CITY OF NEWARK
DELAWARE

_____
Bid Security

_____
Vendor

CITY OF NEWARK

Delaware

CONTRACT NO. 23-15

SANITARY SEWER IMPROVEMENTS 2023

NOTICE

Do not disassemble. Return intact with
properly completed forms or bid may be rejected.

CITY OF NEWARK
Delaware

CONTRACT NO. 23-15

SANITARY SEWER IMPROVEMENTS 2023

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CITY OF NEWARK
Delaware

CONTRACT NO. 23-15

SANITARY SEWER IMPROVEMENTS 2023

NOTICE OF LETTING

Sealed bids for Contract No. 23-15 SANITARY SEWER IMPROVEMENTS 2023 will be received by the City of Newark Purchasing Division (220 South Main Street; Newark, Delaware 19711) until 2:00 p.m., prevailing time, on Tuesday, August 29, 2023, and will be publicly opened and recorded in the Council Chamber shortly thereafter.

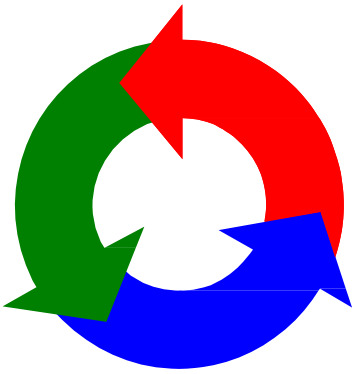
Alternatively, bids may also be emailed in PDF form to the City Purchasing Division at contracts@newark.de.us by the deadline noted above and will be opened immediately after the closing date and time and will be publicly recorded in the Council Chamber shortly thereafter.

A non-mandatory pre-bid meeting will be held on Tuesday, August 8, 2023, at 10:00 a.m. at the McKees Solar Park, located at 100 McKees Lane, Newark, DE 19711. Funding for this project is through the State of Delaware Clean Water State Revolving Fund and attention of the bidder is particularly called to the requirements of this program. The work will be subject to the Equal Opportunity requirements of the program. All contractors and subcontractors performing work covered by this contract must pay their workers the higher of the State of Delaware and Davis-Bacon prevailing wages and fringe benefits determinations for the classifications. A bid bond equal to not less than 10% of the bid price must accompany the bid.

All questions/requests for information regarding this contract (bid process, drawings, and technical specifications, etc.) must be submitted via email to contracts@newark.de.us by 5:00 p.m. on Wednesday, August 23, 2023, to allow staff sufficient time to develop answers to questions deemed appropriate. Please submit all questions/requests for information in bulk (e.g., in a Word document attachment to an email) to limit the total number of emails received.

The contract documents for Contract No. 23-15 may be obtained from the City's web page at www.newarkde.gov/bids.

DELAWARE WATER POLLUTION CONTROL REVOLVING LOAN FUND



PROGRAM REQUIREMENTS

Department of Natural Resources and Environmental Control
Office of the Secretary
Environmental Finance
89 Kings Highway
Dover, DE 19901

Updated: December 2021

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SUBPART A
Prevailing Wage Regulations

A. Prevailing Wages Requirements

a. The Project or Program to which the work covered by this contract pertains to is being assisted by the State of Delaware and the US Environmental Protection Agency (EPA) therefore the prevailing wage provisions of the Clean Water State Revolving Loan Fund (CWSRF) Program are included in this Contract.

b. Loan recipients or engineering representatives are to verify with the State of Delaware Department of Labor (DE DOL) and the United States Department of Labor (US DOL) the appropriate wage determination before they go out for competitive bidding.

c. All contractors and subcontractors performing construction work covered by this contract must pay their laborers and mechanics the higher of the State of Delaware and Davis Bacon prevailing wages and fringe benefits determinations for the classifications.

d. All contractors and subcontractors performing construction work covered by this contract must conform to the State of Delaware and Davis Bacon and Related Acts (DRBA) Provisions and Procedures.

B. Delaware Prevailing Wages

a. Delaware Prevailing Wage Regulations, Worker Classifications, Current Prevailing Wage Rates and forms may be found at: Prevailing Wage - Delaware Department of Labor

or by contacting:

State of Delaware
Department of Labor
Division of Industrial Affairs
Office of Construction Industry Enforcement
4425 North Market Street, 3rd Floor
Wilmington, DE 19802
Telephone No. (302) 761-8200

b. All Contractors and subcontractors must submit to Delaware DOL (at the above address) and to the loan recipient sworn certified DE DOL payroll forms on a weekly basis.

C. Davis Bacon Act Prevailing Wages

a. Davis Bacon Prevailing Wages regulations, current prevailing wage rates, forms and other information may be found at: SAM.gov | Home

b. In compliance with the Davis Bacon and Related Acts all contractors and subcontractors must submit to the loan recipient sworn certified payroll forms on a weekly basis.

SUBPART B:
Equal Opportunity Clause (41 CFR 60-1.4)

A. Executive Order 11246 (Applicable to Contracts/subcontracts above $10,000).

1. During the performance of this contract the contractor and all subcontractors agree as follows:

   a. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin, such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer, recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection of training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

   b. The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive considerations for employment without regard to race, color, religion, sex, or national origin.

   c. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

   d. The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

   e. The contractor will furnish all information and reports required by the Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

   f. In the event of the contractors' noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be cancelled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

g. The contractor will include the portion of the sentence immediately preceding Paragraph (1) and the provisions of Paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: *Provided, however,* that in the event a contractor becomes involved in, or is threatened with litigation with a subcontractor or vendor as a result of such direction by the administering agency the contractor may request the United States to enter into such litigation to protect the interests of the United States.

SUBPART C:
Certification of Non-segregated Facilities (41 CFR 60-1.8)

Bidders and offerors are cautioned as follows: By signing this bid or offer, the bidder or offerors will be deemed to have signed and agreed to the provisions of the "Certification of Nonsegregated Facilities" in this solicitation. The certification provides that the bidder or offeror does not maintain or provide for his employees facilities which are segregated on a basis of race, creed, color, or national origin, whether such facilities are segregated by directive or on a de facto basis. The certification also provides that he will not maintain such segregated facilities.

SUBPART D

Disadvantaged Business Enterprise Regulations for Loan Recipients, Prime Contractors and Subcontractors (CFR Title 40, Part 33)

A. Introduction

EPA's Disadvantaged Business Enterprise (DBE) rule applies to procurement actions funded in part by EPA assistance agreements awarded after May 27, 2008. Loan recipients, their prime contractors and DBE subcontractors are responsible for complying with these regulations during procurement of construction contracts, equipment purchase orders, service agreements (engineering, inspection, legal, etc.) and supplies. A list of Fair Share Objectives, the Six Good Faith Efforts, responsibilities for loan recipients, prime contractors and DBE subcontractors and appendices A, B, C and D are as follows:

B. Fair Share Objectives

The DBE fair share objectives for the loan recipients and prime contractors of the Delaware State Revolving Fund Program (SRF) which includes Minority Business Enterprises (MBEs) and Women's Business Enterprises (WBEs) is as follows:

		MBE - %	WBE - %
1.	Construction	4.41	4.04
2.	Goods/Equipment Combined	2.29	5.47
3.	Services	0.62	0.92
4.	Supplies	2.03	2.18

The above goals are not a quota and apply to DBE participation only.

C. Six Good Faith Efforts:

1. Ensure DBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities; including placing qualified DBEs on solicitation lists and soliciting them whenever they are potential sources.

2. Make information on forthcoming opportunities available to DBEs. Adjust time frames and delivery schedules to encourage participation by DBEs. Advertise for bids and proposals for at least 30 calendar days before bid closing date, unless circumstances require a shorter advertising period.

3. Divide total requirements of the project, when economically feasible, to permit maximum DBE participation.

4. Encourage contracting with a consortium of DBE's when a contract is too large for one of these firms to handle individually.

5. To obtain lists of DBE firms, use the services of the Delaware Department of Transportation (DelDOT), the United States Small Business Administration (SBA), and the Minority Business Development Agency (MDBA) of the U.S. Department of Commerce.

6. Require the prime contractor to follow steps 1 through 5, if prime contractor will be sub-contracting parts of the contract work.

D. **Loan Recipient's Responsibilities**

1. Adopt the fair share objectives of the State of Delaware revolving loan fund (SRF) or conduct an Availability Analysis of local DBE resources and negotiate fair share objectives with EPA Region III Office of Policy and Management. Loan recipients who receive a loan of $250,000 or less are exempt from adopting fair share objectives. This exemption from adopting fair share objectives does NOT exempt a loan recipient from the other DBE responsibilities.

2. Include a copy of Appendix A from the DBE regulations in each contract with prime contractor (for construction, engineering, equipment purchases, etc) which is fully or partially funded with a SRF loan subjective to DBE requirements.

3. Apply the six good faith efforts during procurement of construction, equipment, services, and supplies in each contract which is fully or partially funded with a SRF loan subjective to DBE requirements.

4. Require the prime contractor to complete all applicable items on the lists of Prime Contractor's Pre-award and Post-Award Responsibilities under section E of this subpart. In addition, the request for bids/proposal should define which items need to be included in the bid opening envelope and if necessary, a time frame for submitting additional forms to complete the bid package. State procurement laws and policies may define the bidding requirements that need to be followed by the recipient.

5. Report semiannually DBE participation achievements to the State of Delaware SRF using EPA form 5700-52A, even if the reports are negative reports. Reports are due no more than 30 days after March 31 and September 30. Report must be submitted until the final loan payment is made.

6. Maintain records documenting compliance achieved with the requirements of the DBE regulations, including documentation of the SRF loan recipient and its prime contractor's good faith efforts. Documents to be maintained include solicitation lists, evidence of contacts with DBEs (copies of letters, telephone memos, e-mails), explanations of decisions, EPA forms 6100-3 and EPA 6100-4, bidders list for designated SRF projects, copy of advertisements and copies of EPA forms 5700-52A.

7. Maintain a list of all firms (not just DBEs) that bid or provided a quote on prime contracts and subcontracts. The list must include:
   (a) Entity's name and point of contact;
   (b) Mailing address, telephone number, e-mail address;
   (c) The procurement on which the entity bid or quoted and when the bid or quote was provided:
   (d) Entity's status as a DBE or non-DBE

The list must be maintained until the end of the project period (e.g., construction period or as long as receiving funds from the SRF).

E. **Prime Contractor Pre-Award Responsibilities**

1. Apply the six good faith efforts, if the prime contractor awards subcontracts.

2. Continue to apply the six good faith efforts even if the prime contractor has achieved the fair share objectives.

3. Provide EPA form number 6100-2 *–DBE Program Subcontractor Participation Form* and EPA form number 6100-3 *–DBE Program Subcontractor Performance Form* to each DBE subcontractor selected. These forms are included in Appendix D of this subpart or may be downloaded from EPA's Office of Small Business Programs website: http://www.epa.gov/osbp/grants.htm. EPA form number 6100-3 must be completed by each selected DBE subcontractor and submitted back to the prime contractor so the form can be included in the bid package.

4. Complete EPA form number 6100-4 - DBE *Program Subcontractor Utilization Form*. This form is also included in Appendix D of this subpart or may be downloaded from EPA's Office of Small Business Programs website: http://www.epa.gov/osbp/grants.htm. EPA form number 6100-4 must be completed by the prime contractor and included in the bid package.

5. Submit EPA form 6100-3 and 6100-4 to SRF loan recipient with bid package or proposal.

F. **Prime Contractor Post-Award Responsibilities**

1. Pay subcontractors for satisfactory performance no more than 30 days from the prime contractor's receipt of payment from the SRF loan recipient.

2. Notify the SRF loan recipient in writing prior to termination for convenience of a DBE subcontractor.

3. Employ the six good faith efforts if soliciting a replacement subcontractor after a DBE subcontractor fails to complete work under the subcontract for any reason.

4. Semiannually (on March 31 and September 30) inform the SRF loan recipient of DBE participation achieved for the required reporting.

5. Maintain records documenting compliance with DBE regulations, including documentation of the contractors good faith efforts

G. **DBE Subcontractor's Responsibilities**

1. Obtain certification as a DBE. Self-certification is NOT acceptable for EPAs DBE program. DBE firms may be certified by the Small Business Administration (SBA), the State of Delaware Department of Transportation (DelDOT), or by a State, locality or independent private organization provided their applicable criteria match SBA applicable Business Development Program regulations.

2. May submit EPA form 6100-2-*DBE Subcontractor Participation Form* to Ms. Cynthia Burrows, EPA region III DBE Coordinator. This form gives a DBE an opportunity to describe the work they received from the prime contractor, how they were paid and any other concerns they may have.

3. Must complete EPA form 6100-3-*DBE Program Subcontractor Performance Form*, and submit it to the prime contractor soliciting services from the subcontractor.

APPENDIX A:

DBE Rule Term and Condition

The following term and condition must be included in each procurement contract signed by an EPA loan recipient and their contractors:

The contractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 40 CFR part 33 in the award and administration of contracts awarded under EPA financial assistance agreements. Failure by the contractor to carry out these requirements is a material breach of this contract which may result in termination of this contract or other legally available remedies.

Contractor: _____

Authorized Representative: _____

Date: _____

APPENDIX B

Examples of Good Faith Efforts

A. Loan Recipient

1. **Effort 1**: Awareness covers a variety of activities, including direct solicitation through mailings, phone calls or e-mails, advertising through publications (newspapers, journals or Dodge reports) and/or listing on websites. Loan recipients should maintain the solicitation list and a narrative statement which explains how the contacts were selected as part of their DBE documentation.

2. **Effort 2**: Soliciting (advertising) should include a minimum 30-calender days advertising period. A publisher's affidavit is typically used to document the 30-day advertising period. If the recipient deviates from this minimum, they should document the reasons for a shorter solicitation period.

3. **Effort 3:** Dividing the total project into smaller tasks is an option that needs to be considered on a project by project basis. A $100 million waste water treatment plant project may have no economic advantage if it is broken down into smaller contracts whereas a $10 million sewer collection system project may easily be broken down into several contracts. Dividing a project based on contractors discipline such as electrical HVAC (Heating, Ventilation and Air Conditioning) would be a measure of compliance with this effort.

4. **Effort 4**: Encouraging contracting with DBE consortium could be as simple as stating this option in the bid advertisement (newspaper notice), solicitation letters to DBEs, and/or in the instruction to bidders section of the specifications.

5. **Effort 5**: Contacting the State of Delaware DOT (DelDOT) or any State of Delaware Certifying Office for a list of certified DBE firms would be appropriate.

6. **Effort 6**: This part may be complied with by incorporating the SPECIAL NOTICE – Appendix C into the bidding documents.

B. Prime Contractors, if Subcontracting

1. **Effort 1**: The prime contract will place DBE's on the solicitation list. A prime contractor may have a limited amount of time to solicit subcontractors because of the 30-day advertisement period for the prime contract. The new regulations require the prime contractor to submit EPA forms 6100-3 and 6100-4 with the bid package. These forms will be part of the contractor's Good Faith Effort documentation.

2. **Effort 2**: The prime contractor will determine the time frames and delivery schedules for the contract. The prime contractor may have less than 30-days to solicit subcontractors. Depending upon the type of work being subcontracted, the time frame and delivery schedules can determine the availability of DBEs.

3. **Effort 3**: The prime contractor has to determine if the total requirements can be divided to allow smaller DBE firms to compete for the work.

4. **Effort 4**: Encouraging contracting with a consortium of DBEs when a subcontract is too large for one DBE firm to handle.

5. **Effort 5**: Prime contractors should be in contact with the State of Delaware DOT (DelDOT), Small Business Administration (SBA) and other Certifying Offices to develop their solicitation lists.

6. **Effort 6**: Not applicable to prime contractors.

APPENDIX C:

SPECIAL NOTICE: Insert into the Instructions for Bidders

A. This is to advise bidders of the requirements of this program regarding the "Good Faith Efforts" necessary to be deemed a responsive and responsible bidder. The Federal Register Part 40 CFR 33.301 requires these Good Faith Efforts in procurement actions to assure that Disadvantaged Business Enterprises (DBE) are made aware of procurement opportunities in construction, equipment, services and supplies under EPA financial assistant agreements.

1. Ensure DBE's are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities by placing qualified DBE's on solicitation lists whenever they are potential sources.

2. Establish delivery schedules, where the requirement permits to encourage participation by DBE's. The loan recipient should allow a 30-day minimum advertising period for bidding.

3. Dividing total requirements, when economically feasible, into small tasks or quantities, to permit maximum participation of DBE's.

4. Encourage contracting with a consortium of DBE's when a contract is too large for one of these firms to handle individually.

5. Using the services and of the Delaware Department of Transportation (DelDOT), the United States Small Business Administration (SBA), and the Minority Business Development Agency (MDBA) of the U.S. Department of Commerce.

6. Require the prime contractor, if subcontracts are to be let, to take steps 1-5.

APPENDIX D:
EPA DBE FORMS

A. DBE Subcontractor Participation Form – **EPA FORM 6100-2**

B. DBE Subcontractor Performance Form- **EPA FORM 6100-3**

C. DBE Subcontractor Utilization Form- **EPA FORM 6100-4**

SUBPART E

Civil Rights Act of 1964

The contractor and any subcontractors shall not, on the grounds of race, color, or national origin, or sex, exclude from participation in, deny the benefits of, or subject to discrimination any person under any program or activity receiving Federal financial assistance.

SUBPART F
Section 13 of PL 92-500; Under the Federal Water Pollution Control Act; Rehabilitation Act of 1973; PL 93-112; and Age Discrimination Act of 1975

The contractor and any subcontractors shall not on the ground of race, color, national origin, or sex, exclude from participation in, deny the benefits of, or subject to discrimination any person or activity funded in whole or in part with Federal funds. Any prohibition against discrimination on the basis of age under the Age Discrimination Act of 1975, or with respect to any otherwise qualified handicapped individual as provided in Section 504 of the Rehabilitation Act of 1973 shall also apply to any such program of activity.

SUBPART G
Required Provisions of 40 CFR Part 31 Subpart C

A. **Contracts awarded in excess of $10,000**

1. Equal Employment Opportunity Clause
    a. The contractor agrees to comply with Executive Order 11246, entitled Equal Employment Opportunity, "as amended by Executive Order 11375, and as supplemented in Department of Labor regulations (41 CFR Part 60).

B. **Contracts awarded in Excess of $100,000**

1. Violating Facilities Clause

a. The contractor agrees to comply with all applicable standards, orders or requirements issued under section 306 of the Clean Air Act (42 U.S.C 1857 (h), section 508 of the Clean Water Act (33 U.S.C. 1368), Executive Order 11738, and EPA regulations (40 CFR Part 15) which prohibits the award of this contract to facilities included on the EPA List of Violating Facilities. The contractor shall report violations to EPA.

SUBPART H
Suspension and Debarment and Other Responsibility Matters

The Project or Program to which the work covered by this contract pertains to is being assisted by the State of Delaware and the following provision is included in this Contract pursuant to the provisions applicable to such SRF Program. Loan Recipients or engineering representatives are to refer to the "List of parties excluded from Federal Procurement and Non-Procurement Programs" to insure that the contractor or subcontracts are not on this list. A search for exclusion records can be made at the official US government System for Award Management website at https://www.sam.gov. For assistance visit the Federal Service Desk online at www.fsd.gov or by calling (866) 606-8220.

ACCESS TO PROJECT SITE

The Contractor shall allow representatives of U.S. EPA and the State of Delaware DNREC access to the project site.

PROJECT SIGN

The contractor shall provide and erect a sign at a prominent location at each construction site. The sign and location shall be approved by the Engineer. The sign shall be prepared in accordance with the attached detailed instructions. It shall be the responsibility of the Contractor to maintain the sign in good condition throughout the life of the project.

The sign wording shown on Figure 1 is an example only and must be adapted to suit each project. The Contractor shall be responsible for obtaining the appropriate wording from the Engineer.

