contractor's expense, no sooner than 2 months prior to the expiration of the original warranty period.
4. The televising shall be performed in the presence of the PSAA. Television inspection that is not performed within the presence of the PSAA will not be accepted and shall be performed again at the Contractor's sole expense. Any areas that do not meet the requirements of this specification will be repaired or re lined at no additional cost to the City.

MEASUREMENT AND PAYMENT

The completed work as measured for this item of work will be paid for at the contract unit price for the following contract item:

Pay Item	Pay Unit
Styrene-Free CIPP Sewer Lining, 8" Dia.	Linear Foot
Styrene-Free CIPP Sewer Lining, 10" Dia.	Linear Foot
Styrene-Free CIPP Sewer Lining, 12" Dia.	Linear Foot
Styrene-Free CIPP Sewer Lining, 15" Dia.	Linear Foot
Styrene-Free CIPP Sewer Lining, 18" Dia.	Linear Foot
Styrene-Free CIPP Sewer Lining, 21" Dia.	Linear Foot
Styrene-Free CIPP Sewer Lining, 24" Dia.	Linear Foot
Styrene-Free CIPP Sewer Lining, 30" Dia.	Linear Foot
Styrene-Free CIPP Sewer Lining, 36" Dia.	Linear Foot

Rehabilitation of sanitary sewer will be paid for at the contract unit price per lineal foot. The contract unit price paid shall be payment in full for all labor, material, and equipment required for rehabilitation of existing sanitary sewers by insertion of a CIPP liner and shall include, but is not limited to; furnishing, transporting, preparing, and installing the structural pipe liner and CIPP end seals; furnishing and installing remote temperature sensing devices; reconnecting existing sewers or leads; performing any needed liner repairs; gaining access to work site; removal and replacement of site improvements; pre- and post-lining sewer television inspection; all required warranty work; and all other work and items necessary to complete the Work. Measurements shall be from manhole to manhole and shall take place with both the Engineer and the Contractor (or their agents) present. Measurements shall be recorded and logged on a daily basis.

DETAILED SPECIFICATION
FOR
CIPP SPOT REPAIR AND LATERAL LINER

DESCRIPTION

PART 1 - GENERAL

A. SCOPE OF SERVICES

1. The Contractor shall furnish all labor, components, materials, tools, and appurtenances necessary for the performance and completion of the contract. The Contractor shall provide all materials, labor, equipment, and services necessary for traffic control (if required), bypass pumping and/or diversion of flows, cleaning, measurement and television inspection of sewers to be rehabilitated, CIPP installation, reconnection of service connections, all quality controls, provide samples for performance of required material tests, final television inspection, testing of the rehabilitated pipe system, warranty work and other work, all as specified herein.
2. The Contractor will be held fully liable for any damages incurred that are caused by his or her negligence.
3. The rehabilitation of pipelines shall be done by the installation of a resin-impregnated flexible tube which, when cured, shall be continuous and tight-fitting throughout the entire length of the original pipe. The CIPP shall extend the full length of the spot repair and provide a structurally sound, jointless and water-tight new pipe-within-a-pipe. The Contractor is responsible for proper, accurate and complete installation of the CIPP using the system selected by the Contractor meeting the City's Standard Specifications.
4. Neither the CIPP product, system, nor its installation, shall cause adverse effects to any of the City's processes or facilities. The installation pressure for the product shall not damage the system in any way, and the use of the product shall not result in the formation or production of any detrimental compounds or by-products at the wastewater treatment plant. The Contractor shall notify the PSAA and identify any by-products produced as a result of the installation operations, test and monitor the levels, and comply with any and all local waste discharge requirements. The Contractor shall cleanup, restore existing surface conditions and structures, and repair any of the CIPP system determined to be defective. The Contractor shall conduct installation operations and schedule cleanup in a manner to cause the least possible obstruction and inconvenience to traffic, pedestrians, businesses and property owners or tenants and to provide an environmentally safe restored jobsite.
5. The Spot Repair CIPP Liner shall be continuous and jointless from and shall be free of all defects that will affect the long-term life and operation of the pipe.
6. The CIPP shall not leak at the manholes or through the wall of the installed pipe. If the host pipe is in groundwater, the use of end seals, if specified, shall be included to prevent infiltration tracking between the host pipe and CIPP.
7. The CIPP will be designed for fully deteriorated conditions to resist external groundwater pressures and for a structural stand- alone pipe.
8. The installed CIPP shall comply with the chemical resistance requirements of ASTM F1216 or ASTM D5813.
9. All existing and confirmed active service connections and any other service laterals to be reinstated, as directed by the PSAA, shall be re-opened robotically or by hand in the case of

person-entry size piping, to their original shape and to 95% - 100% of their original area. All over-cut or under-cut service connections shall be properly repaired to meet the requirements of these specifications.

10. All materials furnished, as part of this contract shall be marked with detailed product information, stored in a manner specified by the manufacturer and tested to the requirement of this contract.
11. Testing and warranty inspections shall be executed by the PSAA. Any defects found shall be repaired or replaced by the Contractor.
12. The Contractor shall furnish, from the project installation, all samples, marked with chain of custody information such as project name, section, date, diameter and thickness, etc., for product testing at the request of the PSAA. The Contractor send the samples to an approved laboratory and pay for all material and product testing performed. Costs associated with testing shall be considered incidental to the lining pay item.

B. REFERENCED DOCUMENTS

1. The following documents form a part of this specification to the extent stated herein and shall be the latest editions thereof. Where differences exist between codes and standards, the requirements of these specifications shall apply. All references to codes and standards shall be to the latest revised version.
    a. ASTM - F1216 Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube.
    b. ASTM - F1743 Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP).
    c. ASTM D543 Standard and Practice for Evaluating the Resistance of Plastics to Chemical Reagents.
    d. ASTM D638 Standard Test Method for Tensile Properties of Plastics
    e. ASTM D790 Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
    f. ASTM D792 Standard Test Methods for Density and Specific Gravity of Plastics by Displacement
    g. ASTM D2122 Standard 1 Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings
    h. ASTM F2019 Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Pulled in Place Installation of Glass Reinforced Plastic Cured-in-Place (GRP-CIPP) Using the UIV-Light Curing Method
    i. ASTM F2561 Standard Practice for Rehabilitation of a Sewer Service Lateral and Its Connection to the Main Using a One-Piece Main and Lateral Cured-in-Place Liner
    j. ASTM D2990 Standard Test Methods for Tensile, Compressive, and Flexural Creep and Creep-Rupture of Plastics
    k. ASTM D3567 Standard Practice for Determining Dimensions of Fiberglass (Glass- Fiber-Reinforced Thermosetting Resin) Pipe and Fittings
    l. ASTM D3681 Standard Test Method for Chemical Resistance of “Fiberglass (Glass Fiber Reinforced Thermosetting Resin) Pipe in a Deflected Condition
    m. ASTM D5813 Standard Specification for Cured-in Place Thermosetting Resin Sewer Pipe
    n. Michigan Department of Transportation Standard Specifications for Construction
    o. NASSCO PACP Standards

2. Liability and Assumptions

   In order to minimize and appropriately allocate costs and risks, it is in the best interest of all contracted parties (PSAA and Contractor) and prospective parties (i.e. Bidders) to understand thoroughly the risks associated with any particular project. For that reason, we will define herein, what is standard practice in the procurement and completion of sewer cleaning and inspection so that everyone involved can effectively assess their obligations, risks, and duties.

   a. Assumptions

      It is reasonable and customary to assume the following, unless otherwise detailed in writing:

      i. The PSAA has provided the Parties (Contractor and/or Bidders), in writing, with all of the information that the PSAA possess that would allow the Parties to accurately and fully assess the entire scope of the project.

      ii. The PSAA possesses or has contracted the services of a person or entity who possesses the knowledge, expertise and experience to fully understand the scope of the service for which they are attempting to contract with the Parties.

      iii. The Parties are knowledgeable, capable and legally authorized to contract for the services in question.

      iv. The infrastructure for which the services are requested are in suitable condition to allow for the activities which are usual and customary for the services requested without undue risk to the Parties equipment or personnel, unless otherwise described by the PSAA in writing.

   b. Liabilities

      Should it be found during initial investigation and/or during the course of performance that conditions are different than those which are typical and customary and outside of the assumptions listed above, the Contractor will notify the PSAA immediately.

3. Notification:

   a. If observed defects are believed to be such that further cleaning operations may compromise the structural integrity and/or cause the pipe to become unusable, the Contractor must provide written communication to the PSAA's designee of the observed condition(s) and reason to believe that continued cleaning operations may cause substantial damage. The PSAA will then direct the Contractor as to what services, precautions, etc., the PSAA will require of the Contractor. If the contract documents do not address this potential, then the PSAA and Contractor will negotiate in good faith, the conditions under which the work is to continue or cease to continue.

   b. This exception may only be used to prevent asset damage and shall not be used to eliminate difficult or adverse cleaning areas that were previously documented in these documents or by prior written communication with the PSAA.

C. PERFORMANCE WORK STATEMENT SUBMITTAL

1. The Contractor shall submit, to the PSAA, with the proposal an outline which clearly defines the CIPP product delivery in conformance with the requirements of these contract documents. The Proposal information at a minimum, shall contain the following:

   a. Clearly indicate that the CIPP will conform to the project requirements as outlined in the Description of Work and as delineated in these specifications.

   b. A detailed product installation plan describing all preparation work, cleaning operations, pre-CCTV inspections, bypass pumping, traffic control, installation

procedure, method of curing, service reconnection, quality control, testing to be performed, final CCTV inspection, warrantees furnished and all else necessary and appropriate for a complete CIPP installation.

c. Contractor's description of the proposed CIPP technology, including a detailed plan for identifying all active service connections maintaining service, during mainline CIPP installation, to each home connected to the section of pipe being rehabilitated, including temporary service for commercial, industrial and apartment complexes, if required by the project.
d. A description of the CIPP materials to be furnished for the project. Materials shall be fully detailed in the submittals and conform to these specifications and/or shall conform to the pre-approved product submission.
e. Engineering design calculations, in accordance with the Appendix of ASTM F1216, or other design protocol as specified by the owner including the thickness of each proposed CIPP. It will be acceptable for the Contractor to submit a design for the most severe line condition and apply that design to all of the line sections. These calculations shall be performed and certified by a qualified, Professional Engineer licensed in Michigan. All calculations shall include data that conforms to the requirements of these specifications or has been pre-approved by the PSAA.
f. Proposed manufacturers technology data shall be submitted for all CIPP products and all associated technologies to be furnished.
g. Submittals shall include information on CIPP intended for installation and all tools and equipment required for a complete installation.
h. A detailed public notification plan shall be prepared and submitted including detailed staged notification to residences affected by the CIPP installation.
i. An odor control plan shall be submitted, by the Contractor, that will ensure that project specific odors will be minimized at the project site and surrounding area. Part of the plan will include methods for removing odors from resident's homes, if required.

D. PRODUCT SUBMITTALS

1. Fabric Tube – including the manufacturer and description of product components such as felts and reinforcing materials and tube mechanical properties.
2. Flexible membrane (coating) material – including materials specific to the proposed curing method and recommended repair (patching) procedure if applicable.
3. Raw Resin Data - including the manufacturer and description of product components including the spectroscopic wavelength diagram for the resin being furnished as well as mechanical properties, corrosion data and creep data.
4. Tube wet-out & cure method including:
   a. A description of the wet-out procedure for the proposed technology. In the case of tubes wet-out by a third party, the wet-out information from the third-party source.
   b. The Manufacturer's recommended cure method for each diameter and thickness of CIPP with a detailed curing procedure outlining the curing medium, the method of application and how the curing temperatures will be monitored.

E. SAFETY

1. The Contractor shall conform to all work safety requirements of pertinent regulatory agencies and shall secure the site for the working conditions in compliance with the same. The

Contractor shall erect signs and other devices as are necessary for the safety of the work site.

2. The Contractor shall perform all of the Work in accordance with applicable OSHA standards. Emphasis shall be placed upon the requirements for entering confined spaces and with the equipment being utilized for pipe renewal.
3. The Contractor shall submit a proposed Safety Plan to the PSAA prior to beginning any work, identifying all competent persons. The plan shall include a description of a daily safety program for the job site and all emergency procedures to be implemented in the event of a safety incident. The Safety Plan shall include safety recommendations for mitigating styrene emissions on heat-cure CIPP job sites that have a potential to pose health risks to workers. References: TTC's "Emissions Phase 2 Final Report" and NASSCO's "Guideline for the Safe Use and Handling of Styrene Based Resins in CIPP". All work shall be conducted in accordance with the Contractor's submitted Safety Plan.
4. Fabric Tube – including the manufacturer and description of product components such as felts and reinforcing materials and tube mechanical properties.

F. QUALITY CONTROL PLAN

A detailed quality control plan (QCP) that fully represents and conforms to the requirements of these specifications shall be submitted to the PSAA. At a minimum the QCP shall include the following:

1. A detailed discussion of the proposed quality controls to be performed by the Contractor.
2. Defined responsibilities, of the Contractor's personnel, for assuring that all quality requirements for this contract are met.
3. Proposed procedures for quality control, product sampling and testing.
4. Proposed methods for product performance controls, including method of and frequency of product sampling and testing both in raw material form and cured product form.

G. AS-BUILT DRAWINGS/RECORDS

1. As-Built drawings/records, pre & post inspection video recordings, flash drives/hard drives or other electronic media shall be submitted to the PSAA, by the Contractor, within 2 weeks of final acceptance of said work or as specified by the PSAA. As-Built drawings/records will include the identification of the work completed by the Contractor and shall be prepared on one set of Contract Drawings/Records provided to the Contractor at the onset of the project.

H. WARRRANTY

1. The materials used for the project shall be certified by the manufacturer for the specified purpose. The Contractor shall warrant the CIPP material and installation for a period of two (2) years. During the Contractor warranty period, any defect which may materially affect the integrity, strength, function and/or operation of the pipe, shall be repaired at the Contractor's expense in accordance with procedures included in Section 1.7 CIPP Repair/Replacement and as recommended by the manufacturer.
2. On any work completed by the Contractor that is defective and/or has been repaired, the Contractor shall warrant this work for (2) years in addition to the warrantee required by the contract.
3. After a pipe section has been rehabilitated and for a period of time up to two (2) years following

completion of the project, the PSAA may inspect all or portions of the rehabilitated system. The specific locations will be selected at random by the PSAA's inspector and should include all sizes of CIPP from this project. If it is found that any of the CIPP has developed abnormalities since the time of "Post Construction Television Inspection," the abnormalities shall be repaired and/or replaced as defined in Section 1.7 CIPP Repair/Replacement and as recommended by the manufacturer. If, after inspection of a portion of the rehabilitated system under the contract, problems are found, the PSAA may televise all the CIPP installed on the contract. All verified defects shall be repaired and/or replaced by the Contractor and shall be performed in accordance with Section 1.7 CIPP Repair/Replacement and per the original specifications, all at no additional cost to the PSAA.