The project sign for this project is also required to have the EPA logo. See guidance below:

WORKING FOR YOU TO PROVIDE CLEAN WATER
FOR TODAY & TOMORROW

NAME OF PROJECT

PROJECT NO. xx-xxxx-xxx
Name of Engineering Firm

ENVIRONMENTAL FINANCE

FUNDING PROVIDED BY:

Funding Source	**$xx,xxx,xxx**
Funding Source	**$xx,xxx,xxx**
Funding Source	**$xx,xxx,xxx**
Total Project Costs	**$xx,xxx,xxx**

CONSTRUCTION SITE SIGN REQUIREMENTS

Sign Dimensions: 1200 x 2400 x 19 mm (4' x 8' x ¾") Exterior Plywood (A-B Grade).
1st four lines are 4 inches in height; remaining lines are 2 inches in height.
DNREC Logo is to be the standard colors – decal to be provided by the Financial Assistance Branch.
Black letters on white background with 3 inch border around the perimeter in dark blue. Place bottom of sign 36 inches to 48 inches above grade to permit public viewing.
Provide adequate support for sign.

EXAMPLE
Figure 1

EPA LOGO & SEAL SPECIFICATIONS FOR SIGNAGE PRODUCED BY EPA ASSISTANCE AGREEMENT RECIPIENTS

EPA's logo is a two-leaved flower, without stem, accompanied by the Agency's initials to the right. The EPA logo is the primary identifier for use on construction grant signage. Assistance agreement recipients are not required to receive EPA approval to use the EPA logo when used in accordance with the terms and conditions of their assistance agreement award.

The official seal of EPA is circular and is comprised of the two-leaved flower, with stem, encircled by the title UNITED STATES ENVIRONMENTAL PROTECTION AGENCY. The EPA seal may be used only when official comparable seals are used and the recipient has received prior written EPA approval.

It is important that the EPA logo and seal always be reproduced with consistent high quality. The seal and logo must remain intact and unchanged (for example, don't use the flower from the seal by itself). The logo and seal may only be displayed using either the standard color scheme or a single color that complements the background where it appears.

COLOR AND SPACING

- The entire logo and seal must appear in black, gray, or any uniform color or be knock out white on a dark background. The flower and text may not be different colors. The flower itself may not contain more than one color. The seal can be monotone or full color, based on the rest of the seal it's placed with.
- The relationship between the flower portion of the logo and Helvetica type should never be shifted or adjusted.

EPA PMS 543

EPA PMS 662

EPA Process Blue or 30%

EPA Process Blue

EPA Knock out on a dark color

PREFERRED USE

Use the preferred presentation of the logo on products that do not have enough space for the full logo with text. It may also be used in the presence of other logos.

SIZE AND LOGO WITH OTHER LOGOS

It's important that all parts of the EPA logo be readable. The EPA logo should not be reproduced at sizes any smaller than 1.0" height on a sign. There are no maximum size restrictions as long as the clear space requirements are met. The logo should be made the same relative size as the other logos on the signage.

SIZE AND SEAL WITH OTHER SEALS

When there are multiple state or Federal seals/similar logos, the use of the EPA seal is appropriate with prior written EPA approval. The EPA seal should be the same size as the seals that accompany it and should be a minimum of 3 inches in height.

IMPROPER LOGO USAGE

American Iron and Steel Requirement

P.L. 113-76, Section 436

P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), includes an "American Iron and Steel (AIS)" requirement in section 436 that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use iron and steel products that are produced in the United States for projects for the construction, alteration, maintenance, or repair of a public water system or treatment works.

The Act states:

Sec. 436. (a)(1) None of the funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j–12) shall be used for a project for the construction, alteration, maintenance, or repair of a public water system or treatment works unless all of the iron and steel products used in the project are produced in the United States.

(2) In this section, the term ''iron and steel products'' means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.

(b) Subsection (a) shall not apply in any case or category of cases in which the Administrator of the Environmental Protection Agency (in this section referred to as the ''Administrator'') finds that—

(1) applying subsection (a) would be inconsistent with the public interest;

(2) iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or

(3) inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

(c) If the Administrator receives a request for a waiver under this section, the Administrator shall make available to the public on an informal basis a copy of the request and information available to the Administrator concerning the request, and shall allow for informal public input on the request for at least 15 days prior to making a finding based on the request. The Administrator shall make the request and accompanying information available by electronic means, including on the official public Internet Web site of the Environmental Protection Agency.

(d) This section shall be applied in a manner consistent with United States obligations under international agreements.

(e) The Administrator may retain up to 0.25 percent of the funds appropriated in this Act for the Clean and Drinking Water State Revolving Funds for carrying out the provisions described in subsection (a)(1) for management and oversight of the requirements of this section.

(f) This section does not apply with respect to a project if a State agency approves the engineering plans and specifications for the project, in that agency's capacity to approve such plans and specifications prior to a project requesting bids, prior to the date of the enactment of this Act.

The following guidance excerpt has been provided from EPA:

(Complete guidance may be downloaded from: http://water.epa.gov/grants_funding/upload/AIS-final-guidance-3-20-14.pdf)

Covered Iron and Steel Products

11) What is an iron or steel product?

For purposes of the CWSRF and DWSRF projects that must comply with the AIS requirement, an iron or steel product is one of the following made primarily of iron or steel that is permanently incorporated into the public water system or treatment works:

Lined or unlined pipes or fittings;
Manhole Covers;
Municipal Castings (defined in more detail below);
Hydrants;
Tanks;
Flanges;
Pipe clamps and restraints;
Valves;
Structural steel (defined in more detail below);
Reinforced precast concrete; and
Construction materials (defined in more detail below).

12) What does the term 'primarily iron or steel' mean?

'Primarily iron or steel' places constraints on the list of products above. For one of the listed products to be considered subject to the AIS requirements, it must be made of greater than 50% iron or steel, measured by cost. The cost should be based on the material costs.

13) Can you provide an example of how to perform a cost determination?

For example, the iron portion of a fire hydrant would likely be the bonnet, body

and shoe, and the cost then would include the pouring and casting to create those components. The other material costs would include non-iron and steel internal workings of the fire hydrant (i.e., stem, coupling, valve, seals, etc.). However, the assembly of the internal workings into the hydrant body would not be included in this cost calculation. If one of the listed products is not made primarily of iron or steel, United States (US) provenance is not required. An exception to this definition is reinforced precast concrete, which is addressed in a later question.

14) If a product is composed of more than 50% iron or steel, but is not listed in the above list of items, must the item be produced in the US? Alternatively, must the iron or steel in such a product be produced in the US?

The answer to both question is no. Only items on the above list must be produced in the US. Additionally, the iron or steel in a non-listed item can be sourced from outside the US.

15) What is the definition of steel?

Steel means an alloy that includes at least 50 percent iron, between .02 and 2 percent carbon, and may include other elements. Metallic elements such as chromium, nickel, molybdenum, manganese, and silicon may be added during the melting of steel for the purpose of enhancing properties such as corrosion resistance, hardness, or strength. The definition of steel covers carbon steel, alloy steel, stainless steel, tool steel and other specialty steels.

16) What does 'produced in the United States' mean?

Production in the United States of the iron or steel products used in the project requires that all manufacturing processes, including application of coatings, must take place in the United States, with the exception of metallurgical processes involving refinement of steel additives. All manufacturing processes includes processes such as melting, refining, forming, rolling, drawing, finishing, fabricating and coating. Further, if a domestic iron and steel product is taken out of the US for any part of the manufacturing process, it becomes foreign source material. However, raw materials such as iron ore, limestone and iron and steel scrap are not covered by the AIS requirement, and the material(s), if any, being applied as a coating are similarly not covered. Non-iron or steel components of an iron and steel product may come from non-US sources. For example, for products such as valves and hydrants, the individual non-iron and steel components do not have to be of domestic origin.

17) Are the raw materials used in the production of iron or steel required to come from US sources?

No. Raw materials, such as iron ore, limestone, scrap iron, and scrap steel, can come from non-US sources.

18) If an above listed item is primarily made of iron or steel, but is only at the construction site temporarily, must such an item be produced in the US?

No. Only the above listed products made primarily of iron or steel, permanently incorporated into the project must be produced in the US. For example trench boxes, scaffolding or equipment, which are removed from the project site upon completion of the project, are not required to be made of U.S. Iron or Steel.

19) What is the definition of 'municipal castings'?

Municipal castings are cast iron or steel infrastructure products that are melted and cast. They typically provide access, protection, or housing for components incorporated into utility owned drinking water, storm water, wastewater, and surface infrastructure. They are typically made of grey or ductile iron, or steel. Examples of municipal castings are:

Access Hatches;
Ballast Screen;
Benches (Iron or Steel);
Bollards;
Cast Bases;
Cast Iron Hinged Hatches, Square and Rectangular;
Cast Iron Riser Rings;
Catch Basin Inlet;
Cleanout/Monument Boxes;
Construction Covers and Frames;
Curb and Corner Guards;
Curb Openings;
Detectable Warning Plates;
Downspout Shoes (Boot, Inlet);
Drainage Grates, Frames and Curb Inlets;
Inlets;
Junction Boxes;
Lampposts;
Manhole Covers, Rings and Frames, Risers;
Meter Boxes;
Service Boxes;
Steel Hinged Hatches, Square and Rectangular;
Steel Riser Rings;
Trash receptacles;
Tree Grates;
Tree Guards;
Trench Grates; and
Valve Boxes, Covers and Risers.

20) What is 'structural steel'?

Structural steel is rolled flanged shapes, having at least one dimension of their cross-section three inches or greater, which are used in the construction of bridges, buildings, ships, railroad rolling stock, and for numerous other constructional purposes. Such shapes are designated as wide-

flange shapes, standard I-beams, channels, angles, tees and zees. Other shapes include H-piles, sheet piling, tie plates, cross ties, and those for other special purposes.

21) What is a 'construction material' for purposes of the AIS requirement?

Construction materials are those articles, materials, or supplies made primarily of iron and steel, that are permanently incorporated into the project, not including mechanical and/or electrical components, equipment and systems. Some of these products may overlap with what is also considered "structural steel". This includes, but is not limited to, the following products: wire rod, bar, angles, concrete reinforcing bar, wire, wire cloth, wire rope and cables, tubing, framing, joists, trusses, fasteners (i.e., nuts and bolts), welding rods, decking, grating, railings, stairs, access ramps, fire escapes, ladders, wall panels, dome structures, roofing, ductwork, surface drains, cable hanging systems, manhole steps, fencing and fence tubing, guardrails, doors, and stationary screens.

22) What is not considered a 'construction material' for purposes of the AIS requirement?

Mechanical and electrical components, equipment and systems are not considered construction materials. Mechanical equipment is typically that which has motorized parts and/or is powered by a motor. Electrical equipment is typically any machine powered by electricity and includes components that are part of the electrical distribution system. The following examples (including their appurtenances necessary for their intended use and operation) are NOT considered construction materials: pumps, motors, gear reducers, drives (including variable frequency drives (VFDs)), electric/pneumatic/manual accessories used to operate valves (such as electric valve actuators), mixers, gates, motorized screens (such as traveling screens), blowers/aeration equipment, compressors, meters, sensors, controls and switches, supervisory control and data acquisition (SCADA), membrane bioreactor systems, membrane filtration systems, filters, clarifiers and clarifier mechanisms, rakes, grinders, disinfection systems, presses (including belt presses), conveyors, cranes, HVAC (excluding ductwork), water heaters, heat exchangers, generators, cabinetry and housings (such as electrical boxes/enclosures), lighting fixtures, electrical conduit, emergency life systems, metal office furniture, shelving, laboratory equipment, analytical instrumentation, and dewatering equipment.

23) If the iron or steel is produced in the US, may other steps in the manufacturing process take place outside of the US, such as assembly?

No. Production in the US of the iron or steel used in a listed product requires that all manufacturing processes must take place in the United States, except metallurgical processes involving refinement of steel additives.

24) What processes must occur in the US to be compliant with the AIS requirement for reinforced precast concrete?

While reinforced precast concrete may not be at least 50% iron or steel, in this particular case, the reinforcing bar and wire must be produced in the US and meet the same standards as for any other iron or steel product. Additionally, the casting of the concrete product must take place in

the US. The cement and other raw materials used in concrete production are not required to be of domestic origin.

If the reinforced concrete is cast at the construction site, the reinforcing bar and wire are considered to be a construction material and must be produced in the US.

Certification and Compliance

The attached "Contractor's American Iron and Steel Certification" must be executed and included in the bid package. The contractor will supply to the loan recipient manufacturers' certifications for each iron and steel item documenting/asserting that all manufacturing processes occurred in the United States. Such certifications will be submitted with shop drawings.

Waiver Process

The statute permits EPA to issue waivers for a case or category of cases where EPA finds (1) that applying these requirements would be inconsistent with the public interest; (2) iron and steel products are not produced in the US in sufficient and reasonably available quantities and of a satisfactory quality; or (3) inclusion of iron and steel products produced in the US will increase the cost of the overall project by more than 25 percent.

In order to implement the AIS requirements, EPA has developed an approach to allow for effective and efficient implementation of the waiver process to allow projects to proceed in a timely manner. The framework is described in the guidance document found at:
http://water.epa.gov/grants_funding/upload/AIS-final-guidance-3-20-14.pdf.
Approved and denied waivers may be reviewed at:
http://water.epa.gov/grants_funding/aisrequirement.cfm.

De Minimis Materials Waiver

The EPA has granted a nationwide waiver of the AIS requirements of the Consolidated Appropriations Act under the authority of Section 436(b)(1) (public interest waiver) for de Minimis incidental components of eligible infrastructure projects. For many of these incidental components, the country of manufacture and the availability of alternatives is not always readily or reasonably identifiable prior to procurement in the normal course of business; for other incidental components, the country of manufacture may be known but the miscellaneous character in conjunction with the low cost, individually and (in total) as typically procured in bulk, mark them as properly incidental. Examples of incidental components could include small washers, screws, fasteners (i.e., nuts and bolts), miscellaneous wire, corner bead, ancillary tube, etc. Examples of items that are clearly not incidental include significant process fittings (i.e., tees, elbows, flanges, and brackets), distribution system fittings and valves, force main valves, pipes for sewer collection and/or water distribution, treatment and storage tanks, large structural support structures, etc.

Funds used for such de Minimis incidental components cumulatively may comprise no more than a total of 5 percent of the total cost of the total materials used in and incorporated into a project; the cost of an individual item may not exceed 1 percent of the total cost of the total materials used in and incorporated into a project. Contractors who wish to use this waiver should determine the costs of all items installed or supplied for the project. The contractor must retain relevant documentation (i.e., invoices) for each of these items in their project files, and must summarize the items in monthly draw requests to the owner: the total cost of all materials, the total cost of "incidental" materials, and the calculations by which they determined the percentage of incidental products installed or supplied for the project. None of the products specifically listed as "Covered Iron and Steel Products" are incidental. None of the products identified in detail in the technical specifications are considered incidental.

AIS Construction Contract Language

_____

Project/Contract Title

The Contractor acknowledges to and for the benefit of

_____("**Owner**")
that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund that have statutory requirements commonly known as "American Iron and Steel;" that requires all of the iron and steel products used in the project to be produced in the United States ("American Iron and Steel Requirement") including iron and steel products provided by the Contactor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Owner that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Owner or the State. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Owner to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Owner resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Owner). While the Contractor has no direct contractual privity with the State, as a lender to the Owner for the funding of its project, the Owner and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

_____	_____
Name (Printed)	Contractor/Company
_____	_____
Name (Signature)	Date

CONTRACTOR'S

AMERICAN IRON AND STEEL CERTIFICATION

As the contractor for the _____ project, I certify that I have read, understand and will comply with the "American Iron and Steel (AIS)" requirements of section 436 of P.L. 113-76, Consolidated Appropriations Act, 2014 (Act) that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use iron and steel products that are produced in the United States for projects for the construction, alteration, maintenance, or repair of a public water system or treatment works.

_____	_____
Name (Printed)	Company
_____	_____
Name (Signature)	Date

Davis-Bacon and Related Acts (DBRA) Provisions and Procedures for EPA Funded Clean Water State Revolving Loan Fund (CWSRF) Projects

A Supplement to the CWSRF Program Requirements

Updated December 2021

I. Introduction

The Davis Bacon Act requires that all contractors and subcontractors performing construction, alteration and repair work under federal contracts in excess of $2,000 pay their laborers and mechanics not less than the prevailing wage and fringe benefits. Clean Water State Revolving Fund projects (CWSRF) are subject to the Davis-Bacon provisions through completion of construction and must comply with the following:

A. This contract clause pertains to minimum wages for any contract in excess of $2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a public building or public work, or building or work financed in whole, or in part, from federal funds or in accordance with guarantees of a federal agency or financed from funds obtained by pledge of any contract of a federal agency to make a loan, grant or annual contribution.

1. **Minimum wages**. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account, the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the US Secretary of Labor at the following web site www.wdol.gov/dba.aspx, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. A "wage determination" is the listing of wage and fringe benefit for each classification of laborers and mechanics which the Administrator of the Wage and Hour Division of the U.S. Department of Labor has determined to be prevailing in a given area for a particular type of construction (e.g., building, heavy, highway, or residential). The wage determination (including any additional classification and wage rates) and the Davis-Bacon poster (WH–1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers. The poster may be downloaded from fedprojc.pdf (dol.gov)
2. **Withholding**. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the regulations, the loan or grant recipient may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.
3. **Payrolls and basic records.** Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. The contractor shall submit weekly for each week in which any contract work is performed, a copy

of all payrolls to the recipient, sponsor, or owner. The required weekly payroll information may be submitted in any form desired. A contractor may use Form WH–347 which is available from the Wage and Hour Division web site at http://www.dol.gov/esa/whd/forms/wh347.pdf .

4. **Subcontracts.** The prime contractor is responsible for the compliance by any subcontractor or lower tier subcontractor with the requirements above, the requirements identified in the Davis Bacon Terms and Conditions of the EPA assistance agreement, and the contract clauses in 29 CFR 5.5, which can be found at http://ecfr.gpoaccess.gov/

B. Contract Work Hours and Safety Standards Act. In any contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act, the following clauses shall apply:

1. **Overtime requirements**. No contractor or subcontractor for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one- half times the basic rate of pay for all hours worked in excess of forty hours in such workweek. The overtime rate of time and one half does not apply to fringe payments. For work in excess of forty hours, fringe payments should continue to be paid on a per hour worked basis.

2. **Violation; liability for unpaid wages; liquidated damages**. In the event of any violation of the clause set forth in paragraph (B) (1) of this section the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States government, for liquidated damages.

3. **Withholding for unpaid wages and liquidated damages**. The recipient shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (B) (2) of this section.

4. **Subcontracts.** The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (B) (1) through (4) of this section.

C. In any contract subject only to the Contract Work Hours and Safety Standards

Act and not to any of the other statutes cited in 29 CFR 5.1, the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years.

II. Davis Bacon Compliance Procedures

A. Before Contract Award. Once it is determined that Davis Bacon wage rates will apply to a construction contract, the recipient's contracting organization must state in the solicitation that Davis Bacon Prevailing wage rates are applicable, and bid packages must include the current Davis Bacon general wage determination for the area where construction will occur. To select the prevailing wage rate determination for a specific locality:

1. Go to website SAM.gov | Home
2. Select "DBA WDs"
3. Input the State and County where the construction site is located.
4. Input the type of construction for the project as Building, Heavy, Highway or Residential.

B. Before Bid Opening. The wage determination website should be continually monitored by the contracting organization for modifications. Generally, the most current published wage determination at the time of contract award must be incorporated into the contract. A wage determination update issued less than 10 days before bid opening shall be in effect unless there is not a reasonable time to notify all prospective bidders. In these cases the relevant facts should be documented in the contract file. A convenient way to monitor potential wage determination modifications is to sign up for the alert service as shown on the website SAM.gov | Home

C. After Contract Award. After solicitation, bid opening and contractor selection by the recipient contracting organization, the prevailing wage determination shall be included in the final construction contract between the recipient, sub recipient or borrower and its contractor.

1. In the event the construction contract is not awarded within 90 days of the bid opening date, any modification to the prevailing wage determination published prior to award of the contract shall be effective and should be included in the award documents, or by modification to the contract documents.

III. Applicability of the Davis-Bacon and Related Acts to EPA Programs

EPA capitalization grants to states, which provides loans to municipalities and other eligible entities for eligible projects, including wastewater water infrastructure projects.

OFFICE OF MANAGEMENT AND BUDGET

DIVISION OF FACILITIES MANAGEMENT

Statutory Authority: 29 Delaware Code, Section 6908(a)(6) (29 **Del.C.** §6908(a)(6))

FINAL

ORDER

4104 Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects

NATURE OF THE PROCEEDINGS:

The Office of Management and Budget (OMB) initiated proceedings to adopt the Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects. The OMB proceedings to adopt regulations were initiated pursuant to 29 **Del.C.** Chapter 101 and authority as prescribed by 29 **Del.C.** Ch. 69, §6908(a)(6).

On January 1, 2015 (Volume 18, Issue 7), OMB published in the Delaware *Register of Regulations* its notice of proposed regulations, pursuant to 29 **Del.C.** §10115. It was requested that written materials and suggestions from the public concerning the proposed regulations be delivered to OMB by March 6, 2015 or be presented at a public hearing on February 11, 2015, after which time OMB would review information, factual evidence and public comment to the said proposed regulations.

Written comments were received during the public comment period and evaluated. The results of that evaluation are summarized in the accompanying "Summary of Evidence." This is OMB's "conclusion" and "order" as required by 29 **Del.C.** §10118(b).

SUMMARY OF EVIDENCE

In accordance with Delaware Law, public notices regarding proposed Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects were published in the *Delaware State News*, the *News Journal* and the Delaware *Register of Regulations*.

Written and verbal comments were received on the proposed regulations during the public comment period (January 1, 2015 through March 6, 2015). Individuals offering comments included:

- Dr. Brian Shinkle, DO, CIME.
- Mr. James Maravelias, President, Delaware Building & Construction Trades Council.

Public comments and the OMB (Agency) responses are as follows:

Brian Shinkle, DO, CIME

Comment: Studies show that blood/breath alcohol level directly correlates with impairment, but urine alcohol level has no correlation with impairment. Urine alcohol only reasonably shows that someone has used alcohol within the last few days, which is not illegal. You also cannot tell how much alcohol someone used via a urine alcohol test, due to variable urine dilution rates. A better model is to follow the DOT protocol which is to perform breath alcohol testing (which does correlate directly with blood alcohol level and impairment) and to perform this type of alcohol testing in one or all of the following scenarios: post-accident, random or reasonable suspicion.

Agency response: Thank you for your comment. This comment refers to Section 4.3 of the proposed regulation that reads as follows:

4.3 Employees subject to drug testing shall be tested using at a minimum a seven-panel protocol testing plus urine alcohol screening for the following:

Substance	**Common Name**	**Cutoff**
Marijuana metabolite		50 ng/ml
Cocaine metabolite		150 ng/ml
Opiate metabolite		2000 ng/ml
Acetylmorphine	Heroin metabolite	10 ng/ml
Phencyclidine	PCP	25 ng/ml
Amphetamines (including Methamphetamines)	Meth	500 ng/ml
MDMA	Ecstasy	250 ng/ml

Urine Alcohol		0.04% BAC

Inasmuch as the state has included testing for alcohol as a means to gauge impairment, OMB is in agreement that a urine alcohol test should not be specified. The specification has been changed to a more generic "alcohol test".

James Maravelias, President, Delaware Building & Construction Trades Council

Comment: The seven panel test specified in Section 4.3 of the regulation is insufficient and should be changed to require a ten panel test. Keeping in mind that the goal is to provide the safest workplace for employees, protect the general public and instill Delawareans confidence that those individuals working on state funded projects are working safely, the ten-panel protocol is necessary to capture drugs that are highly abused, extremely addictive and can cause a deadly and unsafe work environment for all those around.

Agency response: Thank you for your comment. This comment refers to Section 4.3 of the proposed regulation that reads as follows:

4.3 Employees subject to drug testing shall be tested using at a minimum a seven-panel protocol testing plus urine alcohol screening for the following:

Substance	**Common Name**	**Cutoff**
Marijuana metabolite		50 ng/ml
Cocaine metabolite		150 ng/ml
Opiate metabolite		2000 ng/ml
Acetylmorphine	Heroin metabolite	10 ng/ml
Phencyclidine	PCP	25 ng/ml
Amphetamines (including Methamphetamines)	Meth	500 ng/ml
MDMA	Ecstasy	250 ng/ml
Urine Alcohol		0.04% BAC

There are no universal standards for the optimal number of panels that must be tested in an employee drug testing program. In fact, Federal DOT standards from which much of this regulation was modeled, requires a five panel testing regimen. The proposed regulation was constructed with a measure of flexibility by mandating "…..a minimum of seven-panel protocol testing….", therefore allowing for additional panels to be tested. Accordingly the proposed regulation will not be further amended.

FINDINGS OF FACT:

The Department finds that the proposed regulation as set forth in the January 2015 *Register of Regulations* with the one insubstantial change noted in section 4.3 should be adopted. While the Office of Management and Budget appreciates the other suggestions brought forth, it is felt the existing content of the regulation as published in the January 2015 *Register of Regulations* represents a fair balance to protect management, labor and members of the public.

NOW THEREFORE, under the statutory authority and for the reasons set forth above, the Director of the Delaware Office of Management and Budget does hereby ORDER that the Regulation be, and that it hereby is, adopted and promulgated. The effective date of this Order is for all large public works projects advertised for bid on or after January 1, 2016.

Ann Shepard Visalli, Director
Office of Management and Budget

4104 Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects

1.0 Purpose

The Office of Management and Budget ("Office"), has developed these regulations that require Contractors and Subcontractors to implement a program of mandatory drug testing for Employees who work on Large Public Works Contracts funded all or in part with public funds pursuant to 29 **Del.C.** §6908(a)(6). The regulations establish the mechanism, standards and requirements of a Mandatory Drug Testing Program that will be incorporated by reference into all Large Public Works Contracts awarded pursuant to 29 **Del.C.** §6962.

2.0 Definitions

"Contractor" means an entity such as, but not limited to, an individual, firm, partnership or corporation that has a contractual obligation to perform work for contracts awarded pursuant to 29 **Del.C.** §6962.

"Division of Facilities Management" **and** "**DFM**" means the Division of Facilities Management within the Office of Management and Budget.

"**Drug Testing Firm**" is an entity engaged in the business of providing drug testing services for businesses, individuals, governments or any entity that requires drug testing of Employees, applicants, licensees, etc., in compliance with these requirements.

"Employee" means an individual employed by a Contractor or Subcontractor who works on the Jobsite of a Large Public Works Contract but does not fulfill a clerical or administrative function. For the purpose of this definition, clerical or administrative functions shall refer to job responsibilities that do not generally require an employee to work outside of the Contractor's Jobsite office, home office or other employer-provided office. For the purposes of this regulation, the term "Employee" shall also include supervisors and foremen working on the Jobsite. The term "Employee" shall also include delivery personnel employed by a Contractor or Subcontractor working on or delivering materials and equipment to and from a Jobsite.

"Impairment" or "Impaired" means symptoms that an Employee while working may be under the influence of drugs or alcohol that may decrease or lessen the Employee's performance of the duties or tasks of the Employee's job position, including symptoms of the Employee's speech, walking, standing, physical dexterity, agility, coordination, actions, movement, demeanor, appearance, clothing, odor, irrational or unusual behavior, negligence or carelessness in operating equipment, machinery or production or manufacturing processes, disregard for the safety of the Employee or others, or other symptoms causing a reasonable suspicion of the use of drugs or alcohol.

"Jobsite" means the site or area directly or indirectly owned, operated or controlled by the Owner in which the Contractor or Subcontractor performs work or delivers services to the Owner. For the purpose of this definition, "Jobsite" does not mean a remote work site not under the direct or indirect control of the Owner in which work is performed to fulfill the Contractor's or Subcontractor's obligations.

"Large Public Works Contract" means a contract for a public works construction awarded pursuant to 29 **Del.C.** §6962.

"Mandatory Drug Testing Program" and "**Program**" means a defined set of basic procedures, requirements and rules that must be used by a Contractor or Subcontractor to test Employees for drugs in compliance with these requirements.

"Owner" is the state agency, school district or entity that awards a Large Public Works Contract to a Contractor pursuant to 29 **Del.C.** §6962.

"Positive Test Result" **and** "**Fail a Drug Test**" means the result reported by a Health and Human Services certified laboratory when a specimen contains a drug or drug metabolite equal to or greater than the cutoff concentration. For purposes of these regulations, an Employee shall not be considered to have a Positive Test Result nor shall an Employee be considered to "Fail a Drug Test" if:

- The Employee is a Registered Qualifying Patient and;
- The drug detected was marijuana, a component of marijuana, or marijuana metabolites.

"Random Drug Testing" means that an Employee is chosen at random for testing without advance notice, from a pool of Employees working on the Jobsite. Specific requirements for random drug testing conducted under these regulations are described in Section 5.0.

"Registered Qualifying Patient" means a person (1) validly issued and in possession of an unexpired Registry Identification Card as defined by 16 **Del.C.** §4902A (14), and (2) subject to confirmation through a "verification system" as set forth at 16 **Del.C.** §4902A(17).

"Subcontractor" means an entity such as, but not limited to, an individual, firm, partnership or corporation that has a contractual obligation to perform work for, or supply services to a Contractor as defined in section 2.1.

"Testing Result Forms" means a form summarizing drug testing completed monthly by the Contractor and Subcontractor and submitted to the Owner in accordance with requirements contained in the bid solicitation.

3.0 Employee drug testing documentation requirements.

3.1 The following documentation requirements apply:

3.1.1 At bid submission - A solicitation for a Large Public Works Contract must require each Contractor that submits a bid for the work to submit with the bid signed individual affadavit(s) for the Contractor and each listed Subcontractor certifying that the Contractor and Subcontractor has in place or will implement during the entire term of the contract a Mandatory Drug Testing Program for their Employees that complies with this regulation.

3.1.2 Two business days prior to contract execution – The awarded Contractor shall provide to the Owner copies of the Employee Drug Testing Program for the Contractor and for all listed Subcontractors.

3.1.3 During contract execution – Contractors that employ additional Subcontractors on the jobsite may do so only after submitting a copy of the Subcontractor's Employee Drug Testing Program. A Contractor or Subcontractor shall not commence work until the Owner has concluded the Employee Drug Testing Program complies with this Regulation as per Section 3.2.

3.1.4 In the event of an emergency a Contractor may employ additional Subcontractors on the jobsite prior to submitting the Subcontractor's Employee Drug Testing Program provided that said Program is submitted to the Owner as soon as practicable.

3.2 A Contractor or Subcontractor shall be treated as having a Mandatory Drug Testing Program that complies with this regulation if the Program includes the following:

3.2.1 The Program meets the minimum standards in section 4.0 of this regulation.

3.2.2 The Program provides for the frequency of testing of Employees as per section 5.0 of this regulation:

3.2.3 The Program imposes disciplinary measures on an Employee who fails a drug test as per section 6.0 of this regulation.

3.3 Prequalified Contractors and Subcontractors – A Contractor or Subcontractor may meet the provisions of Section 3.1 if they are Prequalified through the DFM Prequalification and if the DFM Prequalification includes provisions requiring an Employee Mandatory Drug Testing Program that meet the requirements of Sections 4.0, 5.0 and 6.0 of this Regulation

3.4 The State shall not be obligated to pay, and the Contractor or Subcontractor shall expressly agree that, any portion of work performed by a Contractor or Subcontractor commenced before that Contractor or Subcontractor has complied with Sections 3.1 and 3.2, provided however that emergency work as referenced in 3.1.4 may not be subject to this provision.

4.0 Minimum Standards for a Mandatory Drug Testing Program

4.1 Testing for the presence of drugs in an Employee's system and the handling of test specimens shall be conducted in accordance with guidelines for the collection, chain-of-custody procedures, laboratory testing, and Medical Officer Review procedures contained within the Mandatory Guidelines for Federal Workplace Drug Testing Programs published by the Substance Abuse and Mental Health Services Administration (SAMHSA). http://workplace.samhsa.gov/DrugTesting/Level_1_Pages/mandatory_guidelines5_1_10.html

All tests must be processed by a federal Health and Human Services certified laboratory. Contractors must provide documentation detailing the procedures used in the collection, testing and reporting of drug tests sufficient to show conformance with SAMHSA guidelines.

4.2 Contractors and Subcontractors subject to these regulations may procure the services of an appropriate Drug Testing Firm to administer their program. A Contractor or Subcontractor may also implement a Mandatory Drug Testing Program using in-house personnel and resources. However a Contractor or Subcontractor doing so shall have to demonstrate that the program meets or exceeds the requirements specified herein to the satisfaction of the Owner.

4.3 Employees subject to drug testing shall be tested using at a minimum a seven-panel protocol testing plus **[~~urine~~]** alcohol screening for the following:

Substance	**Common Name**	**Cutoff**
Marijuana metabolite		50 ng/ml
Cocaine metabolite		150 ng/ml
Opiate metabolite		2000 ng/ml
Acetylmorphine	Heroin metabolite	10 ng/ml
Phencyclidine	PCP	25 ng/ml
Amphetamines (including Methamphetamines)	Meth	500 ng/ml
MDMA	Ecstasy	250 ng/ml
[~~Urine~~] Alcohol		0.04% BAC

4.4 The frequency of Random Drug Testing and the methodology for selecting Employees to be screened are defined in section 5.0 and shall be incorporated into Contractor and Subcontractor mandatory testing procedures. A Contractor or Subcontractor may incorporate rules or requirements that exceed the requirements defined herein.

5.0 Drug Testing Requirements – Frequency for the Testing of Employees

5.1 Initial Drug Testing - Employees commencing work on a Jobsite must be tested with the exception that an Employee who has passed a random or scheduled drug test within the past 60 days from the date of commencing work shall be permitted to work at the Jobsite without further testing; however, the Employee is still subject to random testing.

5.2 Random Drug Testing - During the course of a project, each Contractor and Subcontractor with Employees on the Jobsite shall implement Random Drug Testing according to the following requirements.

5.2.1 All Employees will be subject to random, unannounced testing.

5.2.2 The selection of Employees shall be made by a scientifically valid method of randomly generating an Employee identifier from a Contractor or Sub-contractor's pool of Employees.

5.2.3 No less that 10% of a Contractor's or Subcontractor's anticipated workforce based on construction schedules validated by certified payrolls shall be randomly selected each month for testing. Contractors or Subcontractors with less than 10 Employees shall test at least one of their Employees, selected randomly per month. Each Employee shall have an equal chance of selection each time the selection is made. Because the selection process is random, some Employees may not be tested within a year, while others may be tested more than once.

5.2.4 Employees notified that they have been selected must report within four hours for testing to a site specified. Employees so notified must have been given such notification at least four hours before the scheduled closing time of the testing facility. Any failure to report for random testing, or to cooperate with the testing procedure shall be considered a positive result.

5.2.5 Purposely impeding or delaying an Employee's fulfillment of the testing requirements herein by a Contractor or Subcontractor may subject the Contractor or Subcontractor to sanctions listed in Section 8.

5.3 Reasonable Suspicion Testing – An Employee will be required to take a drug test at any time his or her employing Contractor, Subcontractor or the Owner reasonably believes that he or she has an Impairment caused by drugs and/or alcohol. Further, an Employee may be required to take a drug test at any time his or her employing Contractor, Subcontractor or the Owner finds drug paraphernalia and/or open alcohol containers on the Jobsite.

5.4 Return to Duty Testing – As required in Section 6.0.

5.5 Accident Triggered Testing – An Employee will be required to take a drug test and may be subject to an onsite alcohol breathalyzer test at any time there is a Jobsite accident involving loss or significant property damage, injury or death to an Employee of the Contractor, Subcontractor, or Owner or member of the public.

5.5.1 As soon as practicable following an accident, the Contractor will notify the Employee(s) whose performance could have contributed to the accident of the need for the test.

5.5.2 The appropriate Contractor shall ensure that an Employee, required to be tested under this section, is tested as soon as practicable, but no longer than 4 hours after the accident. Employees so notified must have been given such notification at least four hours before the scheduled closing time of the testing facility. If the drug test is not conducted within 4 hours, attempts to conduct the test must cease and the reasons for the failure to test documented.

5.5.3 An Employee who is subject to post-accident testing who fails to remain readily available for such testing, including notifying a supervisor of his or her location if he or she leaves the scene of the accident prior to submission to such test, may be deemed to have refused to submit to testing.

5.5.4 If an Employee fails or refuses to be tested, he/she must be removed from the Jobsite.

5.5.5 Nothing in this section shall be construed to require the delay of necessary medical attention for the injured following an accident, or to prohibit an Employee from leaving the scene of an accident for the period necessary to obtain assistance in responding to the accident, or to obtain necessary emergency medical care.

5.6 All testing required by this section shall be administered according to the standards outlined in Section 4.0.

6.0 Consequences of a Positive Test Result

6.1 The disciplinary measures contained within a Contractor's or Subcontractor's drug testing program for an employee who tests positive to a mandatory drug test must include at a minimum, all of the following:

6.1.1 The Employee is subject to an immediate suspension from any public works Jobsite.

6.1.2 The Employee is not eligible for reinstatement by the Contractor or Subcontractor to any public works Jobsite until 30 days after the Employee tests negative on a seven drug panel plus alcohol test certified by a medical review officer.

6.1.3 The Employee is subject to unscheduled monthly random testing for at least one (1) year after reinstatement, or during the term of the Large Public Works Contract, whichever is less.

6.1.4 An Employee who has tested positive for more than one drug test within a three year period shall be permanently banned from working at public works Jobsites.

6.1.5 An Employee who has tested positive for marijuana, a component of marijuana, or marijuana metabolites and is a Registered Qualifying Patient shall be exempted from the disciplinary actions contained in this section unless:

6.1.5.1 The Employee was Impaired by marijuana at the Jobsite

6.1.5.2 Employment of the Registered Qualifying Patient would cause the Owner to lose monetary or licensing-related benefits under Federal law.

6.2 A Contractor or Subcontractor shall report the Positive Test Result to the Employee's professional licensing board, if applicable.

7.0 Contractor and Subcontractor Certification of Compliance with Regulations

7.1 During the term of the contract:

7.1.1 During the term of the contract, Contractors and Subcontractors shall submit Testing Report Forms to the Owner as set forth herein:

7.1.1.1 The Testing Report Forms shall be submitted to the Owner no less than quarterly.

7.1.1.2 An Owner may require monthly submissions of the Testing Report Forms.

7.1.1.3 A Contractor or Subcontractor that is employed on the Jobsite for less than 30 days shall not be subject to the reporting requirements contained in Sections 7.1.1 and 7.1.2 of this regulation, unless the Owner specifies that such reporting is required in the Invitation to Bid or Specifications relating to the work to be performed.

7.1.2 The forms shall at a minimum contain the following information:

7.1.2.1 The number of Employees who worked on the Jobsite during the previous month.

7.1.2.2 The number of Employees subjected to random testing during the previous month.

7.1.2.3 The number of negative results and the number of positive results.

7.1.2.4 Action taken by the Contractor or Subcontractor on an Employee who failed or tested positive to a random test.

7.1.3 Testing Result Forms may be submitted electronically to an Owner.

7.1.4 Any Positive Test Result including the Employee name and action taken in response by a Contractor or Subcontractor must be reported by the Contractor or Subcontractor to the Owner within 24 hours of the Contractor or Subcontractor receiving the test results. A Positive Test Result must be submitted to the Owner in writing.

7.1.5 The Owner shall have the right to periodically audit all Contractor and Subcontractor test results at the Contractor or Subcontractor's offices.

7.1.6 The failure to comply with these reporting requirements shall be considered a material breach of any agreement relating to the performance of work by the Contractor or Subcontractor.

8.0 Penalties

8.1 A Contractor or Subcontractor on a Large Public Works contract that fails to implement a Mandatory Drug Testing Program in accordance with this regulation or falsifies testing results shall be subject to the following sanctions:

8.1.1 Written warning (1st offense).

8.1.2 Prohibition from bidding on new public works jobs for a period not to exceed three months (2nd offense) and one year (3rd offense).

8.1.3 For subsequent offenses, debarment or bond revocation.

8.2 Notwithstanding any other provision of this regulation, if any failure to comply with the requirements of this regulation are particularly flagrant or egregious, the Owner may seek a termination for cause, a temporary suspension, a determination that the Contractor or Subcontractor **[~~are~~ is]** not responsible, debarment or bond revocation, and any other statutory, common law, or equitable remedy.