PART 2 – PRODUCTS

A. MATERIALS

1. The CIPP System must meet the chemical resistance requirements of these contract documents.

2. All materials shipped to the project site shall be accompanied by test reports certifying that the material conforms to the appropriate ASTM standards listedherein. Materials shall be shipped, stored, and handled in a manner consistent with written recommendations of the CIPP system manufacturer to avoid damage. Damage includes, but is not limited to, gouging, abrasion, flattening, cutting, puncturing or ultra- violet (UV) degradation. On site storage locations shall be approved by the PSAA. All damaged materials shall be promptly removed from the project site at the Contractor's expense and disposed of in accordance with all current applicable agency regulations.

B. FABRIC TUBE

1. The fabric tube shall consist of one or more layers of absorbent non-woven felt fabric, felt/fiberglass, felt/carbon fiber, carbon fiber or fiberglass and meet the requirements of ASTM F 1216, ASTM F 1743, or ASTM F2019 and ASTM D5813 as applicable The fabric tube shall be capable of absorbing and carrying resins, constructed to withstand installation pressures and curing temperatures and have sufficient strength to bridge missing pipe segments and stretch to fit irregular pipe sections. The Contractor shall submit certified information from the felt manufacturer on the nominal void volume in the felt fabric that will be filled with resin.

2. The wet-out fabric tube shall have a uniform thickness and excess resin distribution that when compressed at installation pressures will meet or exceed the design thickness after cure.

3. The fabric tube shall be manufactured to a size and length that when installed will tightly fit the internal circumference of the original pipe. Allowance shall be made for circumferential stretching during installation. The tube shall be properly sized to the diameter of the existing pipe and the length to be rehabilitated and be able to stretch to fit irregular pipe sections and negotiate bends. The Contractor shall determine the minimum tube length necessary to effectively span the designated spot defect The Contractor shall verify the lengths in the field prior to ordering and prior to impregnation of the tube with resin to ensure that the tube will have sufficient length to extend the entire length of the run. The Contractor shall also measure the

inside diameter of the existing pipelines in the field prior to ordering tube so that the CIPP can be installed in a tight-fitted condition.

4. The outside and/or inside layer of the fabric tube before inversion shall be coated with an impermeable, flexible membrane that will contain the resin and facilitate, if applicable, vacuum impregnation and monitoring of the resin saturation during the resin impregnation (wet-out) procedure.

5. No material shall be included in the fabric tube that may cause delamination in the cured CIPP. No dry or unsaturated layers shall be acceptable upon visual inspection as evident by color contrast between the tube fabric and the activated resin containing a colorant, if a colorant is utilized.

6. The wall color of the interior pipe surface of CIPP after installation shall be a light reflective color so that a clear detailed examination with closed circuit television inspection equipment may be made. The color contrast shall be sufficient to distinguish between the fully resin saturated felt fabric and dry or resin lean areas.

7. Seams in the fabric tube, if applicable, shall meet the requirements of ASTM F1743.

8. The outside of the fabric tube shall be marked at a maximum of every 5 feet with the name of the manufacturer or CIPP system, manufacturing lot and production footage.

9. The minimum length of the fabric tube shall be that deemed necessary by the installer to effectively span the distance from the starting manhole to the terminating manhole or access point, plus that amount required to run-in and run-out for the installation process.

10. The nominal fabric tube wall thickness shall be constructed, as a minimum, to a sufficient thickness that exceeds the required design thickness for that section of installed CIPP. Wall thickness transitions may be fabricated into the fabric tube between installation entrance and exit access points. The quantity of resin used in the impregnation shall be sufficient to fill all the felt voids for the nominal felt thickness.

C. RESIN

1. The resin shall be a corrosion resistant polyester or vinyl ester resin and catalyst system or epoxy and hardener system that, when properly cured within the tube composite, meets the requirements of ASTM F1216, ASTM F1743 or F2019 and ASTM D5813, the physical properties herein, and those which are to be utilized inthe design of the CIPP for this project. The resin, specified for the specific application defined in the contract documents, shall produce CIPP which will comply with or exceed the structural and chemical resistance requirements of this specification.

2. The resin to tube ratio, by volume, shall be furnished as recommended by the manufacturer.

D. STRUCTURAL REQUIREMENTS

1. The physical properties and characteristics of the finished CIPP will vary considerably, depending on the types and mixing proportions of the materials used and the degree of cure executed. It shall be the responsibility of the Contractor to control these variables and to provide a CIPP system which meets or exceeds the minimum properties specified herein or as submitted in the PWS.

2. The CIPP shall be designed as per ASTM F1216 Appendix X1. The CIPP design shall assume no bonding to the original pipe wall.

3. The design engineer shall set the long-term (50 year extrapolated) Creep Retention Factor at 50% of the initial design flexural modulus as determined by ASTM D790 test method. This value shall be used unless the Contractor submits long-term test data (ASTM D2990) to substantiate a higher retention factor.

4. The cured pipe material (CIPP) shall, at a minimum, meet or exceed the structural properties, as listed below or as submitted in the PWS.

E. MINIMUM PHYSICAL PROPERTIES

Property	Test Method	Cured Composite Per ASTM F1216
Flexural Modulus of Elasticity (Short-Term) Felt Tubes.	ASTM D790	250,000 psi
Flexural Strength (Short-Term) Felt Tubes.	ASTM D790	4,500 psi

The required structural CIPP wall thickness shall be based, as a minimum, on the physical properties of the cured composite and per the design of the Professional Engineer (see section 1.3.G) and in accordance with the design equations contained in Appendix X1 of ASTM F1216, or Appendix X1.1 of ASTM F2019 and the following design parameters.

Design Safety Factor	2.0
Creep Retention Factor	50% or otherwise verified by test data
Ovality	5% or as measured by field inspection
Constrained Soil Modulus	700 psi
Groundwater Depth	5ft below grade
Soil Depth (above the crown)	Field verified
Live Load	HS20
Soil Load (assumed)	120 lb./cu. ft. or as specified
Minimum Service Life	50 years

1. The Contractor shall submit, prior to installation of the lining materials, certification of compliance with these specifications and/or the requirements of the pre-approved CIPP system. Certified material test results shall be included that confirm that all materials conform to these specifications and/or the pre-approved system. Materials not complying with these requirements will be rejected.

2. The design soil modulus may be adjusted based on data, determined from detailed project soil testing results, as provided by the PSAA in the contract documents.

PART 3 – INSTALLATION

A. CONSTRUCTION REQUIREMENTS

1. The wet-out tube shall be constructed of materials and methods that, when installed, shall provide a jointless and continuous structurally sound CIPP able to withstand all imposed static and dynamic loads on a long-term basis as required in the specifications.

2. The Contractor may, under the direction of the PSAA, utilize any of the existing manholes in the project area as installation access points. If a street must be closed to traffic because of the location of the sewer, the Contractor shall furnish a detailed traffic control plan and all labor and equipment necessary. The plan shall be in conformance with the requirements of the local agency having jurisdiction over traffic control.

3. Cleaning of Pipelines – Before ordering tube materials for the project, the Contractor shall remove all internal debris from the pipeline that will interfere with the installation and the final product delivery of the CIPP, as required in these specifications, and accurately measure and document the diameter and length of the existing pipeline to be rehabilitated. Solid debris and deposits shall be removed from the system and disposed of properly by the Contractor. Moving material from manhole section to manhole section shall not be allowed. As applicable, the Contractor shall either plug or install a flow bypass pumping system to properly clean the pipelines. Precaution shall be taken by the Contractor in the use of cleaning equipment to avoid damage to the existing pipe. The repair of any damage, caused by the cleaning equipment, shall be the responsibility of the Contractor. Unless otherwise specified by the PSAA, the Contractor shall dispose of all debris at no charge.

4. Bypassing Existing Flows - The Contractor shall provide for the flow of existing mainline and service connection effluent, if applicable, around the section or sections of pipe designated for CIPP installation. Installation of the CIPP shall not begin until the Contractor has installed the required plugs, or a sewage bypass system and all pumping facilities have been installed and tested under full operating conditions including the bypass of mainline and side sewer flows, if required. Once the installation has begun, existing flows shall be maintained, until the resin/tube composite is fully cured, cooled down, fully televised and the CIPP ends finished. The Contractor shall coordinate sewer bypass and flow interruptions with the PSAA at least 7 days in advance. The pump and bypass lines shall be of adequate capacity and size to handle peak flows. The Contractor shall submit a detail of the bypass plan and design to the PSAA before proceeding with any CIPP installation. Compensation for bypass pumping and all

associated plans and approvals shall be at the price bid in the Proposal.

5. Contractor shall perform post-cleaning video inspections of the pipelines. Only PACP certified personnel trained in locating defects, obstacles and service connections by closed circuit television shall perform the inspection. The Contractor shall provide the PSAA a copy of the pre-cleaning and post-cleaning video and suitable log, and/or in digital format, for review prior to installation of the CIPP and for later reference by the PSAA.

6. Line Obstructions - It shall be the responsibility of the Contractor to clear the line of obstructions that will interfere with the installation and long-term performance of the CIPP. If pre-installation inspection reveals an obstruction, misalignment, broken or collapsed section or sag that was not identified as part of the original scope of work and will prohibit proper installation of the CIPP, the Contractor may be directed by the PSAA to correct the problem(s) prior to installation by utilizing open cut repair methods.

7. The Contractor shall be responsible for confirming the locations of all branch service connections prior to installing the CIPP. If required by the PSAA, each connection will be dye tested to determine whether or not the connection is live or abandoned. Other approved methods to confirm live connections are acceptable. The cost for dye testing of existing service connections shall be the responsibility of the Contractor. In the event the status of a service connection cannot be adequately defined, the PSAA will make the final decision, prior to installation of the CIPP, as to the status. Only service connections deemed "active" shall be reopened by the Contractor.

8. The Contractor shall be allowed use water from an owner-approved fire hydrant in the project vicinity only as directed by the PSAA. Hydrant meter and double check backflow assembly must be rented from the City. The contractor is not permitted to use their own assembly. Contractor shall pay City for all water usage at the current water rates.

B. INSTALLATION OF CIPP

1. The CIPP shall be installed and cured in the host pipe per the manufacturer's specifications as described and submitted in the RFP.

2. CIPP installation shall be in accordance with the applicable ASTM standards as modified in this section 3.2.

3. If significant groundwater infiltration is present in the existing sewer, such as PACP infiltration gusher or multiple runners, the Contractor shall install a pre-liner tube or perform chemical grouting to control resin loss and contamination, maintain CIPP thickness, prevent physical property reduction and prevent inadequate curing of the CIPP resulting from water or other contamination of the resin during installation. The pre-liner tube shall be a plastic tube to fit the existing pipeline and shall be continuous from manhole (access) to manhole (access).

4. The wet-out tube shall be positioned in the pipeline using the method specified by the manufacturer. Care should be exercised not to damage the tube as a result of installation. The wet-out tube should be inverted through an existing manhole or approved access point and fully

extend to the next designated manhole or termination point.

5. Prior to installation and as recommended by the manufacturer, remote temperature gauges or sensors shall be placed inside the host pipe for its entire length to monitor the temperatures during the cure cycle. CIPP and/or host pipe interface temperature shall be monitored and logged during cure.

6. To monitor the temperature of the CIPP wall and to verify correct curing, where specified by the contract documents, temperature monitors must be placed between the host pipe and the CIPP in the bottom of the host pipe (invert) at manholes or access points and/or throughout its entire length (continuous) to monitor the temperature on the outside of the CIPP during the curing process.

7. Curing shall be accomplished by utilizing the appropriate medium or ultraviolet or LED light in accordance with the manufacturer's recommended cure procedure and/or schedule. The curing source or in and output temperatures shall be monitored and logged during the cure cycles, if applicable. The manufacturer's recommended cure method & schedule shall be used for each line segment installed, and the CIPP wall thickness and the existing ground conditions with regard to temperature, moisture level, and thermal conductivity of soil shall be taken into account by the Contractor.

8. For heat cured CIPP, if any temperature sensor, or continuous sensor location does not reach the temperature as specified by the manufacturer to achieve proper curing or cooling, the installer can make necessary adjustments to comply with the manufacturer's recommendations. For continuous temperature monitoring, the system computer should have an output report that specifically identifies stations along the length of pipe, indicates the maximum temperature achieved and the sustained temperature time at the stations. At each station along the length of the pipe, the computer should record both the maximum temperature and the minimum cool down temperature and comply with the manufacturer's recommendations.

C. COOL DOWN

1. The Contractor shall cool the CIPP in accordance with the approved CIPP manufacturer's recommendations.

2. Temperatures and curing data shall be monitored and recorded by the Contractor throughout the installation process to ensure that each phase of the process is achieved as approved in accordance with the CIPP system manufacturer's recommendations.

D. FINISH

1. The installed CIPP shall be continuous over the entire length of a sewer line section and be free from visual defects such as foreign inclusions, dry spots, pinholes, major wrinkles and delamination. The CIPP shall be impervious and free of any leakage through the CIPP wall.

2. Any defect which will or could affect the structural integrity or strength of the CIPP shall be repaired at the Contractor's expense in accordance with the procedures submitted under Section 1.7 CIPP Repair/Replacement.

3. The beginning and end of the CIPP shall be sealed to the existing host pipe, if specified. The sealing material shall be compatible with the pipe end and shall provide a watertight seal.

4. If any of the service connections leak water between the host pipe and the installed CIPP, the connection mainline interface shall be sealed, if required by these specifications, to provide a leak tight connection.

5. If the wall of the CIPP leaks, it shall be repaired or removed and replaced with a watertight pipe as recommended by the manufacture of the CIPP system.

6. Compensation shall be at the actual length of CIPP installed. The length shall be measured from center of manhole to center of manhole. The unit price per linear foot installed shall include all materials, labor, equipment and supplies necessary for the complete CIPP installation. Compensation for service connection sealing and pipe sealing at the manhole/wall interface shall be at the unit price bid in the Proposal.

E. MANHOLE CONNECTIONS AND RECONNECTIONS OF EXISTING SERVICES

1. A seal, consisting of a resin mixture or hydrophilic seal compatible with the installed CIPP, shall be applied at manhole/wall interface, if specified, in accordance with the CIPP System manufacturer's recommendations.

2. Existing services shall be internally or externally reconnected unless indicated otherwise in the contract documents.

3. Reconnections of existing services shall be made after the CIPP has been installed, fully cured, and cooled down. It is the Contractor's responsibility to make sure that all active service connections are reconnected.

4. A CCTV camera and remote cutting tool shall be used for internal reconnections. The machined opening shall be at least 95 percent of the service connection opening area and the bottom of both openings must match. The opening shall not be more than 100 percent of the service connection opening. The edges of the opening shall not have pipe fragments or CIPP fragments which may obstruct flow or snag debris. In all cases the invert of the service connection shall be cut flush with the invert entering the mainline.

5. If service reinstatements result in openings that are greater than 100 percent of the service connection opening, the Contractor shall install a CIPP type repair, sufficiently in size to completely cover the over-cut service connection. No additional compensation will be paid for the repair of over-cut service connections.

6. Coupons or fragments of CIPP material resulting from service tap cutting shall be collected at the next manhole downstream of the pipe rehabilitation operation prior to leaving the site. Coupons may not be allowed to pass through the system.

7. Compensation shall be at the actual number of services reconnected using either internal means

only. The unit price bid per service line reconnected shall be include all materials, labor, equipment and supplies necessary to complete the work as required in these specifications.

F. TESTING OF INSTALLED CIPP

1. The physical properties of the installed CIPP shall be verified through field sampling and laboratory testing. All testing data shall be furnished by the Contractor to the PSAA. All materials testing shall be performed at the Contractor's expense by an independent third-party laboratory selected by the PSAA as recommended by the CIPP manufacturer. All tests shall be in accordance with applicable ASTM test methods to confirm compliance with the requirements specified in these contract documents.

2. The Contractor shall provide samples for testing from the actual installed CIPP. Samples shall be provided from each section of CIPP installed or as required by the PSAA. The sample shall be cut from a section of cured CIPP that has been inverted through a like diameter pipe which has been held in place by a suitable heat sink, such as sandbags. All curing, cutting and identification of samples will be witnessed by the PSAA and sent to the testing laboratory. Flat plate samples can be taken on pipelines greater than 18 inches in diameter. Identification on the samples shall be standard chain of custody markings.

3. The laboratory results shall identify the test sample location as referenced to the nearest manhole and station. Final payment for the project shall be withheld pending receipt and approval of the test results. If properties tested do not meet the minimum physical and thickness requirements, the CIPP shall be repaired or replaced by the Contractor unless the actual physical properties and the thickness of the sample tested meet the design requirements as required in the contract.

4. Chemical resistance - The CIPP system installed shall meet the chemical resistance requirements of ASTM F1216 or ASTM D5813. CIPP samples tested shall be of the fabric tube and the specific resin proposed for actual construction. It is required that CIPP samples without plastic coating meet these chemical testing requirements. A certification may be submitted, by the Contractor, from the manufacturer verifying that the chemical resistance of the CIPP meets the contract requirements.

5. Hydraulic Capacity - The installed CIPP shall, at a minimum, be equal to the full flow capacity of the original pipe before rehabilitation. Calculated capacities may be derived using a commonly accepted roughness coefficient for the existing pipe material taking into consideration its age and condition.

6. The installed CIPP thickness shall be measured for each line section installed as per the ASTM requirements specified. If the CIPP thickness does not meet that specified in the contract and submitted as the approved design by the Contractor, then the CIPP shall be repaired or removed unless the tested physical properties and the thickness of the sample tested meet the design requirements as required in the contract. The CIPP thickness shall have tolerance of 0%. In worker-entry size piping, where sampling is by flat plate, a quality-based approach using the approved quality plan will be used to accept installed thickness (see discussion in following text box). If the plate sample does not meet the required physical property values, or if any quality

checks are deficient, it may be necessary for the Contractor to remove a 2-inch core from the CIPP 12 o'clock position to check thickness. The openings produced from core samples shall be repaired in accordance with manufacturer's recommended procedures.

7. All costs to the Contractor associated with providing cured CIPP samples for testing shall be included in the Bid Item price. Payment for all testing by a laboratory will be paid for by the PSAA directly to the laboratory under the lump sum Reserve for Testing item force bid in the Bid Proposal.

G. FINAL ACCEPTANCE

1. CIPP sample testing and repairs to the installed CIPP, as applicable, shall be completed before final acceptance, meeting the requirements of these specifications and documented in written form.

2. The Contractor shall perform a detailed closed-circuit television inspection in the presence of the PSAA after installation of the CIPP and reconnection of the side sewers. Conventional pan and tilt TV camera or sidewall scanning technology, as approved by PSAA, shall be used. The finished CIPP shall be continuous over the entire length of the installation and shall be free of significant visual defects, damage, lifts, holes, leaks and other defects that are not a reflection of the existing pipe condition. Unedited digital documentation of the inspection shall be provided to the PSAA within ten (10) working days of the CIPP installation. The data shall note the inspection date, location of all reconnected side sewers, debris, as well as any defects in the CIPP, including, but not limited to, gouges, cracks, bumps, or bulges. If post installation inspection documentation is not submitted within ten (10) working days of the CIPP installation, the PSAA may at its discretion suspend any further installation of CIPP until the post-installation documentation is submitted. As a result of this suspension, no additional working days will be added to the contract, nor will any adjustment be made for increase in cost. Immediately prior to conducting the closed- circuit television inspection, the Contractor shall thoroughly clean the newly installed CIPP removing all debris and build-up that may have accumulated at no additional cost to the PSAA.

3. If required by the PSAA in the specifications, and if the pipe diameter is less than or equal to 36-inches, the CIPP shall be tested for leakage using the water exfiltration test (ASTM F1216 8.2) or a low-pressure air test (refer to Appendix A). Testing is limited to pipe lengths with no reinstated service laterals and could delay service lateral reinstatement. Water exfiltration or air testing is not recommended in pipe diameters exceeding 36-inch diameter. In these cases, a visual inspection for leakage shall be performed, if specified.

   <u>Any unacceptable leakage through the CIPP wall is required to be repaired.</u>

   Not all CIPP line segments can be air tested because of end configurations in the manhole, shape of the CIPP and CIPP irregularities. It is recommended that only a set percentage of the line segments in any one project be tested in lieu of testing each line segment.

   Low pressure air testing can be a dangerous operation. It is imperative that all safety protocols for plug operation & maintenance and air testing be followed, including proper

blocking/bracing of plugs during the air test and limiting air tests to a maximum diameter of 36 inches.

4. Bypass pumping or plugging from the upstream manhole shall be utilized to minimize sewage from entering the line during the inspection. In the case of bellies in the line, the pipe shall be cleared of any standing water to provide continuous visibility during the inspection.

H. CONTRACTOR EXPERIENCE

1. Current documentation, from the System product manufacturer, certifying that the Contractor's training, the Contractor's personnel and equipment comply completely with their product Quality Assurance requirements.

2. For a pipe lining product to be considered for this project, a minimum of 2,000,000 lineal feet of documented manhole to manhole rehabilitation must have been installed with public wastewater systems in the US Midwest.

3. For a Contractor / Installer, not the manufacturer and/or employee (s), to be considered for this project, a minimum of five (5) years of CIPP experience including no less than 1,000,000 lineal feet of successful installations with the same proposed product must be and/or have been installed in the US Midwest. Documentation must be provided with the proposal.

4. In all cases a minimum of three (3) recent (with last 2 years) verifiable references of the Contractor's work within the State of Michigan must be submitted with the proposal, indicating the successful application of the SYSTEM products of the same material type as proposed to be furnished by the Contractor and applied in a similar project environment.

MEASUREMENT AND PAYMENT

Pay Item	**Pay Unit**
CIPP Spot Repair, 8" Dia.	Each
CIPP Spot Repair, 10" Dia.	Each
CIPP Spot Repair, 12" Dia.	Each
CIPP Spot Repair, 15" Dia.	Each
CIPP Spot Repair, 18" Dia.	Each
CIPP Spot Repair, 21" Dia.	Each
CIPP Lateral Liner, up to 18" in Length	Each

The contract unit price shall be payment in full for all labor, materials, and equipment necessary to completely install CIPP Spot Liner up to 10' in length or CIPP Lateral Liner up to 18" in length. CIPP Spot Liner or Lateral Liner shall be paid for at the unit price bid per each liner installed. Payment includes mobilization, pre-installation inspection, pre-installation cleaning and pipe preparation, traffic control, sewer bypass, service reconnections and sealing, manhole wall interface sealing, and post construction inspection.

All invoicing will be by sewer segment and payment and will not be made until all work; including punch list

items (rework and additional work) are completed for each sewer segment. Any invoice for sewer segments that are not complete will not be accepted by the PSAA.

The following items of work will not be measured for payment, but the cost thereof will be considered as incidental to the contract:

1. Data entry, computerized equipment, software, and hardware to submit the required electronic submittals, including the media files, records, and logs.
2. Completion of all electronic forms.
3. Removal and disposal of debris.
4. Photographic equipment and supplies used to show sewer pipe defects.
5. Bypass pumping and flow control where required by the Contractor to perform work.
6. Providing temporary and final paving at any proposed excavations.
7. Providing temporary and final restoration of grass areas.
8. Emergency after hours response.
9. Re-televising and re-cleaning following a point repair completed by the Contractor.
10. Demobilization and mobilization because of suspension of work.
11. Updates to the schedule as required by the PSAA.
12. Right of entry access to private property.
13. Dye testing of service connections in order to meet the CCTV specification.

DETAILED SPECIFICATION
FOR
MULTI-LAYER POLYUREA MANHOLE LINER

DESCRIPTION

PART 1 - GENERAL

A. SUMMARY

1. This section covers work, materials and equipment required to install a monolithic multilayer/ component concrete manhole lining system to provide infiltration and corrosion protection.
2. This section includes procedures for surface preparation, cleaning, application and testing.

B. SUBMITTALS

1. Submit technical data sheets on each product used, including ASTM test results indicating the product conforms to and is suitable for its intended use per these specifications.
2. Material Safety Data Sheets (MSDS) for each product used.
3. Submit technical data sheets and project specific data for repair materials to be top coated with the coating products including application, cure time and surface preparation.
4. Provide samples of the cured system including stepped samples showing stages of multilayer/ component applications.
5. Applicator Qualifications:
    a. Manufacturer and Contractor specializing in the performance of work specified in this section with a minimum of three (3) years documented experience and 3,000 vertical feet of application.
    b. Five (5) references of municipal sanitary sewer projects successfully performed within the past three years for projects similar in size and scope.

C. QUALITY ASSURANCE

1. Coating material shall be produced in an ISO 9001 certified facility.
2. Furnish materials of quality required by ASTM standards or other approved standards and specification.
3. Coating products shall be capable of being installed and curing properly within them specified environments. Coating products shall be resistant to all forms of chemical or bacteriological attack found in municipal sanitary sewer systems and capable of adhering to the substrates and repair products.
4. Coating products must have been tested by and passed ASTM G210-13 Severe Wastewater Analysis Testing (SWAT).
5. Repair product(s) shall be fully compatible with coating product(s) including ability to bond effectively to the host substrate and coating product(s) forming a composite system.
6. Contractor shall utilize equipment for the spray application of the coating product(s) which has been approved by the coating product manufacturer; and, Contractor shall have received training on the operation and maintenance of said equipment from the coating product manufacturer.
7. Contractor shall be trained by, or have their training approved and certified by, the coating product manufacturer for the handling, mixing, application and inspection of the coating product(s) to be used as specified herein.

8. Contractor shall be trained in the use of testing or inspection instrumentation and knowledgeable of the proper use, preparation and installation of the coating products to be used as specified herein.
9. Provide guarantee against defective materials and workmanship in accordance with the requirements of these specifications.

D. DELIVERY, STORAGE AND HANDLING

1. Delivery and Handling: Prevent moisture damage and contamination of materials during delivery and handling.
2. Storage: Store materials in undamaged condition with seals and labels intact as packaged by the manufacturer.
    a. Liquid products shall be protected from freezing while being stored.

E. DEFINITIONS

1. Cleaning: Removal of sand, dirt, roots, grease and all other solid or semi-solid material from the structures as required for proper application of patching and coating products.
2. Faults: Leaking joints, cracks, breaks or other imperfections in the structure.

F. JOB CONDITIONS

1. Environmental Requirements:
    a. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the Manufacturer. Do not apply the products of this Section to frozen surfaces.
    b. Do not apply coatings during rain or snow, or when relative humidity is outside the humidity ranges required by the Manufacturer.
2. Protection:
    a. Public Safety: If public safety is endangered during the progress of the rehabilitation work, provide adequate protective measures to protect public pedestrian and vehicular traffic on streets and walkways.
        i. Signs, signals and barricades used shall conform to requirements of Federal, State and Local laws, rules, regulations, precautions, orders, and decrees.
    b. Existing Facilities Protection: Protect existing structures from damage due to operations associated with work of this Section.
    c. Personnel Protection: It is the responsibility of the Contractor to provide appropriate protective measures to ensure that chemicals are under the control of the Contractor at all times and are not available to unauthorized personnel or animals.

G. WARRANTY

1. Manufacturer and Applicator warrant the liner system against failure for a period of 10 years. "Failure" will be deemed to have occurred if the protective lining fails to prevent the internal deterioration or corrosion of the structure or prevent groundwater infiltration. If any such failure occurs within 10 years of initial completion of work on a structure, the damage will be repaired at no cost to the PSAA. "Failure" does not include damage resulting from mechanical or chemical abuse or act of God. Mechanical or chemical abuse means exposing the lined surfaces of the structure to any mechanical force or chemical substance not customarily present.

PART 2 – PRODUCTS

A. MANUFACTURERS

1. Subject to compliance with requirements, manufacturers that may be used include:
    a. OBIC, LLC.
    b. PSAA approved equivalent

B. PROTECTIVE LINING SYSTEM MATERIALS

2. The protective lining system shall be a multi-layer/component protective lining system, including:
    a. Polyurea Adhesion Coating
    b. Polymer Surfacer Layer
    c. Final Polyurea Armor Layer

C. LINER SYSTEM ARMOR LAYER

3. 100% solids, no volatile organic compound (VOC), moisture tolerant, elastomeric polyurea coating to provide infiltration and corrosion protection. Material shall be capable of curing properly given the project site conditions and temperatures conforming to the following minimum physical requirements:

Property	Value
Hardness, D-2240	D 48
Tensile strength, D-412 100%	3315 psi
Modulus, D-412	1668 psi
200% Modulus, D-412	1960 psi
300% Modulus, D-412	2650 psi
Tear resistance/DIE-C, D-624	417 pli
Ultimate elongation, D-412 Taber	395%
Abrasion, mg loss CS17	15mg loss
Flexibility, 1/8” mandrel ASTM	Pass
G210-13 SWAT	Pass

D. LINER SYSTEM SURFACER LAYER

1. 100% solids, no volatile organic compound (VOC), moisture tolerant, elastomeric polyurethane coating to provide infiltration and corrosion protection. Material shall be capable of curing properly given the project site conditions and temperatures conforming to the following minimum physical requirements:

Product Type	Value
Density (ASTM D – 1622)	6-8 pcf
Compressive Strength 1”	130-180 psi
Closed Cell Content	> 94%
Water Absorption	< 0.03 lbs/sqft
Maximum Service Temp	180 deg F
Viscosity (A side) @ 72 deg F	675 cps
Viscosity (B side) @ 72 deg F	200 cps

PART 3 - EXECUTION

A. SURFACE PREPARATION

1. Conduct surface preparation program to include monitoring of atmosphere for hydrogen sulfide, methane, low oxygen or other gases, approved flow control equipment, and surface preparation equipment.
2. Surface preparation methods may include high pressure water cleaning, hydro blasting, abrasive blasting, grinding, detergent water cleaning and shall be suited to provide a surface compatible for installation of the liner system.
3. Surface preparation method shall produce a cleaned, abraded and sound surface with no evidence of laitance, loose concrete, brick or mortar, contaminants or debris, and shall display a surface profile suitable for application of liner system.
4. After the defects in the structure are identified, repair all leaks with a chemical or hydraulic sealant designed for use in field sealing of ground water. Severe cracks shall be "repaired with a urethane-based chemical" sealant. Product to be utilized shall be as approved by owner/engineer prior to installation. Repairs to exposed rebar, defective pipe penetrations or inverts, etc. shall be repaired utilizing non-shrink grout or approved alternative method.