AFFIDAVIT
OF
EMPLOYEE DRUG TESTING PROGRAM

4104 Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects requires that Contractors and Subcontractors implement a program of mandatory drug testing for Employees who work on Large Public Works Contracts funded all or in part with public funds.

We hereby certify that we have in place or will implement during the entire term of the contract a Mandatory Drug Testing Program for our employees on the jobsite that complies with this regulation:

Contractor/Subcontractor Name: _____

Contractor/Subcontractor Address: _____

_____

_____

Authorized Representative (typed or printed): _____

Authorized Representative (signature): _____

Title: _____

Sworn to and Subscribed before me this _____day of _____ 20____.

My Commission expires _____. NOTARY PUBLIC _____.

THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.

EMPLOYEE DRUG TESTING REPORT FORM
Period Ending:_____

4104 Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects requires that Contractors and Subcontractors who work on Large Public Works Contracts funded all or in part with public funds submit Testing Report Forms to the Owner no less than quarterly.

Project Number: _____

Project Name: _____

Contractor/Subcontractor Name: _____

Contractor/Subcontractor Address: _____
_____
_____

Number of employees who worked on the jobsite during the report period:_____

Number of employees subject to random testing during the report period:_____

Number of Negative Results _____ Number of Positive Results _____

Action taken on employee(s) in response to a failed or positive random test:
_____
_____
_____

Authorized Representative of Contractor/Subcontractor: _____
(typed or printed)

Authorized Representative of Contractor/Subcontractor: _____
(signature)

Date: _____

EMPLOYEE DRUG TESTING
REPORT OF POSITIVE RESULTS

4104 Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects requires that Contractors and Subcontractors who work on Large Public Works Contracts funded all or in part with public funds to notify the Owner in writing of a positive random drug test.

Project Number: _____

Project Name: _____

Contractor/Subcontractor Name: _____

Contractor/Subcontractor Address: _____
_____
_____

Name of employee with positive test result: _____

Last 4 digits of employee SSN: _____

Date test results received: _____

Action taken on employee in response to a positive test result:
_____
_____
_____

Authorized Representative of Contractor/Subcontractor: _____
(typed or printed)

Authorized Representative of Contractor/Subcontractor: _____
(signature)

Date: _____

This form shall be sent by mail to the Owner within 24 hours of receipt of test results.

Enclose this test results form in a sealed envelope with the notation "Drug Testing Form – DO NOT OPEN" on the face thereof and place in a separate mailing envelope.

FREQUENTLY ASKED QUESTIONS
DRUG TESTING PROGRAM FOR LARGE PUBLIC WORKS PROJECTS

Question:	Which State projects require that contractors have a Drug Testing program in place?
Answer:	Large Public Works (PW) projects as defined by Title 29, Chapter 69 of Del Code. Large Public Works projects are those projects which are required to be bid at a threshold level set by the Procurement Council; currently that level is those projects $100,000 and over. Letter bids (not formally advertised) are not subject to testing.
Question:	Which Contractors are subject to testing?
Answer:	The Prime or General Contractor and all *listed* subcontractors.
Question:	What do I submit with my bid to certify compliance with the Regulation?
Answer:	An Affidavit Form is submitted with your bid for your firm and a separate form(s) for all *listed* subcontractors certifying compliance or will have program in place prior to award.
Question:	Do we have to use the Drug Affidavit and Reporting Forms that come with the bid forms?
Answer:	Use the Affidavit Form as contained in the Bid Documents. It is acceptable for the contractor to use their own Reporting Form as long as the Owner agrees, and it contains the minimum data elements as specified in the regulation.
Question:	Is there an expiration for the Drug Affidavit Forms? Can they be used on multiple projects? Do the forms have to be originals?
Answer:	The Drug Affidavit Forms do not expire unless they are no longer valid. They can be used on multiple projects and are not "project specific" but must be submitted with every bid. Original signatures and raised seal are NOT required; copies of the form are acceptable.
Question:	What do I submit prior to contract award?
Answer:	A copy of the Drug Testing program for your firm and from *listed* subcontractors that meets the requirements in the Regulation is submitted 2 days prior to award.
Question:	Which employees are tested?
Answer:	All employees that will be working on the jobsite are subject to testing. Home office employees and other workers not located on the jobsite and not under control of the contractor are not subject to testing.
Question:	When are employees tested?
Answer:	Initially (prior to work on the job, unless they've passed a random or scheduled drug test within the past 60 days), and randomly (either quarterly or monthly as defined in the contract). There are also "Reasonable Suspicion" and "Accident Triggered" testing requirements.

Question:	How is the 30 days in Section 7.1.1.3 calculated?
Answer:	The 30 days refers to a consecutive number of calendar days, including weekend days.
Question:	Does the 60 day prior test in Section 5.1 necessarily include alcohol testing?
Answer:	No.
Question:	How many employees are tested randomly?
Answer:	At least 10% of the Contractor's workforce, not less than one, are randomly tested during the contract period.
Question:	What is considered a "scientific valid method of randomly generating an Employee identifier" for the random testing requirement as noted in 5.2.2?
Answer:	Any method, mechanical (pulling names from a hat) or electronic (random number generator) that provides an unbiased and equal chance of selection to all employees in the pool to be tested.
Question:	If a contractor/subcontractor tests <u>all</u> their employees randomly (10%) are they covered if the person tested that period isn't in the "pool"?
Answer:	Yes.
Question:	Because manpower ramps up and down on a construction site and sometimes very quickly, at what point in the month do you make the determination of how many employees are on site for the pool to determine what constitutes 10%?
Answer:	The measurement of the number of employees is addressed in 5.2 as follows: "No less than 10% of a Contractor's or Subcontractor's anticipated workforce based on construction schedules validated by certified payrolls shall be randomly selected each month for testing". The key word is "anticipated"; the random number pull for a particular month would be based on how many employees you anticipate to be on the job during that month.
Question:	What if there is only one person working for a sub on a project? Since at least 10%, not less than one, need to be tested, are they tested every month/quarter?
Answer:	Yes, unless the subcontractor has a program in place to randomly test at least 10% of <u>all</u> of their employees monthly. Please refer to Section 5.2.3.
Question:	If a subcontractor hires another firm to do portions of their work but they aren't employees (i.e. a "sub of a sub"), do they need to drug test those employees or require the firm to have a program in place?
Answer:	There is nothing in the regulation that requires "subs of subs" to have a testing program in place.
Question:	Are temp agencies or temp employees required to be tested?
Answer:	If they are a listed subcontractor, yes. If they are a "sub of a sub", no.

Question:	We are an Architectural/Engineering sub-consultant firm currently providing services to (State agency). Does this new regulation concerning drug testing apply to A/E contracts, or is it just for general contractors and for bid public works contracts?
Answer:	Reference the definition of "subcontractor" as reflected in the regulation 2.1: **"Subcontractor"** means an entity such as, but not limited to, an individual, firm, partnership or corporation that has a contractual obligation to perform work for, or supply services to a Contractor as defined in section 2.1." As you are providing services to (state agency) directly and not to the Contractor you would not be included in this definition.
Question:	For the 10% random requirement, what happens at 11 employees? Do we test two or one?
Answer:	Because Section 5.2.3 currently states that "no less than 10%..." per month must be tested, if a contractor or a subcontractor has 11 employees on the jobsite, they must randomly test two per month unless the contractor or subcontractor has a program in place to randomly drug test at least 10% of <u>all</u> of their employees monthly.
Question:	If there are 10 employees working 4 job sites and each are required to have programs under this regulation, do 4 of the 10 (10% per jobsite) have to be tested each month?
Answer:	No, 10% of the total need to be tested.
Question:	If a company or firm has several State Large Public Works jobs going at the same time, may they put all employees from each job into one random testing pool?
Answer:	Yes, as long as the program meets all other requirements of the Regulation.
Question:	If office or administrative staff goes to a jobsite for just a site visit or meeting, will they be required to be tested since they are not doing any work onsite?
Answer:	No, the Regulation only covers workers performing work at the jobsite. Note that covered employees DOES also include supervisors/foremen working on the jobsite and delivery personnel delivering materials and equipment to and from the jobsite.
Question:	What are the reporting requirements during the contract?
Answer:	Random testing is reported either quarterly or monthly to verify that 10% of the Contractor's employees are being tested (no names are included, just # tested). Any Positive Test Results are reported to the Owner within 24 hours (name is included in a sealed envelope).
Question:	Is Alcohol screening a requirement for the Initial Drug Test (within 60 days in advance of employee at the jobsite)?
Answer:	No.
Question:	Does alcohol testing have to be urine alcohol?
Answer:	The Regulation does not specify the specific methodology for urine testing.

Question:	What are the consequences of a Positive Result?
Answer:	Employee is immediately suspended from the jobsite. Not eligible on any State PW jobsite until 30 days after a subsequent negative test result. Also subject to one year of unscheduled random testing. More than one positive within a 3 year period results in a permanent ban for the employee from State of Delaware PW jobsites.
Question:	What is the definition of “significant damage” in Section 5.5?
Answer:	As of the current version, it is not defined in the regulation. Generally it is an amount of damage that has a large monetary effect or delays the project schedule.
Question:	What constitutes an injury requiring drug testing as required in 5.5?
Answer:	Any injury requiring medical care beyond first aid.

STATE OF DELAWARE
DEPARTMENT OF LABOR
DIVISION OF INDUSTRIAL AFFAIRS
OFFICE OF LABOR LAW ENFORCEMENT
PHONE: (302) 318-2769

Mailing Address:
252 Chapman Road

Newark, DE 19702

Located at:
252 Chapman Road

Newark, DE 19702

PREVAILING WAGES FOR **HEAVY CONSTRUCTION** EFFECTIVE MARCH 15, 2023

CLASSIFICATION	NEW CASTLE	KENT	SUSSEX
ASBESTOS WORKERS	26.95	23.70	51.54
BOILERMAKERS	86.57	39.16	71.83
BRICKLAYERS	84.08	72.20	30.37
CARPENTERS	59.56	59.56	47.80
CEMENT FINISHERS	53.16	29.69	22.12
DIVER	95.30	Contact DDOL	Contact DDOL
DIVER TENDER	108.79		
ELECTRICAL LINE WORKERS	88.36	88.36	88.36
ELECTRICIANS	79.17	79.17	79.17
GLAZIERS	24.89	21.62	14.65
INSULATORS	65.34	65.34	65.34
IRON WORKERS	73.31	74.33	73.31
LABORERS	53.65	53.65	53.65
MILLWRIGHTS	82.08	82.08	65.93
PAINTERS	91.91	91.91	91.91
PILEDRIVERS	85.37	47.99	37.34
PLASTERERS	23.44	20.38	13.76
PLUMBERS/PIPEFITTERS/STEAMFITTERS	96.38	94.91	23.76
POWER EQUIPMENT OPERATORS	79.29	83.90	79.29
SHEET METAL WORKERS	37.47	23.25	21.84
SPRINKLER FITTERS	40.39	15.29	12.67
TRUCK DRIVERS	41.72	25.08	27.15

CERTIFIED: 06/27/2023 BY: _____
ADMINISTRATOR, OFFICE OF LABOR LAW ENFORCEMENT

NOTE: THESE RATES ARE PROMULGATED AND ENFORCED PURSUANT TO THE PREVAILING WAGE REGULATIONS ADOPTED BY THE DEPARTMENT OF LABOR ON APRIL 3, 1992.

CLASSIFICATIONS OF WORKERS ARE DETERMINED BY THE DEPARTMENT OF LABOR. FOR ASSISTANCE IN CLASSIFYING WORKERS, OR FOR A COPY OF THE REGULATIONS OR CLASSIFICATIONS, PHONE (302) 318-2769.

NON-REGISTERED APPRENTICES MUST BE PAID THE MECHANIC'S RATE.

PROJECT: City of Newark - Sanitary Sewer Improvements 2023, New Castle County

PREVAILING WAGE DEBARMENT LIST

The following contractors have been debarred for violations of the prevailing wage law 29Del.C. §6960 or other applicable State statutes.

Therefore, no public construction contract in this State shall be bid on, awarded to, or received by contractors and individuals on this list for a period of (3) three years from the date of the judgment or as deemed by a court of competent jurisdiction.

Contractor	Address	Date of Debarment
Mullen Brothers, Inc. and Daniel Mullen, individually	3375 Garnett Road, Boothwyn, PA 19060	Indefinite/ Civil Contempt
State Contractors Corporation, and Jose Oscar Rivera, individually	13004 Hathaway Drive Silver Spring, MD 20906	Indefinite/ 19 Del.C. 2374(f)
Green Granite and Jason Green, individually	604 Heatherbrooke Court Avondale, PA 19311	Indefinite/ Civil Contempt
Pro Image Landscaping, Inc. and Owner(s) individually	23 Commerce Street Wilmington, DE 19801 and/or 2 Cameo Road Claymont, DE 19703	Indefinite/19 Del.C. §108 & 10 Del.C. 542(c)
Liberty Mechanical, LLC and Owner(s), individually	2032 Duncan Road Wilmington, DE 19801	Indefinite/ 19 Del.C. 2374(f)
Integrated Mechanical and Fire Systems Inc. and Allison Sheldon, individually	4601 Governor Printz Boulevard Wilmington, DE 19809	Indefinite/19 Del.C. §108 & 10 Del C. 542(c)
ACH 1, INC.	873 Salem Church Road Newark, DE 19702	Indefinite/19 Del.C.6960

Updated: July 6, 2022

"General Decision Number: DE20230011 01/06/2023

Superseded General Decision Number: DE20220011

State: Delaware

Construction Type: Heavy

County: New Castle County in Delaware.

HEAVY CONSTRUCTION PROJECTS

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	. Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least $16.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2023.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	. Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least $12.15 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2023.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at http://www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/06/2023

CARP0173-010 05/01/2022

	Rates	Fringes
CARPENTER (Includes Form Work)	$ 34.90	24.21

ELEC0126-003 05/30/2022

	Rates	Fringes
LINE CONSTRUCTION (Lineman)	$ 59.17	29.75+11.25

ENGI0542-009 05/01/2020

	Rates	Fringes
POWER EQUIPMENT OPERATOR (Crane, Forklift, and Scraper)	$ 42.16	28.80+A

FOOTNOTE: A. PAID HOLIDAYS: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day, and Election Day (provided the employee works the scheduled work day following the holiday.)

LABO0199-008 05/01/2022

	Rates	Fringes
LABORER		
Backfiller, Common or General, Pipelayer, and Tamper (Hand Held)	$ 27.15	24.00
Trencher Hand Guided	$ 27.40	24.00

SUDE2014-008 01/20/2016

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	$ 25.78	0.58
ELECTRICIAN	$ 34.42	24.02
OPERATOR: Backhoe/Excavator/Trackhoe	$ 34.29	16.18
OPERATOR: Bulldozer	$ 27.09	18.20
OPERATOR: Loader	$ 31.88	12.57
TRUCK DRIVER: Dump Truck	$ 22.60	7.56

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

==========

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their

own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at https://www.dol.gov/agencies/whd/government-contracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage

payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISIO"

CITY OF NEWARK
Delaware

CONTRACT NO. 23-15

SANITARY SEWER IMPROVEMENTS 2023

GENERAL PROVISIONS

1. BIDS

Each bid shall be submitted on the proposal form included herein. The proposal and all other required documents must be submitted in a sealed envelope clearly identified with the bidder's name and marked "City of Newark - Contract No. 23-15, SANITARY SEWER IMPROVEMENTS 2023". **Bid Documents must be received by the Purchasing Division prior to 2:00 p.m. prevailing time, Tuesday, August 29, 2023.** Each bid so submitted shall constitute an irrevocable offer for a period of thirty (30) calendar days following the bid opening date. A bid bond equal to not less than 10% of the bid price must accompany the bid.

Alternatively, bids may also be emailed in PDF form to the City Purchasing Division at contracts@newark.de.us by the deadline noted above and will be opened immediately after the closing date and time and will be publicly recorded in the Council Chamber shortly thereafter.

The project includes, but is not limited to, approximately 13,000 linear feet of CIPP Lining, approximately 200 vertical feet of manhole lining. The project also includes approximately 30 manhole lid replacements, construction of a temporary bridge, and construction of a bypass piping operation crossing the White Clay Creek.

A **non-mandatory** pre-bid meeting will be held on **Tuesday, August 8, 2023, at 10:00 a.m.** at the McKees Solar Park, located at 100 McKees Lane, Newark, DE 19711.

2. DEFINITIONS

A. *Agreement:* The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.
B. *Contract Documents:* Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.
C. *Contractor:* The individual or entity with whom the Owner has entered into the Agreement.
D. *Engineer:* The Owner's consultant engineer. The Engineer for this project is Johnson, Mirmiran and Thompson (JMT).

E. *Owner:* The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed. The Owner for this project is the City of Newark.
F. *Shop Drawings:* All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
G. *Site:* Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.
H. *Subcontractor:* An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.
I. *Work:* The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, as required by the Contract Documents.

3. BID SECURITY

Each bid must be accompanied by a certified check, or cashier's check, or bid bond in the amount of ten percent (10%) of the proposed bid price, payable to the City of Newark. Failure to provide the required bid security may be grounds for rejection of the bid.

If the successful bidder fails or refuses to execute and deliver the contract within twenty (20) calendar days after receiving notice of the award of the contract, the successful bidder shall forfeit to the City for such failure or refusal the security deposited with the bid. Any certified check or cashier's check submitted as security shall be returned to all unsuccessful bidders thirty (30) calendar days after the bid opening date.

4. CONTRACT SURETY BOND

The successful bidder shall provide the City with a Performance Bond and Payment Bond in the full amount of the contract guaranteeing faithful performance of the contract. Such bonds shall be provided to the City with the executed contract within twenty (20) calendar days after receiving notice of award of the contract. Upon receipt of the contract surety bond, the City will return any certified check or cashier’s check submitted as bid security by the successful bidder.

If a warranty is included as part of this contract’s scope of work, once the project is substantially complete the surety bond shall be converted into a warranty bond for the term of the warranty. Once substantial completion of the project is reached and approved, City staff shall release any remaining retainage and issue a close out letter to the vendor stating the start date of the warranty period. A copy of the above noted warranty bond shall be provided to the City Purchasing Division no later than thirty (30) days from the receipt of the City’s close out letter.

5. TAXES

The price(s) quoted shall not include federal or state taxes. If applicable, the successful bidder shall provide the City with three (3) copies of the required tax exemption forms to accompany the bidder's invoice.

6. AWARDS

The City Manager or designee shall review each of the bids submitted and make a recommendation to the City Council on the disposition of the bids. The City Council reserves the right to accept or reject any or all bids or parts of bids as they may determine and to waive any irregularities or defects where the best interest of the City would be served.

7. BID PRICE

The bid price shall include all transportation, delivery, installation, and all charges for the goods and services specified for this contract. The Owner reserves the right to add or remove quantities at their discretion. Removal or addition of quantities shall not alter the unit pricing provided in the contract. The work done under this contract will be funded by the State Revolving Loan Fund Program (SRF), therefore prevailing wage rates and Davis Bacon wage rates apply to this contract; the Contractor is required to pay the higher of the wage rates listed for each labor category. The Contractor will be held to have examined and be familiar with the entire Bid Specification prior to submitting their Bid Proposal. No allowance for additional compensation will be considered for failure to comply with this requirement.

8. TIME OF COMPLETION AND LIQUIDATED DAMAGES

The Contractor is to complete the work within two hundred ten (210) calendar days from the date specified by the City in a written "Notice to Proceed". Liquidated damages of five hundred dollars ($500.00) per day may be assessed to the Contractor by the City for each day the contract is extended beyond the completion date to provide recovery of costs. Liquidated damages are not to be construed as a penalty in any sense, but rather a reasonable estimate of the damages that would be suffered by the City in the event of a breach. The City and the contractor shall acknowledge that the actual damages resulting from a breach may be difficult to ascertain and that this provision represents a reasonable estimation of such damages. This provision shall not limit the City’s right to pursue any other remedies available under law or equity.

9. INTENT OF SPECIFICATIONS

It shall be the Contractor's responsibility to furnish the goods and services specifically indicated in the scope of work and specifications and such other as may be required to meet the intent of the specifications, drawings, or as may be necessary to provide the operation intended by the City.