B. REPAIR MATERIALS

1. Repair materials shall be used to fill voids, structurally reinforce and/or rebuild surfaces. Repair materials shall be compatible with the polyurea coating and shall be applied in accordance with the manufacturer's recommendations.
2. Subject to compliance with the polyurea coating manufacturer's requirements, the following products shall be acceptable as compatible repair base coat materials for polyurea top coating:
    a. A hydraulic cement and/or plug shall be used to stop active infiltration. The hydraulic cement and plug shall be suitable for the polyurea top coating and shall be approved by the polyurea coating manufacturer.
    b. Hydrophobic and/or Hydrophilic polyurethane chemical grouts used to stop active infiltration. The chemical grouts shall be suitable for the polyurea top coating and shall be approved by the polyurea coating manufacturer.

C. MATERIAL INSTALLATION

1. Application procedures shall conform to recommendations of the manufacturer, including materials handling, mixing, environmental controls during application, safety and spray equipment.
2. Spray equipment shall be specifically designed to accurately ratio and apply the liner system.
3. Application of multi-layer/component liner system shall be in strict accordance with manufacturer's recommendation. Final installation shall be a minimum of ½" (500 mils).
    a. Adhesion Layer (not intended to fill small voids)
    b. Surfacer Layer (intended to fill voids, bug holes)
    c. Armor Layer

D. INSPECTION

1. Final liner system shall be completely free of pinholes or voids. Liner thickness shall be the minimum value as described herein (500 mils).
2. Due to the fast gel and set time of the material, thickness of the application can be verified by awl point depth checks into the surfacer component and physical removal of a small area of the polyurea material. Repair of the test areas to be done immediately after the test.

3. High Voltage Holiday Detection may be used to inspect for pinholes or breaches in the liner system installation.
4. Visual inspection shall be made by the PSAA. Any deficiencies in the finished liner system shall be marked and repaired according to the procedures set forth by Manufacturer.
5. The manhole may be returned to full operational service after the final inspection has taken place.

MEASUREMENT AND PAYMENT

The completed work as measured for these items of work will be paid for at the unit prices for the following pay items:

Pay Item	**Pay Unit**
Multi-Layer Polyurea Manhole Liner	Vertical Foot

Multi-Layer Polyurea Manhole Lining shall be paid for at the Contract Unit Price per vertical foot of manhole to be lined. Price paid shall be payment in full for all labor, material, and equipment required for rehabilitation of existing manholes by grouting and/or sealing the interior wall of manholes; furnishing and installing liner; reconnection of service leads; bypassing flow, dewatering; gaining access to work site; removal and replacement of site improvements; post rehabilitation video inspection; and all other items necessary to complete the job, whether specifically mentioned or implied.

DETAILED SPECIFICATION
FOR
EPOXY MANHOLE LINER

DESCRIPTION

A. EPOXY MANHOLE LINER

1. Contractor shall Install a 100% solids epoxy monolithic coating to the walls, benches and inverts of manholes.
2. The use of specialized equipment combined with rigorous surface preparation requirements shall be used to apply the products without the use of solvents. The equipment adds high heat and pressure the monolithic surfacing system resulting in a high build and quick set of the completed system. When working near the flow channel, the Contractor shall plug the inlet pipe, inspect for infiltration leaks around the inlet and outlet pipes and in the channel. All leaks
3. present shall be stopped by the use of chemical grout injection and/or by the use of fast-setting cement.
4. Product application requirements and procedures described herein include surface preparation, mixing application, material handling and storage, qualification of the applicator and application quality control.
5. The Contractor shall submit the following information to the PSAA for approval prior to beginning the installation of the protective coating:
    a. Manufactures data sheets for the coating materials.
    b. Third party test results verifying that the physical properties of the coating materials meet or exceed the requirements of these specifications.
    c. Applicator's procedures for preparing the surface of the structure and installing the coating system.
    d. Documentation that the applicator of the coating has been trained and certified by the manufacturer and meets the experience requirements of these specifications.
6. The coating system shall be a spray-applied 100% solids epoxy monolithic surfacing system for use in coating new manholes, wet wells, lift stations, treatment plants, and other structures. All products seeking approval from the PSAA shall submit the following information:
    a. Documentation that the proposed product meets the above minimum physical characteristics including results of testing performed by a bonded, third-party testing company.
    b. An affidavit attesting to the successful use of the product as a protective coating for concrete or masonry structures for a minimum continuous period of 5 years in wastewater conditions recognized as corrosive or otherwise detrimental to concrete and masonry.
    c. A verifiable list of references that document the successful installation and use of the product in a minimum of 750,000 square feet of sanitary sewer structures.
7. An approvable product must have the following minimum physical characteristics as measured by the applicable ASTM Standards referenced herein.
    a. Minimum Compressive Strength: 12,000 psi
    b. Minimum Tensile Strength: 7,000 psi
    c. Minimum Flexural Strength: 11,000 psi
    d. Minimum Bond Strength: 500 psi
    e. Minimum corrosion resistance suitable for environments with pH of 0.5 or higher.
8. Installer Qualifications

a. All products must be installed by an Installer that has been trained and certified by the manufacturer.
b. The Installer must provide verifiable documentation of the above certification and the successful installation of 250,000 square feet of the product in sanitary sewer structures.
c. The Installer must provide verifiable documentation of the above certification and the successful completion of prior installation.

9. Quality Control Assurance
    a. Applicator shall initiate and enforce quality control procedures consistent with applicable current ASTM standards.
    b. Applicator shall use an adequate number of skilled workers who are thoroughly trained and experienced in the necessary crafts. These workers shall be completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
    c. Applicator shall use approved specialty equipment adequate in size, capacity, and number sufficient to accomplish the work of this Section in a timely manner.
10. Surface Preparation
    a. Applicator shall inspect all surfaces specified to receive the monolithic surfacing system prior to surface preparation. Applicator shall promptly notify the PSAA of any noticeable disparity in the surfaces that may interfere with the proper preparation or application of the monolithic surfacing system.
    b. All concrete that is not sound or has been damaged by chemical exposure shall be restored to a sound concrete surface. All contaminants including all oils, grease, incompatible existing coatings, waxes, form release, curing compounds, efflorescence, sealers, salts, roots or other contaminants shall be removed.
    c. Surfaces to receive protective coating shall be cleaned to produce a sound concrete or masonry surface with adequate profile and porosity to provide a strong bond between the monolithic surfacing system and the substrate. Surface preparation methods shall be based upon the conditions of the substrate and the requirements of the monolithic surfacing system to be applied, but as a minimum, shall be in accordance with the procedures listed below. Discharges of contaminants and cleaning chemicals to storm sewer is prohibited; such materials shall be captured and properly disposed of.
11. All surfaces shall be cleaned with high pressure water to remove all loose or contaminated debris. Other equipment and methods may be required to remove all unsound material.
12. When all loose, contaminated, and unsound debris has been removed, the surface shall be etched with a solution of 20% muriatic acid to clean and open the pores of the substrate.
13. The surface shall be washed again, and the wash water shall contain a dilute solution of chlorine to diminish microbiological bacteria growth and to kill any bacteria residing on the surface.
14. The surface shall be tested with litmus paper at various points throughout the structure to ensure that the pH is within acceptable limits (not to exceed 8.5). If the surface does not meet the pH requirements, the above steps shall be repeated until the surface pH
15. is within acceptable limits. All tests results will be retained for review by the PSAA.
16. Active water infiltration shall be stopped by using a cementitious water plug that is compatible and suitable for top coating with the specified monolithic surfacing system.
17. If pre-installation inspection reveals infiltration (defined as visible and consistent movement of water) though the wall of the structure, a collapse in an area of the wall, a bench needing to be
18. rebuilt/repaired, a necessity for sandblasting or anything that will require more than typical preparation of the structure, the contractor shall notify the PSAA. Such extra work will be

approved in writing between the PSAA and the contractor prior to the commencement of the work and shall be considered as a separate pay item.

19. Application
    a. The interior surfacing system shall be applied to the chimney, walls, bench, and flow channel of all manholes and to the specified surfaces of all other structures.
    b. The interior surfacing system shall be continuously bonded to all brick, mortar, concrete, chemical sealant, grout, pipe and other surfaces inside the manhole according to ASTM C882 (Standard Test Method for Bond Strength of Epoxy-Resin Systems Used with Concrete by Slant Shear) testing and therefore shall be designed for hydrostatic loading.
    c. The cured surfacing shall be monolithic with proper sealing connections to all unsurfaced areas and shall be placed and cured in conformance with the recommendations of the monolithic surfacing system manufacturer.
    d. When cured, the system shall form a continuous, tightfitting, hard, impermeable surfacing that is suitable for sewer system service and chemically resistant to any chemicals, bacteria or vapors normally found in domestic sewage.
    e. The system shall effectively seal the interior surfaces of the manhole and prevent any penetration or leakage of groundwater infiltration.
    f. The system shall be compatible with the thermal conditions of the existing sewer manhole surfaces.
    g. Heated, plural component, specially designed equipment for use in the spray or spin-cast application of the specified system approved for use by the monolithic surfacing system manufacturer shall be utilized for each coat of the system.
    h. Application procedures shall conform to the recommendations of the interior surfacing system manufacturer, including material handling, mixing, and environmental controls during application, safety, and equipment.
    i. The equipment shall be specially designated to accurately ratio and apply the specified materials and shall be regularly maintained and in proper working order.
    j. An approved installer of the monolithic surfacing system must apply the specified materials.
    k. The walls, bench, and flow channel of the structure shall be lined with the monolithic surfacing system to provide a thickness as previously specified based on the condition of the existing structure.
    l. The cured surfacing shall be monolithic with proper sealing connections to all unsurfaced areas and shall be placed and cured in accordance with the recommendations of the monolithic surfacing system manufacturer.
    m. The minimum coating thickness shall be per manufacturer recommended minimum thickness.
20. Warranty
21. All approved products must provide a ten-year performance limited warranty that the installed product will:
    a. Stop deterioration of the lined surfaces by sewer gas induced corrosion.
    b. Prevent infiltration of ground water into the collection system through the lined surfaces.
    c. Stop root intrusion through the lined surfaces.

MEASUREMENT AND PAYMENT

PAY ITEM	PAY UNIT
Epoxy Manhole Liner	Vertical Feet

Epoxy manhole Liner specified herein includes all preparation of surface, sealing and stopping leaks, furnishing and installing liner materials, and cleanup and restoration of the site of the work.

DETAILED SPECIFICATION
FOR
INTERNAL CHIMNEY SEAL

DESCRIPTION

A. INTERNAL CHIMNEY SEAL

1. At all times proper measures are to be implemented to protect debris and materials from falling into the flow channel; all debris and materials shall be removed promptly.
2. A plural component, urethane or other PSAA approved material, internal manhole frame-chimney sealant, as specified herein shall be applied in all assigned manholes within the areas included in the project. If excavation is required to repair, rebuild, or replace a manhole, or if manhole linings or coatings are required, the sealant shall be applied after that work has been completed.
3. The manhole frame-chimney sealant shall be designed to prevent leakage of water through the above-described portions of the manhole throughout its design life.
4. The manhole frame-chimney sealant shall remain flexible and bonded to the inside surfaces of the manhole frame and masonry throughout its design life.
5. Manhole frame-chimney sealant material and application methods shall meet current ASTM standards and consist of a PSAA-approved plural component, spray applied, quick setting urethane material conforming to the following requirements:
    a. Viscosity
        i. Part A, 12,000-17,000 cps @ 25C, 20 RPM per ASTM D2393 (Test Method for Viscosity of Epoxy Resins and Related Components)
        ii. Part B, 300-510 cps @ 25C, 300 RPM per ASTM D4287 (Standard Test Method for High-Shear Viscosity Using a Cone/Plate Viscometer)
    b. Weight
        i. Weight/Gallon Part A, 8.90-9.20 lb/gal per ASTM D1875 (Standard Test Method for Density of Adhesives in Fluid Form)
        ii. Weight/Gallon Part B, 9.60-9.75 lb/gal per ASTM D1875
        iii. Weight/Gallon Mixed, 9.25-9.48 lb/gal per ASTM D1875
    c. Processing
        i. Mix Ratio by Weight, 100:107
        ii. Mix Ratio by Volume, 100:100
        iii. Cure Schedule, Hours, 4-5 hours @ 25C
    d. Gel Time
        i. Gel Time, Seconds, 0-15 seconds @ 25C, 100 grams per ASTM D3056 (Standard Test Method for Gel Time of Solventless Varnishes)
    e. Cured Properties
        i. Hardness, Shore A, 95-100 per ASTM D2240 (Standard Test Method for Rubber Property—Durometer Hardness
        ii. Elongation, 379-473% per ASTM D638 (Standard Test Method for Tensile Properties of Plastics) or ASTM D412 (Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension)
        iii. Tensile Strength, 2616-3216 psi per ASTM D638 or ASTM D412
6. Peel Strength, 30.8-46.8 PLI (AL to AL) per ASTM D1876 (Standard Test Method for Peel Resistance of Adhesives (T-Peel Test))

7. All concrete and masonry surfaces must be clean. Grease, organic matter, roots must be completely removed.
8. The Contractor shall have the manufacturer's recommended plural cartridge dispensing tool and all other equipment/tools necessary to prepare the surfaces of the manhole and apply the manhole frame-chimney sealant.
9. All loose and protruding mortar and brick that would prevent proper application of the seal, shall be removed and the appropriate areas of the manhole frame, chimney and or cone/corbel cleaned and prepared. All areas to be sealed shall be free of surface contaminates and be dry and free of any excessive voids or defects.
10. If an adequate sealing surface does not exist on the masonry, cementitious grout or other PSAA approved material shall be used to fill voids and profile the chimney area of the manhole.
11. Cementitious grout shall be a premixed, non-metallic, high strength, non-shrink grout which meets the requirements of ASTM C191 (Standard Test Methods for Time of Setting of Hydraulic Cement by Vicat Needle) and ASTM C827 (Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures) as well as Corps of Engineers CRD-C-588 (Nonshrink Grout)and CRD-C-621 (Non-shrink Grout). When mixed to a mortar or "plastic" consistency, it shall have minimum 1 day and 28-day compressive strength of 6,000 and 9,000 psi, respectively.
12. All surface preparation shall be completed in strict accordance with the frame-chimney sealant manufacturer's published instructions.
13. The internal frame-chimney sealant shall be applied to cover the entire circumference of the chimney section regardless of depth at a minimum thickness 100 mils.