10. EXCEPTIONS & OMISSIONS

Any and all exceptions which are taken to the drawings and specifications must be noted in the space provided on the proposal. Any exception to the specifications may be grounds for rejection of the bid.

Further, the bidder recognizes that the City of Newark is not in the business of preparing specifications, and any omissions in this contract/RFP must be strictly addressed by the firm with the submittal of its proposal.

11. EQUALS

Where a specific product is specified by catalog or model number, the acceptability of any other "or equal" product shall be subject to the sole judgment of the City of Newark.

12. WARRANTIES AND STANDARDS

All goods are to be new and unused in all component parts, including all accessories. The specifications will be construed as the minimum required. When the manufacturer's standard exceeds the specifications, the standard units shall be furnished. All materials shall be free of defects. All standard manufacturer's warranties and guarantees shall apply to equipment and goods supplied under this contract.

The Contractor guarantees all of the work and materials for a period of one year, unless specifically stated as longer in the technical specifications or project plans after the date of completion and final acceptance by the City.

13. WORKMANSHIP

Workmanship will conform to the best current manufacturing practice followed for goods of this type. Component parts and units will be manufactured to definite standard dimensions with proper fit and clearances.

14. FINAL INSPECTION

All delivered goods and services will be subject to inspection by the City of Newark, Delaware. If in any way an item fails to meet the terms of the contract, it may be rejected or liquidated damage charges made. The decision of the City will be final, and any rejected items or materials will have to be replaced at the expense of the vendor.

15. ADVERTISEMENTS

Any bidder submitting a bid will not use the name of the City in any advertisement without first obtaining the written consent of the City Manager or their designee. All such requests should be submitted in writing to contracts@newark.de.us.

16. EEO AND BUSINESS LICENSES

The contractor shall be licensed to do business in the State of Delaware and shall be registered as a contractor in the City of Newark and possess all other required licenses. The contractor shall also be a fair and equal opportunity employer.

17. NONCOLLUSION

The bidder shall not, either directly or indirectly, enter into any agreement, participate in any collusion, or otherwise take any action in restraint of free competitive bidding in connection with the contract. Signed non-collusion statement shall be submitted with bid.

18. ADDENDA AND QUESTIONS

Any changes to the contract documents shall be made by written addenda, no later than four (4) calendar days prior to the bid opening date which may be issued with extensions to the bid submittal date if necessary to allow adequate time for response. Bidders shall bear the entire responsibility for being sure they have received all such addenda. **Bidder is responsible for submitting a signed letter listing the addendums received for this contract.** All addenda will be posted on the City website at www.newarkde.gov/bids. After the bids have been received, no claim that the bidder did not have complete information will be considered. No verbal agreement or conversation with any officer, agent or employee of the City, either before or after the execution of this contract, shall affect or modify any of the terms or conditions outlined herein.

All questions/requests for information regarding this contract (bid process, drawings and technical specifications, etc.) must be submitted via email to contracts@newark.de.us by 5:00 p.m. on Sunday, August 23, 2023 to allow staff sufficient time to develop answers to questions deemed appropriate. Please submit all questions/requests for information in bulk (e.g., in a Word document attachment to an email) to limit the total number of emails received. Any answers deemed necessary will be provided via addendum prior to the bid opening date.

19. PAYMENT

No invoice will be processed for payment until the goods and/or services have been delivered and verification is made that the specifications under this contract have been met. Progress payments, when requested, will be evaluated and approved for payment based on work completed to date according to the approved schedule of values. Upon written request from the Contractor, payment for material stored on site may be made at 50% of the material's

invoice price. Full payment will be made after the material is installed. Payment will be made within thirty (30) days of final acceptance by the City.

20. BIDDERS QUALIFICATIONS

No contract will be awarded to any bidder who in the judgment of the City is not a responsible bidder, or is not prepared with all the necessary experience, capital, organization, and equipment to conduct and complete the work for which the bidder proposes to contract.

21. LIABILITY INSURANCE

A. The Contractor shall at all times maintain and keep in force such insurance as will protect him from claims under Worker's Compensation Acts, and also such insurance as will protect him and the owner from any such claims for damages for personal injuries, including death, which may arise from operations under this contract, whether such operations be by the Contractor or by any Subcontractor or anyone directly or indirectly employed by any of them.

B. The Contractor shall be required to provide Workers' Compensation (WC)/Employer's Liability (EL) coverage with limits of insurance not less than:

$1,000,000 Per Accident
$1,000,000 Per Illness, Employee
$1,000,000 Per Illness, Aggregate

The Contractor shall be required to provide Contractors Professional Liability coverage with limits of insurance not less than:

$2,000,000 Per Claim
$2,000,000 Per Aggregate

The Contractor shall be required to provide Umbrella/Excess Liability coverage with limits of insurance not less than:

$5,000,000 Each Occurrence
$5,000,000 Aggregate

The Contractor shall be required to provide Commercial General Liability (CGL) coverage with limits of insurance not less than:

$2,000,000 Each Occurrence Limit
$2,000,000 Personal & Advertising Injury Limit
$3,000,000 Annual Aggregate Limit
$3,000,000 Products-Completed Operations Limit

$1,000,000 Business Auto Liability Limit (Owned, Hired, & Non-Owned Autos)

The Contractor, The City of Newark (Owner), JMT (Engineer), and all other parties required of the Contractor shall be included as insured on the CGL, using additional insured endorsements providing coverage as broad as the coverage provided for the named insured Subcontractor.

Subcontractors approved in association with the hiring of a Contractor shall be required to provide Commercial General Liability (CGL) coverage with limits of insurance in equal amount to those required of the Contractor.

All Contractors shall provide Contractors Pollution Liability with limits not less than:

Each Claim or Occurrence	$3,000,000
Annual Aggregate	$3,000,000

The Contractors Pollution Liability policy shall include coverage for Emergency Response Costs, Contingent Transportation, Non-Owned Disposal Sites, and Natural Resource Damage. If coverage is written on a claims-made basis, an Extended Reporting Period, or tail coverage, shall be provided for two (2) years following completion of the insured's services. In the alternative, the Contractors Pollution Liability policy shall be renewed for not less than two years following completion. The policy retroactive date shall be no later than the effective date of the Agreement.

C. A copy of the Certificate of Insurance must accompany each bid. The Contractor shall ensure that all insurances required remain valid for the entire term of the contract, inclusive of any term extension(s) and retroactive if claim is made afterward. The Prime Contractor's attention should be directed to other sections of the contract documents in the event additional insurance is required based on the scope of work.

22. ITEMS TO BE EXECUTED AND SUBMITTED WITH BID

Bidders are notified that the proposal, insurance documentation, and bid security must be executed and completed in full and submitted with the bid at the time of bidding, or bid may be subject to rejection.

The Contractor shall also submit the following with the bid:

A. List of Subcontractors and Qualifications
B. Exceptions or qualifications to the Contract Documents
C. Executed Bid Bond
D. Signed Certificate of Nonsegregated Facilities
E. Signed Compliance Statement

F. Acknowledgment of Addenda
G. Proposal
H. Insurance Documentation
I. Affidavit of Employee Drug Testing Program

23. ITEMS TO BE SUBMITTED WITH SIGNED CONTRACT

A. Construction Schedule
B. Performance Bond
C. Insurance Documentation
D. Payment Bond

24. RETAINAGE

The City will retain 5% of the progress payments until such time as the project is complete and accepted by the City.

25. INDEMNIFICATION

The Contractor shall solely be responsible and liable for the accuracy and completeness of all work performed and shall agree to indemnify, defend and hold harmless the City of Newark, its officers, agents and employees, from and against any and all claims, actions, suits and proceedings arising out of, based upon or caused by negligent acts, omissions or errors of or the infringement of any copyright of patent, by the contractor, its officers, agents, employees or subcontractors, in the performance of the contracted agreement.

26. TERMINATION OF AGREEMENT

This agreement may be terminated by the City upon thirty (30) days written notice if the contractor fails to perform satisfactorily in accordance with the terms and conditions of the contract. In the event this agreement is terminated, the contractor shall be paid for services satisfactorily rendered up to the termination date.

27. FAMILIARITY WITH PROPOSED WORK

A complete understanding of the conditions as they exist is required by careful personal examination of the work at the site. Each contractor bidding must completely satisfy himself as to the exact nature and existing conditions of the work area. The contractor also shall carefully examine the plans, specifications, and the contract forms for the work contemplated. Failure to do so will not relieve the successful contractor of his obligation to carry out the provisions of the contract.

The contractor shall not, at any time after the execution of the contract, set up any claims whatsoever based upon insufficient data or incorrectly assumed conditions, nor shall claim

any misunderstanding in regard to the nature, conditions or character of the work to be done under this contract, and shall assume all risks resulting from any change in the conditions which may occur during the progress of the work.

The Contractor is solely responsible to identify, obtain, and pay for all required permits, licenses, and approvals required by any and all State, local, or Federal authorities or governmental agencies to complete the Work.

28. CONTRACTOR'S UNDERSTANDING

It is understood and agreed that the contractor has, by careful examination, satisfied himself as to the nature and location of the work, the conformation of the ground; the character, quality and quantity of the material which will be required; the character of equipment needed preliminary to and during the prosecution of the work; the general and local conditions; all permit restrictions and conditions; and all other matters which can in any way affect the work under this contract. No verbal agreement or conversation with any officer, agent, or employee of the City of Newark, either before or after the execution of this contract, shall affect or modify any of the terms or obligations herein contained.

29. SAFETY REQUIREMENTS

The Contractor shall comply with the requirements and standards of the Occupational Safety and Health Act and all other state and local laws, ordinances and codes governing all work to be provided under the contract documents.

The Contractor shall maintain on-site and in all vehicles at all times spill response equipment appropriate for the types and quantities of fluids and/or materials that may be subject to spillage during the project. All discharges to the storm drainage system or surface waters are strictly prohibited. In the event that a spill reaches the storm drainage system and/or surface waters, the contractor shall notify the Public Works and Water Resources Department immediately at 302-366-7000. The Contractor will also be responsible for spill response and clean-up at no cost to the owner. If the Contractor fails to respond to and clean up a spill to the satisfaction of the owner, the owner will perform clean up and bill the Contractor for 150% of the personnel time and material expenses incurred by the City as necessary for the response.

30. RESTORATION OF DISTURBED AREAS AND CLEAN UP

Upon completion of the work, all related work, such as lawns, curbs, sidewalks, fences, shrubbery, and driveways that have been disturbed shall be restored to their original condition and in accordance with City of Newark Standards and Specifications. The area shall be cleared of all tools, equipment and refuse resulting from the project. The contractor shall, at the end of each day, leave the areas in which he has worked, free of debris and safely secure his material and equipment.

31. INSPECTION OF MATERIAL AND WORK

A. Workmanship shall be of good quality and all work and material shall be at all times subject to the inspection of the City of Newark or their duly authorized representatives. The Contractor shall provide reasonable and necessary facilities for such inspection. If required by the City of Newark, the contractor shall take down or uncover portions of the finished work.
B. The Contractor agrees that in case any of the material or work, or both, shall be rejected as defective or unsuitable by the city, material and the work shall be done again immediately to the satisfaction and approval of the city at the cost and expense of the Contractor.
C. Any omission or failure on the part of the City of Newark or inspectors to disapprove or reject any defective work or materials shall not be construed to be an acceptance of any defective work or material.
D. In case the City should not consider the defect of sufficient importance to require the contractor to replace any imperfect work or materials, the City shall have the power to make an equitable deduction from the stipulated price.
E. Neither the inspection nor supervision of the work, nor the presence or absence of an inspector shall relieve the contractor of any of his obligations under the contract or of making his work conform to the specifications.

32. DEBRIS COLLECTION AND DISPOSAL

The Contractor is responsible for collection, removal, transport, and lawful disposal of construction debris and or materials.

33. OWNERSHIP OF MATERIAL

All documents prepared and submitted pursuant to this RFP or contract shall be property of the City upon submittal and will be subject to staff and public review and discussion in association with our public bidding and formal proposal process. Any information or documents deemed proprietary shall be so marked at time of submittal and limited to detail where the disclosure of contents could be prejudicial to competing offerors during the process of negotiation, and any commercial or financial information of a privileged or confidential nature.

34. REGULATIONS AND EXCEPTIONS

The application of lead paint as defined in Title 16, Chapter 30M of State Code and Chapter 7 of City Code as part of this contract is prohibited. The Contractor will be subject to fines as outlined in State and City Code if it is determined that lead paint was applied in violation of State and City Code.

Safety Data Sheet information for all paints applied to internal or external structures shall be provided to the City for review and approval prior to application. The Contractor will be required to remove and remediate any lead paint to the satisfaction of the City, at no cost to the City. Prior to commencing removal and remediation efforts, the Contractor shall provide a written remedial action plan which includes health safety protection requirements for both employees and the public for review and approval by the City and/or DNREC/DHSS. Any and all sample results that are generated as a result of improper application of lead paint shall be provided to the City within five (5) working days of being received by the Contractor. The Contractor will also be required to replace all paint removed with non-lead paint to the satisfaction of the City, and at no cost to the City.

Failure to adequately remove, remediate, and replace lead paint applied in violation of State and City Code as outlined herein will be considered a breach of contract.

35. FORCE MAJEURE OCCURANCE

Upon the occurrence of a force majeure event, the City of Newark shall immediately notify the awarded vendor. In this instance, the City shall be excused from any further financial or contractual obligations for as long as such circumstances prevail. As used in this document, a "force majeure occurrence" means acts of God; acts of the public enemy; acts of the State and any other governmental entity in its sovereign or contractual capacity; fires; floods; epidemics or pandemics; quarantine restrictions; strikes or other labor disputes; freight embargoes; unusually severe weather; or other unusual event outside of the reasonable control of a party hereto that prevents a party to this Agreement from performing its contractual obligations.

36. RELEASE OF LIENS

The Contractor is required to provide documentation stating that all liens filed against the Contractor have been paid before the final 5% retainage is released to the Contractor.

37. VENDOR REQUIREMENTS FOR FEDERALLY FUNDED PROJECTS

If this contract or RFP is funded through the State Revolving Loan Fund, a federal grant, or any other federal funding, the awarded vendor and all subcontractors must be registered at www.sam.gov before contract agreements are signed. The awarded vendor and all subcontractors must also show proof of SAM registration and good standing through the SAM portal before contract agreements are signed. SAM (System for Award Management) is the primary supplier database for the U.S. Federal Government.

The City of Newark shall not conduct business with vendors that are debarred or otherwise flagged/blacklisted if the project is funded using federal money. If a vendor or subcontractors are determined to be debarred at any point during the term of a contract, this will be seen as grounds for termination of the contract, and potentially grounds for termination from other

contracts held with the City, if any.

The Federal Register Part 40 CFR 33.240 requires these "affirmative steps" in procurement actions to assure that MBE and WBE firms are awarded a fair share of subagreements:

(1) Including qualified small, minority, and women's business solicitation lists.
(2) Assuring that small, minority, and women's businesses are solicited whenever they are potential sources.
(3) Dividing total requirements, when economically feasible, into small tasks or quantities to permit maximum participation of small, minority, and women's businesses.
(4) Establishing delivery schedules, where the requirements of the work permit which will encourage participation by small minority and women's businesses.
(5) Using the services and assistance of the Small Business Administration and the Office of Minority Business Enterprise of the U.S. Department of Commerce.
(6) Requiring each party to a subagreement to take the affirmative steps in 1 through 5 above.

38. SEVERABILITY

If any provision of this contract (general, special, technical, or other) shall be held to be invalid or unenforceable for any reason, the remaining provisions shall continue to be valid and enforceable. If a court finds that any provision of this contract is invalid or unenforceable, but that by limiting such provision it would become valid and enforceable, then such provision shall be deemed to be written, construed, and enforced as so limited.

39. PREFERENCE FOR DELAWARE LABOR

According to State law, any person, company, or corporation who violates the requirements of Title 29, Section 6962, of the Delaware Code regarding preference for Delaware Labor shall pay a penalty to the State Secretary of Finance equal to the amount of compensation paid to any person in violation of this Section. This regulation is waived if it is in conflict with Federal requirements.

40. LIST OF SUBCONTRACTORS' CERTIFICATIONS

A. Each bidder shall execute and submit with his bid, on the form provided herein, a list of subcontractors, including complete names and addresses, whose services the bidder intends to use in performing all work under the contract. Bids submitted without such a list, or with a list not completely or properly executed, are subject to rejection.

B. Each bidder is required to notify all subcontractors that they are obligated to comply with the provisions of Federal and State law as they pertain to this project, and that they must submit evidence of such compliance upon notice or request. The bidder shall certify his compliance with this requirement on the list of subcontractors.

C. After the contract has been awarded, the successful bidder shall not substitute another subcontractor for any subcontractor whose name was set forth on the list of subcontractors which accompanied his bid, without the written consent of the City.

41. GUARANTEE

The contractor hereby guarantees all work for a period of one year after the date of completion and final acceptance thereof by the City as follows:

A. Against all faulty or imperfect materials and against all imperfect, careless, and/or unskilled workmanship.

B. The Contractor agrees to replace with proper workmanship and materials, and to re-execute, correct or repair without cost to the City, any work which may be found to be improper or imperfect and/or which fails to perform as specified.

C. The guarantee obligations assumed by the contractor under these contract documents shall not be held or taken to be in any way impaired because of the specifications, indication or approval by or on behalf of the City of any articles, materials, means, combination of things used or to be used in the construction, performance and completion of the work or any part thereof.

D. No use or acceptance by the City of the work or any part thereof, nor any failure to use the same nor any repairs, adjustments, replacements, or corrections made by the City due to the contractor's failure to comply with any of his obligations under the contract documents, shall impair in any way the guarantee obligations assumed by the Contractor under these contract documents.

42. APPROVAL

The contractor shall receive approval in writing from the engineer before ordering any material for work to be done under this contract.

CITY OF NEWARK
Delaware

CONTRACT NO. 23-15

SANITARY SEWER IMPROVEMENTS 2023

SCOPE OF WORK

1. SCOPE OF WORK

The project includes, but is not limited to, approximately 13,000 linear feet of CIPP Lining, approximately 200 vertical feet of manhole lining. The project also includes approximately 30 manhole lid replacements, construction of a temporary bridge, and construction of a bypass piping operation crossing the White Clay Creek. All work shall be performed in accordance with all Local, State, and Federal laws and regulations.

The drawings and specifications further define the scope of work. The Contractor shall furnish all required equipment, materials, and labor necessary for completion of the work described herein.

2. LOCATION

The project is spread throughout several locations within the City of Newark municipal boundary. Drawing sheets 1 and 2 of the attached plans contain a location map displaying the sanitary sewer improvement locations.

3. PERMITS, CERTIFICATIONS, LAWS, AND ORDINANCES

The Contractor shall perform the work in accordance with all local, state, and federal laws and ordinances.

The Contractor is required to have or obtain a City contractor's license and State of Delaware business license prior to starting the work. The Contractor is required to obtain any permits required for completion of the work. The fees for City of Newark permits, if applicable, will be waived.

4. COORDINATION

A. Contractor shall coordinate construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Contractor shall coordinate its operations with operations that depend on each other for proper installation, connection, and operation.
B. Schedule construction operations in sequence required to obtain the best results where

installation of one part of the Work depends on installation of other components, before or after its own installation.

C. Coordinate removal of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
D. Coordinate with the City to detour pedestrian access to the project site.

5. SUBMITTALS

The Contractor shall submit an **electronic copy** of each submittal for review and approval by the Owner. Provide submittals in accordance with specifications. For scheduling purposes, the Contractor shall allow for a ten (10) business day review time by the Owner. Comments and Approvals will be returned in a digital format. The Contractor shall provide, at minimum, all submittals identified in the specifications. Each shop drawing shall contain only one work item and shall be consecutively numbered before submission. Additional submittals may be requested at the discretion of the Owner.

6. RESTORATION

The Contractor is responsible to restore all disturbed areas to original or better condition and remove all debris, residuals, trash, and excess materials from the sites.