MEASUREMENT AND PAYMENT

PAY ITEM	PAY UNIT
Internal Chimney Seal	Vertical Feet

Internal Chimney Seal includes all excavation, preparation of surface, furnishing and installing sealing materials, cleanout of structure, and cleanup and restoration of the site of the work.

DETAILED SPECIFICATION
FOR
EXTERNAL CHIMNEY SEAL

DESCRIPTION

A. EXTERNAL CHIMNEY SEAL

1. This specification includes the materials and procedures required for the wrap or external sealing of the entire chimney area of all sanitary manholes.
2. Manhole chimney shall be sealed in full, from the exterior using a wrap seal.
3. All surface preparation shall be completed in strict accordance with the frame-chimney sealant manufacturer's published instructions.
4. Manholes shall be excavated, backfilled, and restored as specified herein.
5. The manhole frame shall be clean, dry and free from surface rust and foreign objects. Abrade and/or prepare the surfaces strictly according to manufacturer’s recommendations.
6. Contractor shall ensure that the sleeve is in full contact with the substrate, that there are no cracks or holes in the polyethylene backing and no voids are present below the sleeve, and that the adhesive has flowed beyond the sleeve edges.
7. Manufacturer shall provide complete installation guides with clear illustrations enclosed in each factory carton of sleeves. Installer shall follow all manufacturer’s procedures to ensure proper application.
8. Wrap Seal shall be wrapped tightly around casting and adjustment rings. Seal must extend a minimum of 3 inches onto casting and 3 inches below top of cone section with a 6-inch overlap.

MEASUREMENT AND PAYMENT

PAY ITEM	PAY UNIT
External Chimney Seal	Vertical Feet

External Chimney Seal includes all excavation, preparation of surface, furnishing and installing sealing materials, cleanout of structure, and cleanup and restoration of the site of the work.

DETAILED SPECIFICATION
FOR
RECONSTRUCT BENCH/FLOW CHANNEL

DESCRIPTION

A. RECONSTRUCT BENCH/FLOW CHANNEL

1. This work shall consist of reconstructing flow channel in accordance with MDOT Specifications, Section 403 (Drainage Structures) and as specified herein.
2. Manhole benches and flow channels shall be formed of fast setting ready mix concrete such as Quickrete Fast Setting Concrete Mix, Product No. 1004-50, or PSAA approved equal.
3. The use of PVC SDR-26 may be used to establish and form the flow channel as approved by the PSAA.
4. All concrete and masonry surfaces must be clean. Grease, organic matter, loose bricks, mortar, unsound concrete, roots and other materials must be completely removed.
5. Contractor shall thoroughly clean existing bench/flow channel and remove any accumulated sediment, debris, and broken or loose concrete and properly dispose of all materials removed incidental to the work.
6. Where the process requires interruption of flow, the Contractor shall provide all necessary diversion or bypass pumping equipment in accordance with this Article to handle the flow for the duration of the bench/flow channel rehabilitation, including curing times where applicable.
7. Contractor shall form and place the concrete mix, meeting these Standards, to create new flow channel up to the springline of the flow channel.
8. Contractor shall install concrete flow channel to the springline of the pipe with a ¾-inch to 1-inch gap at pipe ends provided to maintain joint flexibility.
9. Changes in direction of the sewer and entering branch or branches shall be laid out in smooth curves of the longest possible radius which is targeted to the centerlines of adjoining pipelines. Regardless of differences in entrance and exit elevations, flow channels for all pipes are to be formed to present a smooth transition of flow and shall be subject to the approval of the PSAA.
10. Benches/flow channels and surface surrounding it for sewer structures shall be built and finished in accordance with City Standard Details. All bench/flow channels shall be properly consolidated, and hand-trowel finished to a hard finish.
11. All necessary adjustments required to accommodate encountered field conditions for reconstructed bench/flow channel, including all necessary dewatering, shall be included in the cost of the bench/flow channel reconstruction and will not be paid for separately.

MEASUREMENT AND PAYMENT

PAY ITEM	PAY UNIT
Reconstruct Bench/Flow Channel	Each

Reconstruct Bench/Flow Channel includes all labor, material, and equipment necessary to remove existing loose, deteriorated, or broken concrete; preparation of surface; and construction of new bench/flow channel.

DETAILED SPECIFICATION
FOR
PACKER INJECTION JOINT GROUTING

DESCRIPTION

PART 1 - GENERAL

A. DESCRIPTION

1. Provide all labor, materials, tools, equipment, and incidentals as shown, specified, and required to grout pipeline joints using the packer injection method.
    a. Packer injection grouting is used to reduce the infiltration within the pipeline, seal annular space between liners and host pipes at lateral connections, seal pipe joints that have failed the joint test criteria, provide external pipe support, but not a structural rehabilitation, by stabilizing soils outside the pipe and prevent further loss of pipe bedding into the pipe.
    b. Packer injection grouting shall be accomplished by pressure injection of chemical grout into the soils encompassing the exterior of pipe joint. Chemical grouts shall be designed to be injected into the soil surrounding the pipe, which stabilizes the soil and forms a permanent impermeable seal called a grout/soil ring, and into the annular space between liners and host pipes. Adequate volumes of grout must be injected to form an effective seal. Adequate amounts of grout are based generally upon pipe size and field conditions. This application will be through structurally sound joints by using the packer method in tandem with a closed-circuit television (CCTV) inspection system.

B. REQUIREMENTS

1. Contract requires work in active sewers. CONTRACTOR shall follow all federal, state and local requirements for safety in confined spaces and uniform traffic controls.
2. Additional safety considerations including safely handling, mixing, and transporting of chemical grouts should be provided by the grout manufacturer/supplier, and should include safe operating practices and procedures, appropriate personal protective equipment (PPE) for the various grouting operations, and proper storage, transportation, mixing, and disposal of grouts, additives, and their associated containers.
3. Require completion of grout handling and mixing training certification from the grout manufacturer/supplier for personnel working with chemical grouts and additives.

C. QUALIFICATIONS

1. Qualified bidder will have at least 5 years' experience in pressure testing and grout-sealing sanitary sewer mainline joints with acrylamide monomer chemical grout in the State of Michigan. Qualified bidder shall employ experienced personnel and bid submittal shall include resume of operator who shall be responsible for execution of Work under this Contract. Assigned operator shall have at least 3 years of experience as equipment operator of chemical grout packing equipment in Michigan. Assigned operator shall be responsible for all aspects of field operation, including grout mixing and testing, and grouting equipment set-up, testing, and operation, and shall be on site during all phases of Work performed under this Contract.

Operator shall personally perform all calibration, testing, mixing, and other critical operations requiring high level of expertise.

D. SUBMITTALS

1. All submittals are due as scheduled. Work will not proceed until all submittals are received and approved. The project manager reserves the right to adjust the due dates of the submittals based on Contractor performance. The Contractor shall label each submittal indicating what is represented, name of Contractor, and project number. All submittals identified as being in error shall be re-performed and corrected at the Contractor's expense.

2. The CONTRACTOR shall provide a minimum 48-hour advance written notice of proposed testing schedules and testing procedures for review and concurrence of the PSAA.

3. Chemical Grout information:
   a. Description of chemical grout materials to be used per sections 2.3
   b. Description of proposed additives to be used per sections 2.4
   c. Manufacturers recommended procedures for storing, mixing, testing and handling of chemical grouts
   d. MSDS sheets for all materials to be used.

4. Upon completion of each pipe segment, submit to PSAA a report showing the following data for each joint tested, grouted or attempted to be grouted as required by PACP.
   a. Identification of the sewer pipe section tested by assigned sewer ID or address and street, and length
   b. Type of pipe material, diameter & depth of pipe to the surface at manholes.
   c. Length of pipe sections between joints.
   d. Test pressure used and duration of test.
   e. Pass/fail results for each joint/connection tested.
   f. Location stationing of each joint/connection tested and location of any joints/connections not tested with an explanation for not testing.
   g. Volume of grout material used on each joint or connection.
   h. Gel set time used (cup test results from tanks)
   i. Grout mix record of the batches mixed including amount of grout and catalyst, additives, temperature of the grout solution in tanks.
   j. Operator conducting testing and sealing shall be noted on the reports.
   k. Video recordings
      i. Video recording shall include testing and sealing operations for each joint (including inflation and deflation over the joint) displaying the final air test of joints as well as video after all work in that run is complete to verify all equipment and materials have been removed from the main.
      ii. Additional final recording, if specified, shall include inspection of the pipe after all grouting work is complete.

5. Final Submittals Prior to Payment
   a. Digital files, logs, and / or electronic worksheets submitted. All field paperwork must be submitted before the Contractor's invoice will be processed for payment.
   b. Documentation of Post-Construction Inspection in accordance with Grout and Seal codes and reporting per PACP Manual.

c. Corrections to punch list items as required by the project manager to fulfill the requirements of this specification.

E. REFERENCE STANDARDS TO BE USED

1. National Association of Sewer Service Companies (NASSCO) prepared Pipeline Assessment and Certification Program (PACP), TV inspection form and sewer condition codes.
2. ASTM F2304 Standard Practice for Rehabilitation of Sewers using Chemical Grouting (latest revision).

PART 2 – PRODUCTS

A. EQUIPMENT

1. The basic equipment used for mainline pipe joints shall consist of a remotely operated color television camera capable of pan and tilt, joint testing device (referred to hereafter as a packer), and test monitoring equipment. The equipment shall be constructed in such a way as to provide means for introducing air under pressure into the void area created by the expanded ends of the packer against the host pipe and a means for continuously measuring, viewing and recording the actual static pressure of the test medium and grout within the void area only. The packer shall be of a size less than the diameter of the host pipe, with the cables at either end used to pull it through the line and may be constructed in such a manner as to allow a restricted amount of sewage to flow at all times. Packer shall be expanded by air pressure. Packers shall be of low void space construction with void volume given by the packer manufacturer.

2. Void pressure data shall be transmitted from the void area to the monitoring equipment or video picture of a pressure gauge mounted on the packer and connected to the void area. All test monitoring shall be above ground and in a location to allow for simultaneous and continuous observation of the televising monitor and test monitoring equipment.

3. Grouting equipment shall consist of the packer, appropriate pumping and hosing systems capable of supplying an uninterrupted flow of sealing materials to completely fill the voids. Grout pumping system shall be sized to deliver a mixed volume of grout at a minimum of 3 gpm and 30 gallons of uninterrupted flow within 10 minutes.

4. Volume of mixed grout pumped must be capable of being measured and recorded for each grouted joint/connection. Generally, the equipment shall be capable of performing the specified operations in sewers where flows do not exceed 25 percent of pipe diameter unless permitted by PSAA.

5. Provide back-up bladders for each packer on-site at all times during grouting procedures.

B. GROUTS GENERAL

1. All grout materials must have the following characteristics:
   a. Able to react /perform in the presence of water (groundwater) with minimal dilution while being injected.

b. Maintain a constant viscosity during the pumping process prior to gelling

c. Prevent the passage of water (infiltration) into the pipe.

d. Not be subject to shrinkage from water loss in conditions where relative humidity in soil is present.

e. Be moderately flexible, yet rigid enough to stand under its own weight.

f. Be chemically stable and resistant to acids, alkalis, and organics found in sewage.

g. Be easily removable from inside the sewer line after gelling.

h. Cause no upset of treatment or pumping system downstream of the grouting location.

2. Handle, mix, and store grout components in accordance with the manufacturer's recommendations.

3. Provide appropriate protective measures to ensure that the grout components and the chemicals produced in mixing are under the control of the CONTRACTOR always and are not available to unauthorized personnel.

4. All grout materials used shall meet the following minimum application requirements:

   a. All component materials shall be transportable by common carriers.

   b. Packing of component materials shall be compatible with field storage requirements.

   c. Grout components shall be packed in such a fashion as to provide for maximum worker safety when handling the materials and minimize spillage when preparing for use.

   d. Gel initiation shall take place at the point of injection/repair.

   e. Cleanup shall be done in accordance with the manufacturer recommendations.

C. CHEMICAL GROUTS

1. Water based chemical grouts shall have the following characteristics.

   a. A minimum of 10% acrylamide base material by weight in the total grout mix. A higher concentration of acrylamide base material is recommended to increase strength or offset dilution during injection.

   b. The ability to tolerate some dilution and react in moving water during injection.

   c. A viscosity of approximately 2 centipoise, which can be increased with approved additives.

   d. A controllable reaction time from 10 seconds to 1 hour.

   e. A reaction (curing) that produces a homogenous, chemically stable, non-biodegradable, firm, flexible gel.

   f. The ability to increase mix viscosity, density and gel strength by increased concentrations of the mix constituents or by the use of approved additives.

   g. Product Manufacturer: Avanti AV-100, Avanti AV-118; or ENGINEER approved equal

2. Acrylate base grout shall have the following characteristics.

a. A minimum of 10% acrylate base material by weight in the total grout mix

b. The ability to tolerate some dilution and react in moving water during injection.

c. A viscosity of approximately 1-3 centipoise, which can be increased with approved additives.

d. A controllable reaction time from 10 seconds to 1 hour.

e. A reaction (curing) that produces a homogenous, chemically stable, non-biodegradable, firm, flexible gel.

f. The ability to increase mix viscosity, density and gel strength by the use of approved additives.

g. Product Manufacturer:
   i. DeNeef AC-400,
   ii. DeNeef Gelacryl SR,
   iii. Avanti AV-160;
   iv. or approved equal.

D. ADDITIVES

1. At the CONTRACTOR'S discretion and according to field conditions, additives may be selected and used within the manufacturers recommended quantities.
2. Strengthening Agents
   a. For joint grouting, a latex or "diatomaceous earth" additive may be added to increase compressive and tensile strength. The quantity of strengthening agent additive shall be as recommended by the manufacturer and approved by ENGINEER.
   b. Product Manufacturer:
      i. Avanti AV-257 Icoset
      ii. DeNeef Reinforcing Agent
      iii. or approved equal.
3. Root Inhibitor
   a. When roots are present, for joint grouting, a root deterrent chemical shall be added to control root re-growth. The quantity of inhibitor shall be as recommended by the manufacturer and approved by ENGINEER.
   b. Product Manufacturer:
      a. Avanti AC-50W; or approved equal.
4. Dye - A manufacturer approved water soluble dye without trace metals may be added to the grout tank(s) for visual confirmation
5. Gel Time Modifier - A gel time extending agent may be used in accordance with the manufacturer's recommendations to extend gel time as necessary.
6. Freeze/Thaw - In those lines where the grouting material may be exposed to a freeze-thaw cycle, ethylene glycol or other ENGINEER approved additive shall be used to prevent chemical grout cracking once set.