7. SECURITY AND SITE ACCESS

The Contractor is responsible for security of his equipment and materials related to the work. The Contractor is responsible for maintaining the work site in a safe and orderly manner. Contractor is required to maintain a secure perimeter around each work area. Pedestrian walkways shall be always open except when they must be closed for construction purposes.

A. Driveways, Walkways and Entrances: Keep driveways and entrances clear and accessible at all times. Do not use these areas for parking or storage of materials
B. Schedule deliveries to minimize use of driveways and entrances by construction operations.
C. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

Prior to mobilization, the Contractor shall take a pre-construction video or photographs of any such areas to be used for access, staging, or work during the project and submit to the Owner. Video or photographs shall be used to document any existing damage or deteriorated conditions.

It shall be the responsibility of the Contractor to obtain permission from any neighboring property owner if said Contractor finds it necessary to enter upon or use in any manner the property of any neighbor for the expedition of the Contractor's work.

8. WORK RESTRICTIONS

A. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work at the site to normal business working hours of 7:00 a.m. to 5:00 p.m., Monday through Friday, unless otherwise indicated or approved by City of Newark.

C. Any and all work within a DelDOT right-of-way shall be in accordance with DelDOT work restrictions and traffic control requirements which may require nighttime work activity inside the right-of-way when impacting the travel lanes.

D. Weekend Hours: Weekend hours must be approved by the City. Contractor must submit request to work on weekends at least five (5) business days in advance of the projected work date.

E. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:

1. Notify Owner not less than five (5) days in advance of proposed utility interruptions.
2. Obtain Owner's written permission before proceeding with utility interruptions.

F. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption with Owner.

1. Notify Owner not less than two (2) days in advance of proposed disruptive operations.
2. Obtain Owner's written permission before proceeding with disruptive operations.

G. Controlled Substances: Use of tobacco products and other controlled substances on Project sites is not permitted. See Office of Management and Budget – Drug Testing Requirements for further information regarding controlled substances.

H. Contractor shall have contaminant spill response equipment readily available on-site during construction activity.

9. SITE CONSTRUCTION AND EXISTING UTILITIES

A. The Contractor is responsible to account for and consider existing site conditions and existing utilities. Prior to starting any work, the Contractor shall contact Miss Utility of Delmarva at 1-800-282-8555 or 811 for a utility mark out. The Contractor is responsible for locating and protecting existing utilities for the duration of the work.

B. The failure to show on the contract drawings any existing utilities shall not relieve the contractor of his responsibility in determining the locations of utilities.

C. Any damage done to existing utility lines, services, poles, and structures shall be repaired or replaced by the Contractor at his own expense. The Contractor shall notify all possible owners of utilities in the areas where work is to be done and the schedule and extent of such work.

10. EXAMINATION OF SITE, DRAWINGS, ETC.

Before submitting proposals, bidders shall inform themselves fully of the nature of the work by a personal examination of the site and the drawings and by such other means as they may prefer or consider necessary, as to matters, conditions and considerations bearing on or in any way affecting the preparation of their proposals and the contract. They shall not, at any time after submission of the proposal, dispute the accuracy of such drawings or the specifications and the general conditions nor assert that there is any misunderstanding in regard to the location, extent or nature of the work to be performed.

11. STARTING DATE, SEQUENCE OF CONSTRUCTION & COMPLETION DEADLINE

The starting date of this contract will be as specified by the City in a written "Notice to Proceed." A preconstruction meeting shall be scheduled to finalize the sequence of construction. The final decision as to sequence of construction shall be that of the Owner.

12. SUPERVISION OF WORK AND COORDINATION

The Contractor shall supervise the work and shall secure full cooperation of all subcontractors, if any, to complete the work with a minimum interference from the operating personnel of the Owner.

13. COORDINATION WITH THE OWNER

The Contractor shall coordinate all activities with the City including, but not limited to, traffic control, requests for pedestrian trail closures, system shutdowns, and inspections. The Contractor shall provide the City with reasonable time to respond to requests for information and for coordination.

14. INSPECTION OF MATERIAL AND WORK

A. Workmanship shall be of good quality and all work and material shall be at all times subject to the inspection of the City of Newark or their duly authorized representatives. The Contractor shall provide reasonable and necessary facilities for such inspection. If required by the City, the Contractor shall take down or uncover portions of the finished work.

B. The Contractor agrees that in the event that any of the material or work, or both, shall be rejected as defective or unsuitable by the City, the material shall be replaced, and the work shall be done again immediately to the satisfaction and approval of the City at the cost and expense of the Contractor.

C. Any omission or failure on the part of the City of Newark or its inspectors to disapprove or reject any defective work or materials shall not be construed to be acceptance of any defective work or material.

D. Contractor and City Inspector must agree on additional work required outside of the contract documents. A daily time and material log for all additional work shall be supplied by the Contractor and signed by the City Inspector.

15. PROTECTION TO PUBLIC AND PROPERTY

A. The Contractor shall insure protective measures to the general public and to occupants of property along and adjacent to the work area.

B. The Contractor is responsible for any and all damage or injury of any kind which directly or indirectly may be done to any property or sustained by any persons during the execution of the work.

C. If any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect or misconduct in the execution of the work, the contractor shall restore at his own expense such property to a condition similar or equal to that existing before such damage or injury was done by repairing, rebuilding or otherwise restoring as may be directed, or he shall make good such damage or injury in an acceptable manner.

16. SAFETY PRECAUTIONS

A. The Contractor shall execute work under this contract with the utmost concern for the safety of the general public. All areas worked upon and subject to travel by the public shall be identified with the proper warning indicators and signs during the working period. Upon completion of the contract or when such areas are reopened to public travel, they shall be rendered in a safe condition using either temporary or permanent repair material as the case may be. No private driveway shall be blocked or closed without the property owner being notified and obtaining their agreement.

B. Streets, roads, and driveways used by the Contractor for access to and from the work site shall be protected from damage in excess of that caused by the normal traffic of vehicles used for or in connection with construction work. Any such damage done shall be repaired immediately and left in good condition at the end of the construction period and shall be

repaired at the Contractor's expense.

17. RIGHT-OF-WAY

All operations shall be confined to the assigned work area. The City will provide no right-of-way over other properties. The Contractor shall take every precaution to minimize the inconvenience to the owners or tenants of adjacent property. Public roads shall not be obstructed in such a way as to cut off traffic. The Contractor shall, at his own expense, repair any damage or injury to either public or private property during the progress of the work.

18. TRAFFIC CONTROL AND ROAD SIGNS

A. The Contractor shall be responsible for traffic control for the duration of the project, as needed, and shall coordinate traffic control plans and obtain necessary permits from the Owner for work on city-owned roads. The Contractor shall be responsible for removal and re-installation of all signs in the work area. Signs necessary for the safe movement of traffic shall be maintained in operation during construction. Any other signs shall be properly stored by the Contractor, who shall be responsible for them. All signage shall comply with the current Manual on Uniform Traffic Control Devices (MUTCD).

B. The Contractor shall provide notice to the City seven (7) calendar days in advance of any planned road or entrance closure. All closures shall be at the discretion of the City.

19. EXCAVATED MATERIAL

It shall be the responsibility of the Contractor to dispose of all excavated material which, in the opinion of the City, is unsatisfactory for backfill or fill. The cost of this disposal shall be borne by the Contractor.

20. DUST CONTROL/EROSION AND SEDIMENT CONTROL

It shall be the responsibility of the Contractor to handle dust control on this project and necessary erosion and sediment controls required by the City and State, including, but not limited to, compost filter socks. The City Inspector shall make the final determination on necessary measures.

21. WATER SUPPLY

The Contractor shall not use City fire hydrants without permission and advance notice. The Contractor shall schedule and perform work in a manner that minimizes disruption of water service to City of Newark customers. The Contractor shall not operate any water valves unless permission in writing is granted by the City.

22. JOB SITE MAINTENANCE, RESTORATION AND CLEANUP

The Contractor is responsible to restore all disturbed areas to original or better condition and remove all debris, residuals, trash, and excess materials from the site. The Contractor is required to keep the work area clean during construction and remove trash as it accumulates. Roads shall be kept clean and free of mud, debris, and dirt. At the direction of the City Inspector, the Contractor is responsible for the cost of street sweeping and maintenance required for upkeep of clean road surfaces.

23. PROJECT MEETINGS

Progress meetings shall be scheduled and held monthly during construction and shall be facilitated by the City or the City's representative.

24. DRAWINGS

Project Drawings are included as Attachment 1.

25. BID ITEMS

Bidders must provide prices on the Proposal form including all adjustment bid items. The Owner reserves the right to delete from the Contract one or more items listed and the right to add or subtract from the quantity of each item. The total price to be paid will be adjusted in accordance with the Contractor's unit prices as required below. There will be no extra compensation or increase in unit prices in the Proposal if such additions and/or deletions are made to quantities.

26. BASIS OF PAYMENT

Payment for these items shall be included in the unit prices for each item as described in the Proposal. All other items, methods, and materials necessary to complete the work as described below shall be incidental to the bid item the work is being completed under.

Application and Certification for Payment shall be made on proper AIA Documents.

27. METHOD OF MEASUREMENT AND INCIDENTALS DETERMINATION

Payment for the material furnished and work done under this contract will be made as stipulated herein for the amount of materials supplied and work done under authorization of the City and in accordance with actual measurements; and the Contractor shall not be entitled to receive additional compensation for anything else furnished or done, except for such extra work as shall be required by a written change order issued and approved by the City.

It is intended that all work shown on the contract drawings and included in the specifications is to be paid for under the items listed in the proposal form. The absence

from the proposal form of bid items specifically described in the Standard Specifications or shown on the drawings shall be interpreted as meaning that the cost of such work contemplated by the contract documents shall be included in the prices bid for related items for which quantities have been established.

All work shall be paid based on the methods of Measurement and Payment Provisions in the Standard Specifications except as otherwise noted herein.

The item numbers referenced in this contract relate to the Construction Details outlined in the Standard Specifications.

The Contractor shall prepare a monthly Application and Certification for Payment of the total amount of work completed on the contract. For the purpose of arriving at a basis for monthly payment, the Contractor shall submit an invoice for work performed during the preceding month, with a breakdown of the work performed and the unit prices for the various items included in the proposal.

In accordance with Title 29, Section 6962 of the Delaware Code, the City shall retain five percent (5%) of the funds to be paid to the Contractor during the contract until completion and final acceptance of all work by the City.

Unless otherwise specifically specified herein, the measurement of payment shall be for the installation of the materials listed in the proposal in accordance with the unit described as Each (EA), Linear Foot (LF), Vertical Foot (VF), Square Yard (SY), Ton (TN), Lump Sum (LS), etc. All incidental work and costs associated with the Bid Item shall be included in the Contractor's unit price for each bid item.

Bid Item Descriptions:

A. Bid Items 1-1, 2-1, 3-1, 4-1 and 6-1 - Cured-In-Place Pipe (CIPP) Liner, 8-inch Diameter: This bid item includes, but is not limited to, mobilization and demobilization, cleaning, pre-lining and post lining CCTV inspection, and preparation of sanitary sewer pipe prior to lining, bypassing of sewer flows (pump and haul where applicable), installation of CIPP liner, maintenance of traffic, access improvements, on-road and off-road restoration, erosion and sediment control measures, and any other incidental costs required to complete all scope of work items. This item is measured per linear foot (LF) of 8-inch diameter CIPP liner installed. Refer to the Specification for Pipe Rehabilitation by Cured-In-Place Method (CIPP) for additional items incidental to this per linear foot cost.

B. Bid Items 2-2 and 5-1 - Cured-In-Place Pipe (CIPP) Liner, 10-inch Diameter: This bid item includes, but is not limited to, mobilization and demobilization, cleaning, pre-lining and post lining CCTV inspection, and preparation of sanitary sewer pipe prior to lining, bypassing of sewer flows, installation of CIPP liner, maintenance of traffic, access improvements, on-road and off-road restoration, erosion and sediment control

measures, and any other incidental costs required to complete all scope of work items. This item is measured per linear foot (LF) of 10-inch diameter CIPP liner installed. Refer to the Specification for Pipe Rehabilitation by Cured-In-Place Method (CIPP) for additional items incidental to this per linear foot cost.

C. Bid Items 4-2 and 5-2 - Cured-In-Place Pipe (CIPP) Liner, 18-inch Diameter: This bid item includes, but is not limited to, mobilization and demobilization, cleaning, pre-lining and post lining CCTV inspection, and preparation of sanitary sewer pipe prior to lining, bypassing of sewer flows, installation of CIPP liner, maintenance of traffic, access improvements, on-road and off-road restoration, erosion and sediment control measures, and any other incidental costs required to complete all scope of work items. This item is measured per linear foot (LF) of 18-inch diameter CIPP liner installed. Refer to the Specification for Pipe Rehabilitation by Cured-In-Place Method (CIPP) for additional items incidental to this per linear foot cost.

D. Bid Item 1-2 - Cured-In-Place Pipe (CIPP) Liner, 24-inch Diameter: This bid item includes, but is not limited to, mobilization and demobilization, cleaning, pre-lining and post lining CCTV inspection, and preparation of sanitary sewer pipe prior to lining, bypassing of sewer flows, installation of CIPP liner, maintenance of traffic, access improvements, on-road and off-road restoration, erosion and sediment control measures, and any other incidental costs required to complete all scope of work items. This item is measured per linear foot (LF) of 24-inch diameter CIPP liner installed. Refer to the Specification for Pipe Rehabilitation by Cured-In-Place Method (CIPP) for additional items incidental to this per linear foot cost.

E. Bid Item 1-3 - Cured-In-Place Pipe (CIPP) Liner, 36-inch Diameter: This bid item includes, but is not limited to, mobilization and demobilization, cleaning, pre-lining and post lining CCTV inspection, and preparation of sanitary sewer pipe prior to lining, bypassing of sewer flows, installation of CIPP liner, maintenance of traffic, access improvements, on-road and off-road restoration, erosion and sediment control measures, and any other incidental costs required to complete all scope of work items. This item is measured per linear foot (LF) of 36-inch diameter CIPP liner installed. Refer to the Specification for Pipe Rehabilitation by Cured-In-Place Method (CIPP) for additional items incidental to this per linear foot cost.

F. Bid Items 1-4, 2-4, 3-3, 4-5, 5-4, and 6-4 – Hinged Lid Replacement: This bid items includes, but is not limited to, excavation, saw cutting, removal of existing frame and cover, installation of hinged lid frame and cover, backfill, on-road and off-road restoration, erosion and sediment control measures, and any other incidental costs required to complete all scope of work items. This item is measured per each (EA) lid replacement. Refer to the Specification for Installation of Sanitary Sewer Mains and Manholes for additional items incidental to this per each cost.

G. Bid Item 3-4 – Standard Lid Replacement: This bid items includes, but is not limited to, excavation, saw cutting, removal of existing frame and cover, installation of standard lid frame and cover, backfill, on-road and off-road restoration, erosion and sediment control measures, and any other incidental costs required to complete all scope of work items. This item is measured per each (EA) lid replacement. Refer to the Specification for Installation of Sanitary Sewer Mains and Manholes for additional items incidental to this per each cost.

H. Bid Items 2-3, 3-2, and 4-3 - Lateral Connection Reinstatement: This bid item includes, but is not limited to, all measures required to reinstate sanitary sewer laterals following CIPP liner installation. This item is measured per lateral reinstated. Refer to the Specification for Pipe Rehabilitation by Cured-In-Place Method (CIPP) for additional items incidental to this per linear foot cost.

I. Bid Items 4-4, 5-3, and 6-3 – Manhole Lining, 48-Inch Diameter: This bid item includes, but is not limited to, mobilization and demobilization, cleaning, pre-lining and post lining CCTV inspection, and preparation of sanitary sewer manhole prior to lining, grouting, bypassing of sewer flows, installation of liner on all components of the structure (chimney, cone, wall, bench, invert), maintenance of traffic, on-road and off-road restoration, erosion and sediment control measures, and any other incidental costs required to complete all scope of work items. This item is measured per vertical foot (VF) of 48-inch diameter manhole liner installed. Refer to the Specification for Manhole Rehabilitation for additional items incidental to this per vertical foot cost.

J. Bid Item 4-6 – White Clay Creek Bypass: This bid items includes, but is not limited to, clearing and grubbing, access improvements, equipment, materials, bypass piping, on-road and off-road restoration, erosion and sediment control measures, and any other incidental costs required to complete all scope of work items. This item is measured as lump sum (LS).

K. Bid Item 5-5 – Temporary Access Bridge: This bid items includes, but is not limited to, clearing and grubbing, access improvements, equipment, materials, on-road and off-road restoration, erosion and sediment control measures, and any other incidental costs required to complete all scope of work items. This item is measured as lump sum (LS).

L. Bid Item 6-2 – Point Repair, Open Cut: This bid items includes, but is not limited to, the lump sum cost for mobilization and demobilization, excavation, removal and installation of sanitary sewer pipe, manhole installation, maintenance of traffic, on-road and off-road restoration, erosion and sediment control measures, and any other measures required to complete all scope of work items. Refer to the Specification for Installation of Sanitary Sewer Mains and Manholes for additional items incidental to this per each cost.

M. Bid Item 7-1 – Pipe Grouting Prior to Lining: This bid item includes, but is not limited to, all measures required to apply grout and seal infiltration at defect locations and joints as

necessary prior to installing CIPP liner. This item is measured per joint or defect grouted. Refer to the Specification for Sanitary Sewer Pipe Joint and Service Connection Testing and Grouting for additional items incidental to this cost.

N. Bid Item 7-2 – Removing Protruding Lateral: This bid item includes, but is not limited to, removing all lateral protruding into the waterway that may inhibit the successful installation of CIPP liner. This item is measured per lateral intrusion removed.

28. AVAILABLE BACKGROUND INFORMATION

Maps, photographs, closed circuit television (CCTV) inspection videos, and other documents provided herein form a part of this Bid Specification to the extent referenced and provide detailed information about the Project Location, and existing conditions of the site(s). The documentation is provided for informational purposes only and for the sole use of the Contractor. The City makes no claims as to the correctness or accuracy of the data provided therein. The Contractor shall review and determine for themselves the correctness and accuracy of the information before incorporating and relying on the prior work as part of their work product to the City.

CITY OF NEWARK
Delaware

CONTRACT NO. 23-15

SANITARY SEWER INPROVEMENTS 2023

PROPOSAL

To: The Mayor and City Council
Newark, Delaware

From: _____

The undersigned as a lawfully authorized agent for the below named bidder has carefully examined the Bid Documents to be known as Contract No. 23-15 and binds himself on award to him by the Mayor and City Council of Newark, Delaware to execute in accordance with such award, a contract of which this Proposal and said General Provisions and Specifications and any Addenda shall be a part, and to furnish the goods as specified F.O.B. Newark, Delaware in a manner that is in complete accordance with said General Provisions and Specifications at the following named unit price on or before the delivery period stated below:

Bid Item	Item Description	Unit	Bid Quantity	Unit Price	Item Total
AREA 1: MACDUFF COURT					
1-1	CIPP Liner, 8"	LF	199		
1-2	CIPP Liner, 24"	LF	399		
1-3	CIPP Liner, 36"	LF	166		
1-4	Hinged Lid Replacement	EA	4		
AREA 2: COLLEGE AVE					
2-1	CIPP Liner, 8"	LF	698		
2-2	CIPP Liner, 10"	LF	489		
2-3	Lateral Connection Reinstatement	EA	8		
2-4	Hinged Lid Replacement	EA	7		
AREA 3: BELLEVUE ROAD					
3-1	CIPP Liner, 8"	LF	763		
3-2	Lateral Connection Reinstatement	EA	3		
3-3	Hinged Lid Replacement	EA	1		
3-4	Standard Lid Replacement	EA	1		

Bid Item	Item Description	Unit	Bid Quantity	Unit Price	Item Total
AREA 4: EAST MAIN STREET & MCKEES LANE					
4-1	CIPP Liner, 8"	LF	375		
4-2	CIPP Liner, 18"	LF	3035		
4-3	Lateral Connection Reinstatement	EA	34		
4-4	Manhole Lining	VF	9		
4-5	Hinged Lid Replacement	EA	2		
4-6	White Clay Creek Bypass	LS	1		
AREA 5: CREEK ROAD					
5-1	CIPP Liner, 10"	LF	899		
5-2	CIPP Liner, 18"	LF	4177		
5-3	Manhole Lining	VF	114		
5-4	Hinged Lid Replacement	EA	14		
5-5	Temporary Access Bridge	LS	1		
AREA 6: FREMONT TRAIL					
6-1	CIPP Liner, 8"	LF	1839		
6-2	Point Repair, Open Cut	EA	1		
6-3	Manhole Lining	VF	84		
6-4	Hinged Lid Replacement	EA	7		
CONTINGENT ITEMS					
7-1	Grouting	EA	20		
7-2	Remove Protruding Lateral	EA	10		
TOTAL FOR BID ITEMS 1-1 THROUGH 7-2:					

CITY OF NEWARK
Delaware

CONTRACT NO. 23-15

SANITARY SEWER IMPROVEMENTS 2023

PROPOSAL (CONT.)