PART 3 – EXECUTION

A. CONTROL TESTS

1. Packer Tests - Demonstrate the acceptable performance of air test.

a. To ensure the accuracy, integrity and performance capabilities of the testing equipment, a demonstration test will be performed in an above-ground 8" nominal diameter test cylinder suitable to contain the full length of the packer and sustain the void test pressure. The test cylinder shall be equipped with a void release valve to exercise a controlled release of pressurized air from the void area to test the packer under both sound and leaking conditions. The test cylinder shall also be equipped with a local pressure gauge (0-25 psi) within the void space.
   i. With the void release valve sealed, inflate the packer and air test void at 7-10 psi. The observed void pressure at the test cylinder pressure gauge must be within ±1.0 psi of the reading in the control center/studio void pressure gauge and follow both up and down pressure changes (allowing time for pressure equalization
   ii. If above test is passed, crack the release valve to simulate a very small leak. The cylinder shall be equipped with a void release valve to exercise a controlled release of the test media with the associated pressure drop to be equally displayed ±1.0 psi of the cylinder gauge and test monitoring equipment

2. After entering each pipeline segment with the test equipment, but prior to the commencement of joint testing, position the packer on a section of sound sewer pipe between pipe joints, and perform a test as specified. The equipment shall hold a 7-10 psi test pressure for a period of 15 seconds with a pressure drop of less than 1 psi. In the event of a failed test, repair any defective equipment and re-test to verify proper operation of all equipment at no additional compensation. Should it be found that the surface or porosity conditions of the barrel of the sewer pipe cannot meet the joint test requirements, then the performance testing shall be waived or modified as determined by the PSAA.

3. If air testing cannot be performed successfully, repair or otherwise modify air test equipment and repeat the tests. This test may be required at any other time during the performance of joint testing work if the PSAA suspects the testing equipment is not functioning properly.

4. Pump Tests - At the beginning of the contract, prior to application of grout, perform a pump test to determine if proper ratios are being pumped from the grout component tanks at the proper rates and to measure pump rates. Use separate containers to capture the discharges from each of the grout component hoses, to simulate the actual volumes of each component through the interconnect hoses, hose reel and length of grout hose and confirm accuracy of grout pump totalizer. Take corrective action if ratios or rates are not within manufacturer's recommended standards.

5. Grout Tests - Perform and record a grout gel test in the presence of the PSAA by recording the grout tank solution temperature, catalyst tank solution temperature, ambient air temperature in truck, and gel time of the sample whenever the following conditions occur.
   1. At the beginning of each day; the material in the hoses shall be recycled to the tanks and a sample shall be taken
   2. When new batches of grout are mixed
   3. Whenever the temperature in the tanks or ambient temperature have changed by more than +/- 10°F from the previous gel test

B. PIPE PREPARATION

1. Prior to the application of the chemical grouting materials or grout sleeves, the CONTRACTOR shall thoroughly clean the sewer designated to receive the chemical grouting. Cleaning shall constitute removal of all loose debris & solids which inhibit proper seating of

the packer. If mineral deposits or protruding taps are present, they shall be removed and paid for per the applicable items on the Schedule of Prices. Removal of other hardened materials such as concrete shall be considered beyond the scope of this work.

2. The CONTRACTOR shall have cleared the designated sewer line(s) of obstructions such as dropped joints, protruding lateral connections, and broken pipe / crushed pipe which will prevent the use of the grouting equipment. If the CCTV inspection reveals a condition for which an applicable pay item has not been included on the Schedule of Prices, the CONTRACTOR shall inform the PSAA. The PSAA may choose to make a point repair or will direct the CONTRACTOR to abandon the section of pipe scheduled for test & seal.

3. Remove all roots and loose debris for the length of mainline to be tested/grouted.

C. GROUT PREPARATION

1. Follow the manufacturer's recommendations for the mixing and safety procedures.
2. Adjust gel time as necessary to compensate for changes in temperature in grout component tanks or hoses. The addition of dilution water to extend gel times is not acceptable unless resulting base grout tank only material exceeds 20% by weight for solution grouts.
3. During the grouting process, the Grouting Technician shall monitor the grout component tanks to make sure that proper ratios are being pumped. If unequal levels are noted in the tanks, repeat the pump test as described above and correct any defective equipment.

4. Gel times shall be calculated using the following formula unless CONTRACTOR experience and/or field conditions dictate otherwise. Any alterations of the gel time formula shall be approved by the PSAA.

$$Gel\ Time = \left(\frac{Volume\ of\ Pipe\ /\ PackerVoid\ Space\ (gal)}{Pumping\ Rate\ (gpm)}\right)\left(\frac{60\text{sec}}{1\text{min}}\right)\text{+20sec(+/-5 sec)}$$

Packer/Pipe void shall be defined as the volume between the inflated packer and the inside pipe wall when the packer is inflated per manufacturer recommendations.

For example: an 8" pipe with a packer void space of 0.3 gallons and a 3 gpm pumping rate would provide

$$Gel\ Time = \left(\frac{.3(gal)}{3(gpm)}\right)\left(\frac{60\text{sec}}{1\text{min}}\right)\text{+(20sec)=26sec(+/-5 sec)}$$

D. TESTING AND GROUTING DEFECTS

1. Testing and grouting will not be required on pipe exhibiting the following conditions or characteristics:
   a. Longitudinally cracked, fractured or broken pipe.
   b. Sections of the pipe with structural defects between joints.
   c. Any sections of pipe or joints that are in such poor structural condition that in the judgment of PSAA, significant structural damage of the pipe would occur as a result of the pressure test.
2. Any structurally undamaged joint that structurally fails (breaks) during testing and grouting that are documented on video to have been done under normal pressure conditions shall be the CONTRACTOR's responsibility and cost to repair.
3. Grout all circumferential cracks and fractures or other defects as specified or as directed

by PSAA. Do not test or grout any other pipe defects unless so specified or shown, or directed by PSAA to do so. Promptly repair any other sewer damage resulting from the CONTRACTOR's operations at no additional compensation.

E. JOINT TESTING

1. Joint testing pressure shall be equal to 0.5 psi per vertical foot ground water evidenced over the pipe plus 4 psi; however, test pressure shall not exceed 10 psi without the approval of the PSAA.
2. Individually test each sewer pipe joint at the above-specified pressure (and retest after sealing) in accordance with the following procedure.

    a. Air Test Procedure.
        i. The packer shall be positioned within the pipe in such a manner as to straddle the joint to be tested.
        ii. The packer ends shall be expanded so as to isolate the joint from the remainder of the pipe and create a void area between the packer and the pipe joint. The ends of the testing device shall be expanded against the pipe as per manufacturer's recommendations. If all attempts to isolate the joint fail, pump grout in an attempt to seal the leak around the packer end elements. The CONTRACTOR shall be paid the unit price for grout to seal the packer unless the PSAA determines that the sewer was inadequately cleaned or the packer is not performing properly but will not be paid the unit price for joint grouting for this activity.
        iii. After the void pressure is observed to be equal to or greater than the required test pressure, the air flow shall be stopped. If the void pressure decays by more than 1.0 psi within 15 seconds, the joint will have failed the test and shall be sealed.

3. Upon completing the testing of each individual joint, the packer shall be deflated with the void pressure meter continuing to display void pressure. Should the void pressure meter fail to drop to 0.0 +/- 0.5 psi, clean the test equipment of residual grout material or make the necessary equipment repairs to provide for an accurate void pressure reading.

F. GROUTING GENERAL

1. Grout all joint connections that failed the pressure test by the injection method. This shall be accomplished by forcing grout through a system of pumps and hoses into and through the joints of the sewer from the packer within the sewer pipe.

    Remove excess grout from pipe. Excess grout shall be defined as a thickness of grout that given its location, size and geometry, could cause a blockage. Flush or push forward to the next downstream manhole, remove from the sewer system, and properly dispose of excess grout.

G. PIPE JOINT SEALING BY PACKER INJECTION GROUTING FOR MAINLINE SEWERS

1. Position the mainline packer over the joint or defect to be sealed by means of a CCTV camera in the line. Position the push/pull packer over the joint or defect to be sealed by a means of visual observation, marked push rod, or where a cleanout is available, through a CCTV camera in the lateral. For push packers, start work at the most distant point to be grouted. Take an accurate measurement of the location of the defect to be sealed using a portion of the packer as a point of reference for positioning the injection area of packer over the defect.

2. Pneumatically expand the packer sleeves such that they seal against the inside periphery of the pipe to form a void area at the joint now completely isolated from the remainder of the pipe line.

3. Pump grout materials, in stages if needed, into this isolated area to refusal and the void or surrounding soil has been filled or solidified with the goal of applying 0.25 to 0.5 gallons of grout per inch-diameter per pipe joint. Refusal is when the packer void pressure during grout pumping instantaneously rises or "spikes" by 4 to 5 psi or more above the normal void pressure experienced during grout pumping operation. Refusal may also be revealed when pumping void pressure exceeds the holding pressure of the packer end elements as evidenced by "blowby" past the packer sealing end elements. Refusal shall mean, when the joint will not accept any more grout because it has flowed throughout the void, through any joint failure and into the surrounding soil; gelled or filled the available void space; and formed a cohesive seal stopping further grout flow, then the joint will have then been sealed. Record the amount of grout pumped on the sealing log. If sealing is not achieved refer to 3.9.E.

4. Upon completion of the injection, deflate the packer to break away from the ring of gel formed by the packer void. The packer should then be re-inflated and the joint retested at a pressure equal to the initial test pressure. If the joint fails this air test, repeat the grouting procedure at no additional cost to the City, except for the additional grout used. Repeat this sequence of air testing, grouting and subsequent air testing until either the joint is sealed or it is determined that the grout consumption is too high (see section 3.9.E). The final determination to stop subsequent attempts to seal a joint will be made jointly between the PSAA and the CONTRACTOR. Should the void pressure meter not read zero ± 0.5 psi, clean the equipment of residual grout or make the necessary equipment repairs/adjustments to produce accurate void pressure readings.

5. If a mainline joint requires more than 0.5 gallon of grout per inch-diameter per pipe joint, modify grouting procedure to perform stage grouting by pumping additional grout in up to 4-gallon increments, waiting 1 gel set cycle time or 1 full minute, whichever is greater between stages. Maximum number of stages shall not exceed two stages of 4 gallons each unless approved by PSAA.

H. JOINT SEALING VERIFICATION

1. Record grouting of joints in conjunction with the testing of joints. Record the void pressure drop continuously on video and in writing immediately before sealing, and immediately after grouting. After the packer is deflated and moved, record on video the visual inspection of the joint.

2. Use of standardized test and seal data sheets and PACP data codes is required.

I. DISPOSAL

1. Collect and properly dispose of cleaning materials used in the cleaning of the grouting equipment.

J. POST-CONSTRUCTION INSPECTION

1. After grouting is complete, all pipe sections shall be final inspected by means of a color CCTV system. The inspection shall be conducted as per the NASSCO Pipeline Assessment and Certification Program. One set of digital submittals and reports shall be submitted per Sewer Video Inspection specification.

MEASUREMENT AND PAYMENT

PAY ITEM	PAY UNIT
Packer Injection Joint Grouting, 8" to 36"	Each

The contract unit price shall be payment in full for all labor, materials, and equipment necessary to completely perform Packer Injection Joint Grouting. Packer Injection Joint Grouting shall be paid for at the unit price bid per each joint grouted. Payment includes mobilization, pre-installation inspection, pre-installation cleaning and pipe preparation, traffic control, sewer bypass, service reconnections and sealing, manhole wall interface sealing, and post construction inspection.

All invoicing will be by sewer segment and payment and will not be made until all work; including punch list items (rework and additional work) are completed for each sewer segment. Any invoice for sewer segments that are not complete will not be accepted by the PSAA.

The following items of work will not be measured for payment, but the cost thereof will be considered as incidental to the contract:

1. Data entry, computerized equipment, software, and hardware to submit the required electronic submittals, including the media files, records, and logs.
2. Completion of all electronic forms.
3. Removal and disposal of debris.
4. Photographic equipment and supplies used to show sewer pipe defects.
5. Bypass pumping and flow control where required by the Contractor to perform work.
6. Providing temporary and final paving at any proposed excavations.
7. Providing temporary and final restoration of grass areas.
8. Emergency after hours response.
9. Re-televising and re-cleaning following a point repair completed by the Contractor.
10. Demobilization and mobilization because of suspension of work.
11. Updates to the schedule as required by the PSAA.
12. Right of entry access to private property.
13. Dye testing of service connections in order to meet the CCTV specification.

DETAILED SPECIFICATION
FOR
MANHOLE CHEMICAL GROUTING

DESCRIPTION

A. CHEMICAL GROUTING OF MANHOLES

1. Grouting manhole defects may include corbel, wall, pipe connections, manhole joints, and/or bench/trough. The PSAA will determine areas of the manhole designated to be grouted. If entire manhole is scheduled for grouting, grouting shall include corbel, wall, pipe connections and bench/trough. Pipe connections grouting shall include all pipe connections in the specified manhole and grouting of the specified manhole including the bench/trough to the maximum height of 18 inches above the crown.
2. Materials, additives, mixture ratios, and procedures utilized for the grouting process shall be in accordance with manufacturer's recommendations or PSAA approved equal. A list of currently approved chemical sealing materials can be found in Appendix A (Material Requirements) of these Standards.
3. The following properties shall be exhibited by the grout:
    a. Documented service of satisfactory performance in similar usage.
    b. Controllable reaction times and shrinkage through the use of chemicals supplied by the same manufacturer. The minimum set time shall be established so that adequate grout travel achieved.
    c. Chemical resistance to most organic solvents and to mild acids and alkali.
    d. The chemical shall be essentially non-toxic in a cured form.
    e. Sealing material shall not be rigid or brittle when subjected to dry atmosphere. The material shall be able to withstand freeze/thaw and moving load conditions.
4. Acrylate grouts may not be used.
5. Mixing and handling of chemical grout, which may be toxic under certain conditions shall be in accordance with the recommendations of the manufacturer and in such a manner to minimize hazard to personnel. It is the responsibility of the Contractor to provide appropriate protective measures to ensure that authorized personnel handle chemicals or gels in the proper manner. All equipment shall be used in accordance with the manufacturer's specifications. Only trained personnel thoroughly familiar with the handling of the grout material and additives shall perform the grouting operations.
6. Manholes to be grouted may be of brick, concrete, or fiberglass construction.
7. Manhole grouting shall not be performed until the repair of the manhole frame and grade rings or any other structural manhole repairs are complete.
8. The Contractor shall cut and trim all roots within the manhole.
9. The Contractor shall seal all unsealed lifting holes, unsealed step holes, or voids larger than approximately ½ inch in thickness.
10. All cracked or deteriorated material shall be removed from the area to be patched and replaced with a waterproof quick setting mortar in accordance with manufacturer's specifications.
11. The Contractor shall perform the Expanded Gasket Placement (EGP) technique to control in-flowing water in larger cracks, joints or pipe to manhole boots by soaking dry Oil Free Oakum (AV-219) with (AV-202) Multigrout and forcing the Oakum/Resin plug into opening until it sets. (See: Avanti EGP Technical Manual for details.)

12. The Contractor shall perform the EGP to seal intruding drop or lateral connections, slip line terminal seals, and open joints in RCP manholes.
13. The Contractor shall perform the EGP to seal between the corbel and grade rings, and between the manhole frame and grade rings.
14. Normal grouting operations shall be performed in accordance with manufacturer's recommendations.
15. Drilling and injecting grout shall be performed as follows:
    a. Injection holes shall be drilled through the manhole wall at locations as recommended by the manufacturer.
    b. Grout shall be injected through the holes under pressure with a suitable probe. Injection pressure shall not cause damage to the manhole structure or surrounding surface features.
    c. Grout shall be injected through the lowest holes first. The procedure shall be repeated until the manhole is externally sealed with grout.
    d. Grouting from the ground surface shall not be allowed.
    e. Grout travel shall be verified by observation of grout to defects or adjacent injection holes. Provide additional injection holes if necessary to ensure grout travel.
    f. Injection holes shall be cleaned with a drill and patched with a waterproof quick setting mortar for brick and concrete manholes.

MEASUREMENT AND PAYMENT

PAY ITEM	PAY UNIT
Manhole Chemical Grouting	Gallon

Payment for Chemical Grouting of manholes will be per gallon of chemical grout pumped through the manhole wall to seal the manhole. Payment includes all preparation, patching, sealing, injecting grout, and cleanup.

DETAILED SPECIFICATION
FOR
TRAFFIC CONTROL

DESCRIPTION

"Traffic Control, Minor" shall be used to perform traffic control on City Minors (per ACT51) and as otherwise necessary incidental to the work.

"Traffic Control, Major" shall be used to perform traffic control on City Majors, MDOT Trunklines, and Freeways (per ACT51).

Use of the "Traffic Control, Major" pay item shall be approved by the PSAA prior to implementation. A schedule and plan of the proposed traffic control measures used as part of the "Traffic Control, Major" pay item shall be submitted to and approved by the PSAA minimum one week prior to work.

The Contractor shall maintain vehicular and pedestrian traffic during the work by the use of traffic regulators, channelizing devices, and signs as necessary, as determined by the PSAA, and in accordance with MMUTCD, City Standards, and other regulatory requirements.

Necessary traffic control, ROW, and additional permits shall be obtained by the Contractor before beginning work within this Contract.

MEASUREMENT AND PAYMENT

PAY ITEM	PAY UNIT
Traffic Control, Minor	Day
Traffic Control, Major	Day

Payment for "Traffic Control, ___" includes all labor, material and equipment costs necessary for:

i. The furnishing and operating of miscellaneous signs, warning devices, traffic regulators, temporary concrete barriers, and cones as required;
ii. Installing, maintaining and removing additional signs furnished by the City;
iii. Furnishing and installing meter bags as directed by the PSAA;
iv. Coordinating with the City to have meter heads removed and reinstalled as directed by the PSAA;
v. Coordinating with the City on signal timing and phasing changes;
vi. Maintaining pedestrian traffic in accordance with the requirements of the ADA and City Code;
vii. Temporarily covering conflicting traffic controls with Engineer-approved covers;
viii. Temporarily covering conflicting existing signs as directed by the PSAA with
ix. approved sign covers; and,
x. Any and all other miscellaneous and/or incidental items that are necessary to properly and safely perform the work.

DETAILED SPECIFICATION
FOR
MOBILIZATION

DESCRIPTION

1. The work shall consist of the mobilization and demobilization of the Contractor's forces and equipment necessary for performing the work required under the contract.
2. This pay item shall be used per mobilization and demobilization for a given scope of work as provided by the PSAA and agreed upon by the Contractor.
3. Non-emergency mobilization shall be within 90 days of the PSAA assigning a given scope of work.
4. Emergency mobilization shall be within 30 days of the PSAA assigning a given scope of work.

MEASUREMENT AND PAYMENT

PAY ITEM	PAY UNIT
Mobilization, Non-Emergency	Each
Mobilization, Emergency	Each

“Mobilization, ___” shall include all associated costs for transportation of Contractor's personnel, equipment, and operating supplies to and from the site for a given scope of work as provided by the PSAA and agreed upon by the Contractor. Additional mobilization costs shall not be given if the Contractor demobilizes and re-mobilizes for a given scope of work.

ATTACHMENT B
GENERAL DECLARATIONS

City of Ann Arbor
Guy C. Larcom Municipal Building
Ann Arbor, Michigan 48107

Ladies and Gentlemen:

The undersigned, as Bidder, declares that this Bid is made in good faith, without fraud or collusion with any person or persons bidding on the same Contract; that this Bidder has carefully read and examined the bid documents, including City Nondiscrimination requirements and Declaration of Compliance Form, Living Wage requirements and Declaration of Compliance Form, Prevailing Wage requirements and Declaration of Compliance Form, Vendor Conflict of Interest Form, Notice of Pre-Bid Conference, General Information, Bid, Bid Forms, Contract, Bond Forms, General Conditions, Standard Specifications, Detailed Specifications, all Addenda, and the Plans (if applicable) and understands them. The Bidder declares that it conducted a full investigation at the site and of the work proposed and is fully informed as to the nature of the work and the conditions relating to the work's performance. The Bidder also declares that it has extensive experience in successfully completing projects similar to this one.

The Bidder acknowledges that it has not received or relied upon any representations or warrants of any nature whatsoever from the City of Ann Arbor, its agents or employees, and that this Bid is based solely upon the Bidder's own independent business judgment.

The undersigned proposes to perform all work shown on the plans or described in the bid documents, including any addenda issued, and to furnish all necessary machinery, tools, apparatus, and other means of construction to do all the work, furnish all the materials, and complete the work in strict accordance with all terms of the Contract of which this Bid is one part.

In accordance with these bid documents, and Addenda numbered _____, the undersigned, as Bidder, proposes to perform at the sites in and/or around Ann Arbor, Michigan, all the work included herein for the amounts set forth in the Bid Forms.

The Bidder declares that it has become fully familiar with the liquidated damage clauses for completion times and for compliance with City Code Chapter 112, understands and agrees that the liquidated damages are for the non-quantifiable aspects of non-compliance and do not cover actual damages that may be shown and agrees that if awarded the Contract, all liquidated damage clauses form part of the Contract.

The Bidder declares that it has become fully familiar with the provisions of Chapter 14, Section 1:320 (Prevailing wages) and Chapter 23 (Living Wage) of the Code of the City of Ann Arbor and that it understands and agrees to comply, to the extent applicable to employees providing services to the City under this Contract, with the wage and reporting requirements stated in the City Code provisions cited. Bidder certifies that the statements contained in the City Prevailing Wage and Living Wage Declaration of Compliance Forms are true and correct. Bidder further agrees that the cited provisions of Chapter 14 and Chapter 23 form a part of this Contract.

The Bidder declares that it has become familiar with the City Conflict of Interest Disclosure Form and certifies that the statement contained therein is true and correct.

The Bidder encloses a certified check or Bid Bond in the amount of 5% of the total of the Bid Price. The Bidder agrees both to contract for the work and to furnish the necessary Bonds and insurance documentation within 10 days after being notified of the acceptance of the Bid.

If this Bid is accepted by the City and the Bidder fails to contract and furnish the required Bonds and insurance documentation within 10 days after being notified of the acceptance of this Bid, then the Bidder shall be considered to have abandoned the Contract and the certified check or Bid Bond accompanying this Bid shall become due and payable to the City.

If the Bidder enters into the Contract in accordance with this Bid, or if this Bid is rejected, then the accompanying check or Bid Bond shall be returned to the Bidder.

In submitting this Bid, it is understood that the right is reserved by the City to accept any Bid, to reject any or all Bids, to waive irregularities and/or informalities in any Bid, and to make the award in any manner the City believes to be in its best interest.

SIGNED THIS _____ DAY OF _____, 202_.

_____	_____
Bidder's Name	Authorized Signature of Bidder
_____	_____
Official Address	(Print Name of Signer Above)
_____	_____
Telephone Number	Email Address for Award Notice

ATTACHMENT C
LEGAL STATUS OF BIDDER

(The bidder shall fill out the appropriate form and strike out the other three.)

Bidder declares that it is:

* A corporation organized and doing business under the laws of the State of _____, for whom _____, bearing the office title of_____, whose signature is affixed to this Bid, is authorized to execute contracts.

NOTE: If not incorporated in Michigan, please attach the corporation's Certificate of Authority

• A limited liability company doing business under the laws of the State of _____, whom _____ bearing the title of _____ whose signature is affixed to this proposal, is authorized to execute contract on behalf of the LLC.

* A partnership, organized under the laws of the state of _____ and filed in the county of _____, whose members are (list all members and the street and mailing address of each) (attach separate sheet if necessary):

_____

_____

_____

_____

_____

* An individual, whose signature with address, is affixed to this Bid: __ _____
(initial here)

Authorized Official

_____ **Date** _____**,** 202_

(Print) Name _____ Title _____

Company:

_____

Address:

_____

Contact Phone ( ) _____ Fax ( ) _____

Email _____

ATTACHMENT D
PREVAILING WAGE DECLARATION OF COMPLIANCE

The "wage and employment requirements" of Section 1:320 of Chapter 14 of Title I of the Ann Arbor City Code mandates that the city not enter any contract, understanding or other arrangement for a public improvement for or on behalf of the city unless the contract provides that all craftsmen, mechanics and laborers employed directly on the site in connection with said improvements, including said employees of subcontractors, shall receive the prevailing wage for the corresponding classes of craftsmen, mechanics and laborers, as determined by statistics for the Ann Arbor area compiled by the United States Department of Labor. Where the contract and the Ann Arbor City Code are silent as to definitions of terms required in determining contract compliance with regard to prevailing wages, the definitions provided in the Davis-Bacon Act as amended (40 U.S.C. 278-a to 276-a-7) for the terms shall be used. Further, to the extent that any employees of the contractor providing services under this contract are not part of the class of craftsmen, mechanics and laborers who receive a prevailing wage in conformance with section 1:320 of Chapter 14 of Title I of the Code of the City of Ann Arbor, employees shall be paid a prescribed minimum level of compensation (i.e. Living Wage) for the time those employees perform work on the contract in conformance with section 1:815 of Chapter 23 of Title I of the Code of the City of Ann Arbor.

At the request of the city, any contractor or subcontractor shall provide satisfactory proof of compliance with this provision.

The Contractor agrees:

(a) To pay each of its employees whose wage level is required to comply with federal, state or local prevailing wage law, for work covered or funded by this contract with the City,

(b) To require each subcontractor performing work covered or funded by this contract with the City to pay each of its employees the applicable prescribed wage level under the conditions stated in subsection (a) or (b) above.

(c) To provide to the City payroll records or other documentation within ten (10) business days from the receipt of a request by the City.

(d) To permit access to work sites to City representatives for the purposes of monitoring compliance, and investigating complaints or non-compliance.

The undersigned states that he/she has the requisite authority to act on behalf of his/her employer in these matters and has offered to provide the services in accordance with the terms of the wage and employment provisions of the Chapter 14 of the Ann Arbor City Code. The undersigned certifies that he/she has read and is familiar with the terms of Section 1:320 of Chapter 14 of the Ann Arbor City Code and by executing this Declaration of Compliance obligates his/her employer and any subcontractor employed by it to perform work on the contract to the wage and employment requirements stated herein. The undersigned further acknowledges and agrees that if it is found to be in violation of the wage and employment requirements of Section 1:320 of the Chapter 14 of the Ann Arbor City Code it shall has be deemed a material breach of the terms of the contract and grounds for termination of same by the City.

_____
Company Name

_____
Signature of Authorized Representative Date

_____
Print Name and Title

_____
Address, City, State, Zip

_____
Phone/Email address

Questions about this form? Contact Procurement Office City of Ann Arbor Phone: 734/794-6500

ATTACHMENT E
LIVING WAGE ORDINANCE DECLARATION OF COMPLIANCE

The Ann Arbor Living Wage Ordinance (Section 1:811-1:821 of Chapter 23 of Title I of the Code) requires that an employer who is (a) a contractor providing services to or for the City for a value greater than $10,000 for any twelve-month contract term, or (b) a recipient of federal, state, or local grant funding administered by the City for a value greater than $10,000, or (c) a recipient of financial assistance awarded by the City for a value greater than $10,000, shall pay its employees a prescribed minimum level of compensation (i.e., Living Wage) for the time those employees perform work on the contract or in connection with the grant or financial assistance. The Living Wage must be paid to these employees for the length of the contract/program.

Companies employing fewer than 5 persons and non-profits employing fewer than 10 persons are exempt from compliance with the Living Wage Ordinance. If this exemption applies to your company/non-profit agency please check here [___] *No. of employees__*

The Contractor or Grantee agrees:

(a) To pay each of its employees whose wage level is not required to comply with federal, state or local prevailing wage law, for work covered or funded by a contract with or grant from the City, no less than the Living Wage. The current Living Wage is defined as $16.43/hour for those employers that provide employee health care (as defined in the Ordinance at Section 1:815 Sec. 1 (a)), or no less than $18.32/hour for those employers that do not provide health care. The Contractor or Grantor understands that the Living Wage is adjusted and established annually on April 30 in accordance with the Ordinance and covered employers shall be required to pay the adjusted amount thereafter to be in compliance with Section 1:815(3).

Check the applicable box below which applies to your workforce

[___] Employees who are assigned to any covered City contract/grant will be paid at or above the applicable living wage without health benefits

[___] Employees who are assigned to any covered City contract/grant will be paid at or above the applicable living wage with health benefits

(b) To post a notice approved by the City regarding the applicability of the Living Wage Ordinance in every work place or other location in which employees or other persons contracting for employment are working.

(c) To provide to the City payroll records or other documentation within ten (10) business days from the receipt of a request by the City.

(d) To permit access to work sites to City representatives for the purposes of monitoring compliance, and investigating complaints or non-compliance.