We acknowledge that we **are/are not (circle one)** registered on www.sam.gov. We also acknowledge that there are no exceptions noted against us as outlined on www.sam.gov.

Our unique entity identifier (UEI), as outlined on www.sam.gov is (write N/A if none): _____

We acknowledge receipt of addendum(a) numbers: _____

Exceptions: _____

_____

Contact Information for Notice of Award/Rejection (If different from below): _____

_____

Project to be Completed by _____

BIDDER: _____ DATE: _____

SUBMITTED BY:

_____ _____
Legally Authorized Representative Signature Print Name

_____ _____
Title Address Line 1

_____ _____
Email Address Address Line 2

_____ _____
Telephone Number City, State, ZIP Code

CITY OF NEWARK
Delaware

CONTRACT NO. 23-15

SANITARY SEWER IMPROVEMENTS 2023

BOND TO ACCOMPANY PROPOSAL

(Not Necessary if Certified or Cashier's Check is Used)

KNOW ALL MEN BY THESE PRESENTS THAT _____ of _____ _____ in the County of _____ and State of _____ _____ Principal, and _____ of _____ _____ as surety, legally authorized to do business in the State of Delaware, are held and firmly bound unto the City of Newark in the sum of _____ _____ Dollars, to be paid to said City of Newark for use and benefit of the Mayor and Council of Newark, for which payment well and truly to be made, we do bind ourselves, our and each of our heirs, executors, administrators and successors, jointly and severally, for and in the whole, firmly by these presents. Sealed with our seals, dated the _____ day of _____ _____ in the year of our Lord, two thousand and twenty-three (2023).

NOW THE CONDITIONS OF THIS OBLIGATION ARE SUCH, that if the above bound principal _____ _____ who has submitted to said City of Newark, a certain proposal to enter into a certain Contract No. 23-15, SANITARY SEWER IMPROVEMENTS 2023, shall be awarded said Contract, and if said _____ shall well and truly enter into and execute said contract and furnish therewith such surety bond or bonds as may be required by the terms of said contract and approved by said City of Newark,

said contract, and said bond to be entered into within twenty (20) days after the date of official notice of award thereof in accordance with the terms of said proposal, then this obligation to be void, otherwise shall remain in full force and virtue.

SIGNED AND SEALED IN THE PRESENCE OF WITNESS:	SIGNED:_____(SEAL)
	BY:_____(SEAL)
_____	SIGNED:_____(SEAL)
	BY:_____(SEAL)

CITY OF NEWARK
Delaware

CONTRACT NO. 23-15

SANITARY SEWER IMPROVEMENTS 2023

NON-COLLUSION STATEMENT

Date: _____

City of Newark
Newark, Delaware

This is to certify that the undersigned bidder _____

has not, either directly or indirectly entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with this proposal submitted to the City of Newark on the _____ day of _____, 20___.

Signature of Bidder: _____

By: _____
Its legally authorized representative

Sworn to and subscribed before me on this _____ day of _____ 20___.

My Commission expires _____

_____
Notary Public

CITY OF NEWARK
Delaware

CONTRACT NO. 23-15

SANITARY SEWER IMPROVEMENTS

EQUAL OPPORTUNITY AFFIDAVIT

CERTIFICATION REGARDING COMPLIANCE WITH EQUAL OPPORTUNITY REQUIREMENTS

The undersigned Bidder _____ (has, has not) previously performed work subject to the Presidents Executive Order Nos. 10925, 11114 or 11246.

NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENTS

FOR CERTIFICATION OF NON-SEGREGATED FACILITIES

A certification of Non-Segregated Facilities, as required by the May 9, 1967 order (32 F.R. 7439, May 19, 1967), on Elimination of Segregated Facilities, by the Secretary of Labor, must be submitted prior to the award of a subcontract exceeding $10,000, which is not exempt from the provisions of the Equal Opportunity clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semi-annually, or annually).

NOTE: The penalty for making false statements in orders is prescribed in 18 U.S.C. 10001.

Date:_____ _____

Signature of Bidder or Prospective Contractor

_____

_____

Address (Including Zip Code)

PART 1 DESCRIPTION

1.1 **Reference.** All applicable requirements of other portions of the Contract Documents apply to the Work of this Section.

1.2 **Description of Work.** These specifications include requirements for all design, materials, transportation, equipment and labor necessary to rehabilitate deteriorated sections of sewer listed in the Contract Documents. This specification is intended to identify the minimum requirements of the City.

1.3 This Section shall supplement and amend the City of Newark Water and Wastewater Standards and Specifications and cover the materials and methods of application for the rehabilitation of existing pipelines through the use of the Cured-in-Place and/or Pulled-in-Place technologies.

1.4 The Contractor shall furnish all material, labor and special equipment required to accomplish the work in accordance with these specifications. The installation shall affect the complete interior relining of the existing sanitary sewer piping and shall result in a smooth, hard, strong and chemically inert interior finish, and closely following the contours of the existing piping. The Contractor shall provide a completed watertight system with mainline sewer and all active lateral connections in operational condition.

1.5 The Contractor shall perform all required permanent landscape restoration and site restoration of disturbed areas on private property and within City rights-of-way upon completion of pipe rehabilitation, to the satisfaction of the City.

1.6 The Contractor shall obey applicable environmental regulatory requirements.

1.7 For any ASTM standard referenced, the Contractor shall use the most current active version. If requested by the City, the Contractor shall provide a copy of the current ASTM standard.

1.8 **Contractor Experience.**

A. The prospective Contractor must be approved, in writing, by the City prior to the award of contract. The Contractor shall provide any information or documentation, which the City may require as proof of the Contractor's competency to perform work of the type herein specified.

B. The Contractor for the cured-in-place pipe rehabilitation of sewers must have a minimum of three (3) years experience using the proposed product and have installed at least 50,000 linear feet of the proposed product. All workers performing work on the pipe rehabilitation of sewer must be certified by the pipe rehabilitation system supplier as qualified to perform work with the proposed product and method.

C. The superintendent for the job must have supervised jobs in which at least 50,000 feet of pipe has been rehabilitated using the product and method proposed in the bid. The superintendent for the job shall be on-site during all phases of the work involving

the insertion and processing of the liner pipe. The superintendent must be an employee of the lining contractor.

D. The Contractor shall be licensed by the liner process manufacturer.

1.9 **Product Experience**. The product proposed for the pipe rehabilitation of sewers must have been in use for at least three years in this country, and a minimum of 60,000 linear feet of the product must have been installed to date in this country.

1.10 **Water Use.** Potable water to be used for pipe lining and cleaning processes may be obtained from the City of Newark Maintenance Yard at 406 Phillips Avenue, Newark DE 19711. The Contractor shall provide all piping, hoses, valves, or connections necessary to complete the work.

1.11 **Subcontractors.** Not more than fifty (50) percent of the work (total bid amount) shall be subcontracted. The Contractor shall submit the subcontractor(s) name(s), contact information, and proposed percentage of work (as a percentage of the total bid amount) to the City prior to the notice to proceed.

1.12 **Safety.**

A. Contractor shall ensure public safety and worker safety during progress of the rehabilitation work.

B. Contractor shall use employees who are properly trained and who are aware of possible work, materials, and job site related hazards.

C. It shall be the responsibility of the Contractor to provide adequate measures to protect pedestrian and vehicular traffic on streets. Signals and barricades shall conform to requirements of federal, state and local laws, rules, regulations, precautions, orders and decrees.

D. Contractor shall report to the City any condition that may pose a threat to the health and welfare of the project inspectors, contractor's employees, or the general public.

E. Provide proper ventilation and personal protective equipment as required to ensure worker safety. Perform work in adherence to statutes of appropriate local, state, and federal health and labor laws, including OSHA confined space entry requirements.

F. Contractor shall have available on the job-site current manufacturer's Material Safety Data Sheets.

G. Contractor shall keep the working area clean, safe, appropriately barricaded, and properly lighted.

H. The Contractor shall conduct operations in accordance with applicable OSHA standards, including those safety requirements involving entry into a confined space. Make suitable precautions to eliminate hazards to personnel near construction activities.

I. The following plans shall be on-site for the duration of the project and be made available to City personnel as requested:

1. Safety Plan: The Safety Plan shall identify all competent persons, a description of the daily safety program for the job site, and all emergency procedures to be implemented in the event of a safety incident. All work shall be conducted in accordance with the Contractor's submitted Safety Plan.
2. Emergency Plan: The Emergency Plan shall detail procedures to be followed in event of health and safety emergencies, pump failures, overspray, chemical spills, sewer overflows, service backups, and sewage spillage. Address dangers associated with sewer rehabilitation work (i.e. working with large boiler trucks).
3. Health and Safety Plan: The Health and Safety Plan shall identify a health and safety officer (i.e. crew chief) responsible for providing health and safety oversight of personnel participating on the project team, performing and documenting routine work area inspections, conducting safety meetings, and providing safety orientations for team members.
4. Equipment: The Contractor shall maintain a list of critical rehabilitation equipment to be inspected on a daily basis. Monthly maintenance logs and noise attenuation logs shall also be maintained.
5. Odor Control Plan: The Contractor shall develop an odor control plan that will ensure that project specific odors will be minimized at the project site and surrounding area.

1.13 **Submittals - General.**

The Contractor shall have ten (10) contract days after the date of award to submit the following information to the City for review and approval. Failure to do so may be grounds for termination of contract.

A. Manufacturer's published literature and published data for the proposed pipe liner systems. MSDS sheets for all materials shall be available on-site throughout construction.

B. The pipe rehabilitation system supplier's letter of certification for the workers who will perform pipe rehabilitation work. The workers must have completed training in handling, insertion, trimming, reinstatement of laterals, and finishing pipe liner.

C. Independent test report showing that the physical properties and chemical resistance of the proposed pipe system meet the respective ASTM requirements, requirements of these specifications, and the requirements published in the manufacturer's literature.

D. Written verification confirming that the Contractor is licensed by the liner process manufacturer.

E. The manufacturer's certification that the proposed pipe system for the project meets the respective ASTM requirements, requirements of these specifications, and will meet or exceed the physical properties given in the manufacturer's published literature submitted as required by Part (a) of this subsection.

F. Documentation of Contractor's experience. This shall include references for all jobs within the last three years that were either completed or under construction using the proposed rehabilitation product and method. References for a minimum of ten jobs shall be provided. The jobs submitted shall show that the contractor has installed at least 50,000 linear feet of the proposed product. Information provided shall include a description of the job (including rehabilitation product and method used and related diameters and footages), the location of the job, the value of the job, and the Owner's contact for the job including name, title, address, and phone number.

G. Documentation of Product experience. This shall include references for jobs completed with the proposed pipe rehabilitation product and method. The jobs submitted shall show that at least 60,000 linear feet of the product, using the proposed method, has been installed by the Contractor or other Contractors. The documentation shall include at least ten jobs which have been completed, preferably within the last two years. Information provided for each job shall include a description of the job (including rehabilitation product and method used and related diameters and footages), the location of the job, the value of the job, the Owner, and the contact for the job including name, title, address, and phone number.

H. References for the project superintendent documenting experience as required by these specifications. If a change in superintendent is made prior to or during construction, the Contractor shall provide references documenting experience as required by these specifications, for the City's review and approval.

1. Manufacturer's recommended cure method for each diameter and thickness of liner to be installed. Include curing procedures detailing the curing medium and the method of application. Also include curing procedures detailing how to address the different existing host pipe materials found in this project.

2. Letter identifying the crew members performing the lining. If any of the crew members are not identified on the original certification letter received during the pre-qualification process, then a new certification letter listing the crew member(s) must be received from the rehabilitation system supplier prior to initiation of the work.

3. Calculations supporting recommended liner thicknesses, assuming a fully deteriorated host pipe condition, based on ASTM F1216. The data shall include both the sealed calculated thicknesses and the thicknesses proposed to be installed. Upon review and approval by the City, the proposed installed thicknesses will be considered the contracted design thicknesses. The thickness test results, addressed in this Specification, will be compared against these proposed installed thicknesses, not the minimum design thicknesses. The calculations shall be sealed by a registered Professional Engineer and an executed copy of the following form shall be provided:

Professional Engineer Certification Form

The undersigned hereby certifies that he/she is a Professional Engineer registered in the State of Delaware and that he/she is employed by:

_____
(Name of Contractor)
to design the required liner segments. The undersigned further certifies that he/she has performed the design of the specified liner diameters and thicknesses and that the design is in conformance with all applicable local, state, and federal codes, rules, and regulations. It is further certified that the signature and Professional Engineer stamp will be affixed to all calculations and drawings used in, and resulting from the design.

The undersigned hereby agrees to make all original design drawings and calculations available to the Owner within seven (7) days following the Owner's request.

Professional Engineer Stamp _____

*By*_____

4. Product Warranty and Certification Form: To insure that all products and materials proposed for use on this project are of the highest quality and specifically designed and manufactured for the intended installation or use, a Product Warranty and Certification Form shall be completed by the rehabilitative product manufacturer(s), manufacturer's representative or vendor as well as the Cured-In-Place Pipe (CIPP) liner installer certifying that the product(s) they are proposing to use is specifically designed for the intended application, installation and/or function. Failure to complete this form may prevent the product(s) from being used on this project.
5. Sample of the written resident notification that is to be provided to affected homes and businesses in accordance with Section 2731.03.02 (b).

PRODUCT WARRANTY AND CERTIFICATION FORM

REFERENCE: **City of Newark – Sanitary Sewer Improvements 2023**

THE UNDERSIGNED HEREBY ATTESTS THAT HE/SHE HAS EXAMINED ALL THE REFERENCED PROJECT INFORMATION, PROJECT INSTALLATION REQUIREMENTS AND THE CONTRACT SPECIFICATIONS AND HEREBY WARRANTS AND CERTIFIES THAT THE REHABILITATION PRODUCTS THAT THEY PROPOSE TO FURNISH, DELIVER, AND INSTALL FOR THIS PROJECT MEETS OR EXCEEDS THE REQUIREMENTS OF THESE CONTRACT SPECIFICATIONS, IS SUITABLE FOR THE INTENDED PURPOSE AND INSTALLATION, AND WILL SATISFACTORILY PERFORM TO THE CRITERIA SPECIFIED. THIS WARRANTY SHALL BE IN ADDITION TO, AND NOT IN LIEU OF, ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED.

PRODUCT:_____

MANUFACTURER:_____

Address:

By:_____
(Typed Name and Title) (SEAL)

_____ /s/ _____
(Signature) (Date)

The Product Warranty and Certification must be signed by a Principal Person (President, Vice-President, etc.) of the Product's Manufacturer. In the event the manufacturer is not the Supplier then a Principal Person of the Supplier must also sign this form.

MANUFACTURER'S REPRESENTATIVE/VENDOR:_____

Address:

By:_____
(Typed Name and Title) (SEAL)

_____ /s/ _____
(Signature) (Date)

The Product Warranty and Certification must be signed by a Principal Person (President, Vice-President, etc.) of the Installation Contractor. In the event the manufacturer is not the Installation Contractor then a Principal Person of the Installation Contractor must also sign this form.

INSTALLATION CONTRACTOR:_____

Address:

By:_____ (SEAL)
(Typed Name and Title)

_____ /s/ _____
(Signature) (Date)

1.14 Submittals – Following the Notice to Proceed

The Contractor shall submit the information listed below for review and approval. These items may be submitted prior to the notice to proceed for review and approval. Once the notice to proceed is issued, contract days will start being counted, regardless of the submittal status. It is, therefore, in the Contractor's best interest to provide complete submittals in a timely and organized manner. The Contractor shall also make every effort to submit all submittals within each grouping (i.e. Pipeline Liner submittals, Flow Control submittals, etc.). In addition, the City will review up to two submittals for each item. The Contractor shall not commence construction activities (i.e., point repairs, mainline lining, and manhole lining) until all of the listed information has been reviewed and approved by the City. Mark all submittals with mainline pipe identification number, work order number, Contract number, Contractor's name, operator's name, and date of test readings, if applicable.

A. All measurements made by the Contractor to verify length, ovality, and diameter of host pipe prior to ordering of material. These submitted measurements will be considered final. If measurements are revised just prior to or at the time of the liner installation, the Contractor is responsible for any related expenses to accommodate the measurements and ensure a liner and installation in accordance with these Specifications, at no additional expense to the City. Material includes all material used in the manufacture of the liner system, including at minimum, as applicable, the resin and fabric tube. The measurements shall be submitted a minimum of seven days prior to each liner installation.

B. Documentation:

1. Infrared spectrograph chemical fingerprint and Certificate of Analysis for each lot of material (to be provided to the City inspector during construction, if requested):

   Lot number
   Product name
   Manufacturer
   Brookfield Viscosity Thix Index

   Gel time at cure temperature
   Peak temperature for failure
   Percent of non-volatile solids
   Specific Gravity
   Catalyzed Stability time at optimum temperature Catalyst to resin ratio
   Analysis signature
   Date tested
   Batch ticket for each resin-catalyst-colorant batch made up and impregnated into felt liner material.

2. Shipping Manifest (to be provided to the City inspector during construction, if requested):

   Date shipped
   Origination and delivery locations
   Shipping method and carrier Shipping order number
   Purchase order number
   Shipped item
   Stock number
   Lot number
   Manufacturer
   Any shipping, storage, or safety requirements
   Received by, and date
   Signature of Receiver

C. Quality assurance and quality control information from product manufacturer including recommended installation procedures (including any heating and cooling temperatures at specified time intervals, pulling speed, ultraviolet light intensity, rate of travel of the ultraviolet assembly, pressures, etc.) from the rehabilitation system supplier.

D. Procedure for disposal of any superheated water.

E. Proposed method and product for sealing the mainline connection at the manholes.

F. Samples of the liner material shall be provided for prior approval of the City.

1.15 **Submittals – Prior to Payment.**

The Contractor shall submit the information listed below for review and approval. Final payment will not be issued until all of the listed information has been reviewed and approved by the City.

A. The curing log of temperatures at the upstream and downstream manholes during the curing process, rate of travel of the ultraviolet assembly (if used), pressures maintained, logs for temperature monitoring, and any other documentation used to verify the completion/adequacy of the curing process.

B. Results of testing for materials provided for this job, as specified in the respective rehabilitation Specification Sections.

C. Two complete sets of DVDs from each of the television inspections performed (Pre-Installation, Post-Installation, and Final Acceptance TV Inspection), as specified in Section 20006, Television Inspection. All work, including manhole rehabilitation and connection grouting and/or lining shall be completed prior to Final Acceptance inspection. Main line rehabilitation line item will not be compensated until rehabilitation work is complete and Post-Installation CCTV inspections showing completion of work have been submitted to the City. Related rehabilitation tasks,

including manhole rehabilitation and service connection grouting, lining, and/or replacement may be compensated upon completion and approval; however, final acceptance of all work and final payment under this contract will not be made until the Final Acceptance TV Inspection has been received, reviewed, and accepted by the City as described in Section 20006.

D. Post Installation: If repairs need to be made to the liner, as a result of defects caused during manufacturing, transporting and/or installation, the Contractor shall prepare calculations supporting the recommended repair liner thickness(es), assuming a fully deteriorated host pipe condition. The calculations shall be sealed by a registered Professional Engineer. The data shall include both the sealed calculated thicknesses and the thicknesses proposed to be installed. Upon review and approval by the City, the proposed installed thicknesses will be considered the contracted design thickness. The thickness test results will be compared against these proposed installed thicknesses, not the minimum design thicknesses.