(e) To take no action that would reduce the compensation, wages, fringe benefits, or leave available to any employee covered by the Living Wage Ordinance or any person contracted for employment and covered by the Living Wage Ordinance in order to pay the living wage required by the Living Wage Ordinance.

The undersigned states that he/she has the requisite authority to act on behalf of his/her employer in these matters and has offered to provide the services or agrees to accept financial assistance in accordance with the terms of the Living Wage Ordinance. The undersigned certifies that he/she has read and is familiar with the terms of the Living Wage Ordinance, obligates the Employer/Grantee to those terms and acknowledges that if his/her employer is found to be in violation of Ordinance it may be subject to civil penalties and termination of the awarded contract or grant of financial assistance.

_____	_____
Company Name	Street Address
_____ _____	_____
Signature of Authorized Representative Date	City, State, Zip
_____	_____
Print Name and Title	Phone/Email address

Attachment F

CITY OF ANN ARBOR
LIVING WAGE ORDINANCE

RATE EFFECTIVE APRIL 30, 2024 - ENDING APRIL 29, 2025

$16.43 per hour
If the employer provides health care benefits*

$18.32 per hour
If the employer does **NOT** provide health care benefits*

Employers providing services to or for the City of Ann Arbor or recipients of grants or financial assistance from the City of Ann Arbor for a value of more than $10,000 in a twelve-month period of time must pay those employees performing work on a City of Ann Arbor contract or grant, the above living wage.

ENFORCEMENT

The City of Ann Arbor may recover back wages either administratively or through court action for the employees that have been underpaid in violation of the law. Persons denied payment of the living wage have the right to bring a civil action for damages in addition to any action taken by the City.

Violation of this Ordinance is punishable by fines of not more than $500/violation plus costs, with each day being considered a separate violation. Additionally, the City of Ann Arbor has the right to modify, terminate, cancel or suspend a contract in the event of a violation of the Ordinance.

* Health Care benefits include those paid for by the employer or making an employer contribution toward the purchase of health care. The employee contribution must not exceed $.50 an hour for an average work week; and the employer cost or contribution must equal no less than $1/hr for the average work week.

The Law Requires Employers to Display This Poster Where Employees Can Readily See It.

For Additional Information or to File a Complaint contact
Colin Spencer at 734/794-6500 or cspencer@a2gov.org

Revised 2/1/2024

ATTACHEMENT G

Vendor Conflict of Interest Disclosure Form

All vendors interested in conducting business with the City of Ann Arbor must complete and return the Vendor Conflict of Interest Disclosure Form in order to be eligible to be awarded a contract. Please note that all vendors are subject to comply with the City of Ann Arbor's conflict of interest policies as stated within the certification section below.

If a vendor has a relationship with a City of Ann Arbor official or employee, an immediate family member of a City of Ann Arbor official or employee, the vendor shall disclose the information required below.

1. No City official or employee or City employee's immediate family member has an ownership interest in vendor's company or is deriving personal financial gain from this contract.
2. No retired or separated City official or employee who has been retired or separated from the City for less than one (1) year has an ownership interest in vendor's Company.
3. No City employee is contemporaneously employed or prospectively to be employed with the vendor.
4. Vendor hereby declares it has not and will not provide gifts or hospitality of any dollar value or any other gratuities to any City employee or elected official to obtain or maintain a contract.
5. Please note any exceptions below:

Conflict of Interest Disclosure*	
Name of City of Ann Arbor employees, elected officials or immediate family members with whom there may be a potential conflict of interest.	( ) Relationship to employee _____ ( ) Interest in vendor's company ( ) Other (please describe in box below)

*Disclosing a potential conflict of interest does not disqualify vendors. In the event vendors do not disclose potential conflicts of interest and they are detected by the City, vendor will be exempt from doing business with the City.

I certify that this Conflict of Interest Disclosure has been examined by me and that its contents are true and correct to my knowledge and belief and I have the authority to so certify on behalf of the Vendor by my signature below:		
Vendor Name	**Vendor Phone Number**	
Signature of Vendor Authorized Representative	**Date**	**Printed Name of Vendor Authorized Representative**

Questions about this form? Contact Procurement Office City of Ann Arbor Phone: 734/794-6500, procurement@a2gov.org

ATTACHMENT H

DECLARATION OF COMPLIANCE

Non-Discrimination Ordinance

The "non discrimination by city contractors" provision of the City of Ann Arbor Non-Discrimination Ordinance (Ann Arbor City Code Chapter 112, Section 9:158) requires all contractors proposing to do business with the City to treat employees in a manner which provides equal employment opportunity and does not discriminate against any of their employees, any City employee working with them, or any applicant for employment on the basis of actual or perceived age, arrest record, color, disability, educational association, familial status, family responsibilities, gender expression, gender identity, genetic information, height, HIV status, marital status, national origin, political beliefs, race, religion, sex, sexual orientation, source of income, veteran status, victim of domestic violence or stalking, or weight. It also requires that the contractors include a similar provision in all subcontracts that they execute for City work or programs.

In addition the City Non-Discrimination Ordinance requires that all contractors proposing to do business with the City of Ann Arbor must satisfy the contract compliance administrative policy adopted by the City Administrator. A copy of that policy may be obtained from the Purchasing Manager

The Contractor agrees:

(a) To comply with the terms of the City of Ann Arbor's Non-Discrimination Ordinance and contract compliance administrative policy, including but not limited to an acceptable affirmative action program if applicable.

(b) To post the City of Ann Arbor's Non-Discrimination Ordinance Notice in every work place or other location in which employees or other persons are contracted to provide services under a contract with the City.

(c) To provide documentation within the specified time frame in connection with any workforce verification, compliance review or complaint investigation.

(d) To permit access to employees and work sites to City representatives for the purposes of monitoring compliance, or investigating complaints of non-compliance.

The undersigned states that he/she has the requisite authority to act on behalf of his/her employer in these matters and has offered to provide the services in accordance with the terms of the Ann Arbor Non-Discrimination Ordinance. The undersigned certifies that he/she has read and is familiar with the terms of the Non-Discrimination Ordinance, obligates the Contractor to those terms and acknowledges that if his/her employer is found to be in violation of Ordinance it may be subject to civil penalties and termination of the awarded contract.

_____
Company Name

_____
Signature of Authorized Representative Date

_____
Print Name and Title

_____
Address, City, State, Zip

_____
Phone/Email Address

Questions about the Notice or the City Administrative Policy, Please contact:
Procurement Office of the City of Ann Arbor
(734) 794-6500

ATTACHMENT I

CITY OF ANN ARBOR NON-DISCRIMINATION ORDINANCE

Relevant provisions of Chapter 112, Nondiscrimination, of the Ann Arbor City Code are included below. You can review the entire ordinance at www.a2gov.org/humanrights.

Intent: It is the intent of the city that no individual be denied equal protection of the laws; nor shall any individual be denied the enjoyment of his or her civil or political rights or be discriminated against because of actual or perceived age, arrest record, color, disability, educational association, familial status, family responsibilities, gender expression, gender identity, genetic information, height, HIV status, marital status, national origin, political beliefs, race, religion, sex, sexual orientation, source of income, veteran status, victim of domestic violence or stalking, or weight.

Discriminatory Employment Practices: No person shall discriminate in the hire, employment, compensation, work classifications, conditions or terms, promotion or demotion, or termination of employment of any individual. No person shall discriminate in limiting membership, conditions of membership or termination of membership in any labor union or apprenticeship program.

Discriminatory Effects: No person shall adopt, enforce or employ any policy or requirement which has the effect of creating unequal opportunities according to actual or perceived age, arrest record, color, disability, educational association, familial status, family responsibilities, gender expression, gender identity, genetic information, height, HIV status, marital status, national origin, political beliefs, race, religion, sex, sexual orientation, source of income, veteran status, victim of domestic violence or stalking, or weight for an individual to obtain housing, employment or public accommodation, except for a bona fide business necessity. Such a necessity does not arise due to a mere inconvenience or because of suspected objection to such a person by neighbors, customers or other persons.

Nondiscrimination by City Contractors: All contractors proposing to do business with the City of Ann Arbor shall satisfy the contract compliance administrative policy adopted by the City Administrator in accordance with the guidelines of this section. All city contractors shall ensure that applicants are employed and that employees are treated during employment in a manner which provides equal employment opportunity and tends to eliminate inequality based upon any classification protected by this chapter. All contractors shall agree not to discriminate against an employee or applicant for employment with respect to hire, tenure, terms, conditions, or privileges of employment, or a matter directly or indirectly related to employment, because of any applicable protected classification. All contractors shall be required to post a copy of Ann Arbor's Non-Discrimination Ordinance at all work locations where its employees provide services under a contract with the city.

Complaint Procedure: If any individual believes there has been a violation of this chapter, he/she may file a complaint with the City's Human Rights Commission. The complaint must be filed within 180 calendar days from the date of the individual's knowledge of the allegedly discriminatory action or 180 calendar days from the date when the individual should have known of the allegedly discriminatory action. A complaint that is not filed within this timeframe cannot be considered by the Human Rights Commission. To file a complaint, first complete the complaint form, which is available at www.a2gov.org/humanrights. Then submit it to the Human Rights Commission by e-mail (hrc@a2gov.org), by mail (Ann Arbor Human Rights Commission, PO Box 8647, Ann Arbor, MI 48107), or in person (City Clerk's Office). For further information, please call the commission at 734-794-6141 or e-mail the commission at hrc@a2gov.org.

Private Actions For Damages or Injunctive Relief: To the extent allowed by law, an individual who is the victim of discriminatory action in violation of this chapter may bring a civil action for appropriate injunctive relief or damages or both against the person(s) who acted in violation of this chapter.

THIS IS AN OFFICIAL GOVERNMENT NOTICE AND
MUST BE DISPLAYED WHERE EMPLOYEES CAN READILY SEE IT.

Michigan Department
Of Transportation
CP-347 (04/10)

MICHIGAN DEPARTMENT OF TRANSPORTATION

CERTIFIED PAYROLL

COMPLETION OF CERTIFIED PAYROLL FORM FULFILLS THE MINIMUM MDOT PREVAILING WAGE REQUIREMENTS

(1) NAME OF CONTRACTOR / SUBCONTRACTOR (CIRCLE ONE) (2) ADDRESS

(3) PAYROLL NO. (4) FOR WEEK ENDING (5) PROJECT AND LOCATION (6) CONTRACT ID

(a) EMPLOYEE INFORMATION	(b) WORK CLASSIFICATION	(c) Hour Type	(d) DAY AND DATE — HOURS WORKED ON PROJECT	(e) TOTAL HOURS ON PROJECT	(f) PROJECT RATE OF PAY	(g) PROJECT RATE OF FRINGE PAY	(h) GROSS PROJECT EARNED / GROSS WEEKLY EARNED	(i) TOTAL WEEKLY HOURS WORKED ALL JOBS	(j) DEDUCTIONS: FICA	FEDERAL	STATE		OTHER	TOTAL DEDUCT	(k) TOTAL WEEKLY WAGES PAID FOR ALL JOBS
NAME:				0			$0.00							$0.00	$0.00
ETH/GEN: ID #:	GROUP/CLASS #:	S		0											
NAME:				0			$0.00							$0.00	$0.00
ETH/GEN: ID #:	GROUP/CLASS #:	S		0											
NAME:				0			$0.00							$0.00	$0.00
ETH/GEN: ID #:	GROUP/CLASS #:	S		0											
NAME:				0			$0.00							$0.00	$0.00
ETH/GEN: ID #:	GROUP/CLASS #:	S		0											
NAME:				0			$0.00							$0.00	$0.00
ETH/GEN: ID #:	GROUP/CLASS #:	S		0											
NAME:				0			$0.00							$0.00	$0.00
ETH/GEN: ID #:	GROUP/CLASS #:	S		0											
NAME:				0			$0.00							$0.00	$0.00
ETH/GEN: ID #:	GROUP/CLASS #:	S		0											
NAME:				0			$0.00							$0.00	$0.00
ETH/GEN: ID #:	GROUP/CLASS #:	S		0											
NAME:				0			$0.00							$0.00	$0.00
ETH/GEN: ID #:	GROUP/CLASS #:	S		0											

Date _____

I, _____ _____
(Name of Signatory Party) (Title)

do hereby state:

(1) That I pay or supervise the payment of the persons employed by

_____ on the
(Contractor or Subcontractor)

_____; that during the payroll period commencing on the
(Building or Work)

_____ day of _____, _____, and ending the _____ day of _____, _____,

all persons employed on said project have been paid the full weekly wages earned, that no rebates have been or will be made either directly or indirectly to or on behalf of said

_____ from the full
(Contractor or Subcontractor)

weekly wages earned by any person and that no deductions have been made either directly or indirectly from the full wages earned by any person, other than permissible deductions as defined in Regulations, Part 3 (29 C.F.R. Subtitle A), issued by the Secretary of Labor under the Copeland Act, as amended (48 Stat. 948, 63 Start. 108, 72 Stat. 967; 76 Stat. 357; 40 U.S.C. § 3145), and described below:

_____

_____

_____

_____

(2) That any payrolls otherwise under this contract required to be submitted for the above period are correct and complete; that the wage rates for laborers or mechanics contained therein are not less than the applicable wage rates contained in any wage determination incorporated into the contract; that the classifications set forth therein for each laborer or mechanic conform with the work he performed.

(3) That any apprentices employed in the above period are duly registered in a bona fide apprenticeship program registered with a State apprenticeship agency recognized by the Bureau of Apprenticeship and Training, United States Department of Labor, or if no such recognized agency exists in a State, are registered with the Bureau of Apprenticeship and Training, United States Department of Labor.

(4) That:

(a) WHERE FRINGE BENEFITS ARE PAID TO APPROVED PLANS, FUNDS, OR PROGRAMS

☐ – in addition to the basic hourly wage rates paid to each laborer or mechanic listed in the above referenced payroll, payments of fringe benefits as listed in the contract have been or will be made to appropriate programs for the benefit of such employees, except as noted in section 4(c) below.

(b) WHERE FRINGE BENEFITS ARE PAID IN CASH

☐ – Each laborer or mechanic listed in the above referenced payroll has been paid, as indicated on the payroll, an amount not less than the sum of the applicable basic hourly wage rate plus the amount of the required fringe benefits as listed in the contract, except as noted in section 4(c) below.

(c) EXCEPTIONS

EXCEPTION (CRAFT)	EXPLANATION

REMARKS:

NAME AND TITLE	SIGNATURE

THE WILLFUL FALSIFICATION OF ANY OF THE ABOVE STATEMENTS MAY SUBJECT THE CONTRACTOR OR SUBCONTRACTOR TO CIVIL OR CRIMINAL PROSECUTION. SEE SECTION 1001 OF TITLE 18 AND SECTION 231 OF TITLE 31 OF THE UNITED STATES CODE.