1.16 The on-site person-in-charge shall have good verbal communication skills and shall be able to communicate clearly with the City's inspectors.

PART 2 MATERIALS

2.1 **Accuracy of the Plans.** To the greatest practical extent, the plans accurately depict the details of the work, including the locations and numbers of all manholes, etc. However, the Contractor shall determine the locations of all structures and verify all dimensions, including lengths between manholes, by field measurement. The Contractor shall also be aware that minor variations in pipe diameter and circumference and joint offsets will occur, that it is not intended that such minor variations be indicated on the plans and that such variations will not be considered as grounds for additional claims for compensation.

Prior to initiating the project, the Contractor shall thoroughly review pre-lining CCTV inspection logs and/or videos of all piping to be relined. Available DVDs/video tapes and/or inspection logs of piping to be lined will be made available to the Contractor for inspection prior to initiation of the project. The Contractor shall note the dates of the television inspections and make reasonable assumptions about deterioration and root growth/intrusion in the line since the inspections. The City will not accept responsibility, nor incur additional costs for unanticipated deterioration or root growth/intrusion in the line.

2.2 All materials and equipment used in the lining and in the insertion, process shall be of their best respective kinds, without multiple patches (vacuum, repair or other patches), and shall be as approved by the City. Any materials not approved by the City prior to insertion into the piping shall be rejected and shall be removed and replaced with approved materials at the Contractor's expense.

2.3 **Design Thicknesses.** The City reserves the right to change specified thicknesses based on new information.

2.4 **Flow Capacity.** Maintenance of flow capacity of existing pipes is essential. Rehabilitated pipe shall have minimum of no change in capacity. An increase in flow capacity following rehabilitation is preferred, and in no case shall the flow capacity of rehabilitated pipes be reduced.

2.5 **Liner Sizing.** The liner shall be fabricated to a size that when installed will neatly fit the internal circumference of the pipe to be lined. The Contractor shall make allowance for longitudinal and circumferential stretching of the liner during installation.

2.6 **Length.** The length of the liner shall be that which is deemed necessary by the Contractor to effectively carry out the insertion, provide test samples, and seal the liner at the inlet and outlet of the manhole. Individual inversion runs may be made over one or more manhole to manhole sections as determined.

2.7 The Contractor shall provide a liner exhibiting the properties described in these Specifications. Prior approval of shop drawings related to any or all materials or methods of installation shall not relieve the Contractor of this responsibility.

2.8 **Manufacture Information.** It shall be necessary for the Contractor to obtain the City's prior approval for all materials or processes and the City shall have the power at any time to order the Contractor to modify or discontinue any practice. All such orders shall be given in writing.

2.9 **Wall Color.** The wall color of the interior pipe surface of the rehabilitated pipe after installation shall be a light reflective color so that a clear detailed examination with closed circuit television (CCTV) inspection equipment may be made.

PART 3 CONSTRUCTION REQUIREMENTS

3.1 **Inspections.**

A. Prior to beginning insertion of the liner, the Contractor shall inspect the cleaned line by use of closed-circuit T.V. cameras, and shall confirm to his own satisfaction the condition of the line and confirm that the lines are adequately cleaned. Insertion of the liner by the Contractor shall serve as evidence of his acceptance of the condition of the piping and the suitability of the liner insertion within the host pipe. Failure of the liner system due to inadequately cleaned host pipes shall be repaired by the Contractor at no cost to the City.

B. During the process of manufacture and impregnation, the City shall have reasonable opportunity to examine all operations where the manufacture and impregnation (when applicable) of the liner is being carried out. The Contractor shall give appropriate prior notice in order that the City's inspector may be on hand to observe the various processes.

C. **No work shall be performed by the Contractor except in the presence of the City inspection personnel, unless otherwise approved. The Contractor shall coordinate his work schedule and give 48 hours (2 working days) prior notice regarding his**

intentions to perform any and/or all parts of the work, in order that the City's inspector may be on hand. Any work performed in the absence of the City's inspector is subject to removal and replacement at the Contractor's expense.

D. Upon substantial completion of the work the Contractor shall, in the presence of the City's inspector, inspect the line using closed-circuit television equipment. The DVD thus produced shall be accompanied by a simultaneously produced, narrated sound DVD. The sound narration and visual inspection shall draw attention to all recognizable defects, imperfections, etc., and the location along the length of the piping shall be accurately noted. Also, the locations and all pertinent details regarding the entrance of service laterals into the main trunk sewer shall be accurately noted on the sound DVD. Both copies of the DVDs shall become the property of the City. Televising shall be performed as specified in Section 20006, Television Inspection.

3.2 **Preparatory Procedures.**

A. Coordination with the City: The Contractor shall provide a minimum of seven days advanced notice to the City, prior to initiating the work specified.

B. Notification of Residents: Prior to starting any and all Work, including cleaning and/or television inspection, it is the responsibility of the Contractor to notify all residents that could be affected by the Work. This notification shall consist of written information and verbal communication that outlines the tasks associated with the Work (i.e. cleaning and televisions inspection) and specific information regarding the rehabilitation and/or repair process, as well as timing of the project. The written information shall be delivered to each affected home or business at least 72 hours prior to the start of any and all work, and at minimum shall describe the work, schedule, how it affects the home/business, the project manager's name, crew foreman's name, emergency contact number, and detail how to identify crew members/vehicles. The Contractor shall communicate verbally with the homeowners/business owners the day prior to the beginning of any tasks being conducted on the section relative to the homeowners/business owners. The system being cleaned, inspected, rehabilitated and/or replaced is an active system and service must be maintained during the course of construction.

C. The Contractor shall implement necessary erosion and sediment control measures prior to initiating any work.

D. The Contractor shall provide water and sewer to affected property owners in the event of extended service interruption, at no additional cost to the City. No property shall be without sewer service for more than eight hours.

E. When necessary and approved by the City and all resident and commercial properties affected, the Contractor shall install appropriate access roads. The access road and all related items shall be removed at the end of the job. Final payment will not be made until the site is restored to original or better conditions, including removal of all gravel.

F. The actual sizes, lengths and materials of the pipes to be relined shall be as indicated on the plans, but shall be verified by the Contractor prior to commencing with the work, including prior to ordering of materials.

G. Cleaning: Cleaning of sewer lines and manholes shall be performed as specified in Section 20005, Sewer Line, Lateral, and Manhole Cleaning.

H. TV Inspection: Inspection of sewer lines shall be performed as specified in Section 20006, Television Inspection.

I. Flow Control: When required for acceptable completion of an insertion process, the Contractor shall provide for adequate flow control including but not limited to required pumping and bypassing as stipulated in Section 20004, Flow Control, of the Contract Documents.

J. Intruding service connections shall be cut flush with the host pipe prior to liner installation. These connections shall be removed using remote robotic cutter equipment specifically designed for this purpose. The internal cutter shall be capable of cutting cast iron, PVC, vitrified clay pipe, and ductile iron pipe. All materials/cuttings shall be removed from the sewer and properly disposed of.

K. Material Removal: Refer to Section 20005, Sewer Line, Lateral, and Manhole Cleaning, for material removal.

L. Disposal of Materials: Refer to Section 20005, Sewer Line, Lateral, and Manhole Cleaning, for disposal of materials.

M. Visible Leaks: The Contractor shall seal all leaks and infiltration that will prevent the liner from curing properly and meeting the requirements of Specification Sections 20003.

3.3 **Sealing at Manholes Immediately Prior to Lining.**

A. Contractor shall install hydrophilic end seals at all manhole penetrations prior to mainline rehabilitation, to form a watertight seal between the pipe liner and host pipe. The end seals must be composed of hydrophilic rubber and molded as a one-piece, 3.5-inch wide cylinder which when installed will form a 360 degree seal between the host pipe and the newly installed liner. The use of caulking, rope or band type of an end seal will not be allowed. Acceptable End Seals are the Insignia™ End Seal Sleeve by LMK, or pre-approved equal.

B. The Contractor shall repair any manhole benches and inverts that have been damaged during the liner installation.

3.4 **Internal Drops.**

A. Internal drops shall be fully reinstated and fully cut out to original diameters and the Contractor shall brush each opening upon reinstatement.

3.5 **Service Connections.**

A. Service connections shall be fully reinstated and fully cut out to original diameters and the Contractor shall brush each opening upon reinstatement.

3.6 **Defective Work.** Any defects, which, in the judgement of the City, will affect the integrity or strength of the lining, impede flow or operations and maintenance (O&M) equipment, or allow leakage into the lined pipe shall be repaired or the liner replaced at the Contractor's expense. Obtain approval of the City for method and length of repair, including open cut point repairs, which may require field or workshop demonstration. Prior to and following any repairs, the Contractor shall clean and television inspect the respective pipeline section(s), from manhole to manhole, at the Contractor's expense.

3.7 **Final Cleanup.** Upon completion of rehabilitation work and testing, the Contractor shall clean and restore the project area affected by the Work.

3.8 **Payment and Final Acceptance.**

A. Payment shall detail quantities by line item and shall have backup materials, including the breakdown of billable work for each line item.

B. Main line rehabilitation may be compensated once rehabilitation work is complete and post-installation CCTV inspections showing completion of work have been submitted to the City. Related rehabilitation tasks, including manhole rehabilitation and service connection grouting, lining, and/or replacement may be compensated upon completion and approval of work and submission of required post-installation CCTV inspections. If defects are observed during the post-installation CCTV inspection, the Contractor shall make the repairs as specified herein. See individual sections for descriptions of items and basis of payment. Payment for an item does not indicate final acceptance of that item.

C. Upon completion of **all** work on each pipe segment, including repairs for defects observed during the post-installation CCTV inspections, the Contractor will reinspect the rehabilitated and/or repaired pipeline, including all related manhole and service connection/lateral work, by the use of closed-circuit TV cameras and shall submit a Final Acceptance CCTV Inspection, including color DVD and inspection log, of the work on each segment to the City for approval/acceptance of the work in accordance with Section 20006, Television Inspection. If the City deems the rehabilitated pipeline section is not clean enough for proper viewing and approval of the work, the Contractor shall clean the pipeline section in accordance with Section 20005, Sewer Line, Lateral, and Manhole Cleaning, and reinspect the respective pipeline section in accordance with Section 20006, Television Inspection, at no additional expense to the City. Payment for the Final Acceptance CCTV Inspection item will only be made once for each main-line section on which any rehabilitation, replacement, and/or repair work is performed. Payment of this item for a section indicates acceptance by the City of lining and lateral work on that section. Payment will only be made for Final Acceptance CCTV inspection footage reviewed and approved by the City.

D. Final completion of the contract will not be given until all defects are repaired, television inspected, and a Final Acceptance CCTV Inspection is submitted and approved in accordance with Section 20006 for each pipe segment and associated work included in the contract. Final Payment will only be made after the City has received and approved all required submittals and requested field data including, but not limited to, Final Acceptance Inspection DVDs, temperature monitoring logs, TV logs, curing logs, grouting logs, and inspector's reports for the entire rehabilitated section.

E. The Contractor shall be responsible for repairing all damage that is caused during the completion of the work. This includes, but is not limited to, repair of damaged water meters, sidewalks, driveways, landscaping and all other public and private property. All repairs shall be completed and the site restored to its original or better conditions before final payment is made. All repairs and site restoration shall be approved by the City Inspector before final payment is made. Damage caused as a result of negligence of the Contractor, in the opinion of the City, will not be compensated for and will be considered incidental to existing, approved bid items.

3.9 **Warranty Inspection.** The Contractor may be required to clean and televise any sections (from manhole to manhole) that have been repaired as a result of defects in the work product, at the end of a two year warranty period to assure quality. The lines shall be cleaned and televised in accordance with Section 20005, Sewer Line, Lateral, and Manhole Cleaning and Section 20006, Television Inspection. This warranty inspection shall be included in the cost of the project.

END OF SECTION

PART 1 DESCRIPTION

1.1 **Reference.** All applicable requirements of other portions of the Contract Documents apply to the Work of this Section.

1.2 **Description of Work.** These specifications include requirements for all design, materials, transportation, equipment and labor necessary to rehabilitate deteriorated sections of sewer listed in the contract documents by means of cured-in-place pipe (CIPP) liner, using the inversion and curing of a resin-impregnated tube method, per ASTM F1216. This specification is intended to identify the minimum requirements of the City.

1.3 **Submittals After the Notice of Award.** The Contractor shall have ten (10) working days after the date of award to submit the following information to the City for review and approval. Failure to do so may be grounds for termination of contract. This shall be in addition to the information required pursuant to Section 20001.

A. Detailed description of lubricant proposed for inversion process. Lubricant shall be compatible with the County's and/or City's wastewater treatment plant operations and pretreatment program.

B. Certification of resin volume and required 5 to 10% addition.

C. Certification from resin manufacturer regarding approval of resin dye quantity and type.

D. Information on the maximum allowable tensile stress for the tube, from the felt manufacturer.

E. Shop drawings and product data to identify materials of construction (including resins, catalysts, felt, etc.), felt manufacturer, location of the felt manufacturing facility, location of the wet-out facility, etc. All CIPP liner shall be manufactured from this designated wet-out facility throughout the entire Contract unless specifically approved otherwise by the City in writing. Multiple wet-out facilities shall not be allowed and on-site wet out shall also not be allowed.

F. A complete description of the proposed wet-out procedure for the proposed technology.

G. If requested, wet-out forms with detailed information including, but not limited to, roller gap settings, start times, finish times, gel times, resin injection locations, and any other pertinent data documenting the wet-out for each section of CIPP liner manufactured.

H. Provide data on the maximum allowable stresses and elongation of the tube during installation and the means in which the Contractor will monitor stress and elongation.

I. Continuous temperature monitoring system, if required.

1.4 **Submittals After the Notice to Proceed.** The Contractor shall submit the information listed below, after the Notice to Proceed, for review and approval. This shall be in addition to the information required pursuant to Section 20001.

A. Suitable documentation for each liner, indicating manufacturer, trade name, time and date of manufacture, felt thickness, number of layers, diameter, length of liner, resin types, resin content, catalyst, relevant batch numbers, storage limitations and requirements, etc.

B. CIPP liner curing reports documenting the liner installation for all sewer segments shall be submitted after the notice to proceed. The CIPP liner reports shall document all details of liner installation, including manhole numbers, street names/sewer location, project number, date, time, temperature, curing temperature, curing time, CIPP liner thickness, etc. A sample report shall be submitted to the City for approval prior to the installation of any CIPP lining.

C. Product Warranty and Certification Form: To insure that all products and materials proposed for use on this project are of the highest quality and specifically designed and manufactured for the intended installation or use, a Product Warranty and Certification Form shall be completed by the rehabilitative product manufacturer(s), manufacturer's representative or vendor as well as the Cured-In-Place Pipe (CIPP) liner installer certifying that the product(s) they are proposing to use is specifically designed for the intended application, installation and/or function. Failure to complete this form may prevent the product(s) from being used on this project.

1.5 **Submittals After Cured-in-Place Pipe Liner Installation.** The Contractor shall submit the information listed below after the CIPP liners have been installed. This shall be in addition to the information required pursuant to Section 20001.

A. If requested, wet-out forms with detailed information including, but not limited to, roller gap settings, start times, finish times, gel times, resin injection locations, and any other pertinent data documenting the wet-out for each section of CIPP liner manufactured.

PRODUCT WARRANTY AND CERTIFICATION FORM

REFERENCE: **City of Newark – Sanitary Sewer Improvements 2023**

THE UNDERSIGNED HEREBY ATTESTS THAT HE HAS EXAMINED ALL THE REFERENCED PROJECT INFORMATION, PROJECT INSTALLATION REQUIREMENTS AND THE CONTRACT SPECIFICATIONS AND HEREBY WARRANTS AND CERTIFIES THAT THE REHABILITATION PRODUCTS THAT THEY PROPOSE TO FURNISH, DELIVER, AND INSTALL FOR THIS PROJECT MEETS OR EXCEEDS THE REQUIREMENTS OF THESE CONTRACT SPECIFICATIONS, IS SUITABLE FOR THE INTENDED PURPOSE AND INSTALLATION, AND WILL SATISFACTORILY PERFORM TO THE CRITERIA SPECIFIED. THIS WARRANTY SHALL BE IN ADDITION TO, AND NOT IN LIEU OF, ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED.

PRODUCT:_____

MANUFACTURER:_____

Address:

By:_____
(Typed Name and Title) (SEAL)

_____ /s/ _____
(Signature) (Date)

The Product Warranty and Certification must be signed by a Principal Person (President, Vice-President, etc.) of the Product's Manufacturer. In the event the manufacturer is not the Supplier then a Principal Person of the Supplier must also sign this form.

MANUFACTURER'S REPRESENTATIVE/VENDOR:_____

Address:

By:_____
(Typed Name and Title) (SEAL)

_____ /s/ _____
(Signature) (Date)

The Product Warranty and Certification must be signed by a Principal Person (President, Vice-President, etc.) of the Installation Contractor. In the event the manufacturer is not the Installation Contractor then a Principal Person of the Installation Contractor must also sign this form.

INSTALLATION CONTRACTOR:_____

Address:

By:_____
(Typed Name and Title) (SEAL)

_____ /s/ _____
(Signature) (Date)

PART 2 MATERIALS

2.1 The liner shall generally consist of a corrosion resistant polyester, vinyl ester, or epoxy thermosetting resin, or approved equal, impregnated tubing material consisting of one or more layers (with any layer not less than 1.5mm thick) of flexible non-woven polyester felt or fiberglass fiber. The liner system shall meet the requirements of ASTM F1216, ASTM F1743, and ASTM D5813 and shall be constructed to absorb and carry resins, withstand inversion pressures and curing temperatures, have sufficient strength to bridge missing pipe, stretch to fit irregular pipe sections, and shall invert smoothly around bends. The felt content of the CIPP liner shall be determined by the Contractor, but shall not exceed 25 percent of the total impregnated liner volume. The liner shall fit tightly to the internal circumference of the existing pipe, and an impermeable, flexible membrane integrally bonded to the internal circumference of the felt, thus forming a smooth, chemically inert internal flow surface. The membrane shall be an appropriate thickness to accommodate the installation and cure conditions and shall not be considered to impart any structural strength to the liner but considered an integral part of the liner system. The membrane (internal liner coating) shall be constructed of a material that is suitable for the liner installation/cure method used by the Contractor. The liner shall be fabricated to a size that when installed will neatly fit the internal circumference of the pipe to be lined. Allowance for longitudinal and circumferential stretching of the liner during installation shall be made by the Contractor. All CIPP linings shall be from a single manufacturer. The cured liner shall have a 50-year life span.

2.2 The resin volume shall be adjusted by adding 5 to 10% excess resin for the change in resin volume due to polymerization and to allow for any migration of resin into the cracks and joints in the original pipe.

2.3 **Wall Thickness:** The required structural CIPP wall thickness shall be designed in accordance with the guidelines in Appendix X1 of ASTM F1216. The CIPP liner wall thickness design shall be based on fully deteriorated pipe. The Contractor shall provide thickness calculations for approval during shop drawing review. The minimum liner thickness for nominal pipe diameters of 8 to 12 inches shall be 6 mm. Minimum liner thickness for nominal pipe diameters of 14 to 16 inches shall be 7.5 mm. Minimum liner thickness for nominal pipe diameters of 18 inches shall be 9 mm. Liner thicknesses, for nominal pipe diameters of 8 to 18 inches, may be modified with the approval of supporting calculations by the Contractor's Professional Engineer; however, in no case shall thicknesses be less than previously stated. Minimum liner thickness for nominal pipe diameters of 24 inches shall be 12.5 mm. Minimum liner thickness for nominal pipe diameters of 36 inches shall be 19 mm. In cases where ovality exceeds 10%, or where pipes are egg or oval shaped, alternative methods of design may be considered by the Engineer. The categories of design parameters noted in Tables 20002-1, 20002-2, and 20002-3 shall be used, unless otherwise directed by the City. The selected thicknesses shall be uniform for each pipe diameter and shall be based on the thickest, most conservative design wall thickness calculated for each diameter.

2.4 **Common Design Parameters:** Design inputs generally considered to be the same from site to site for a particular project are provided in Table 20002-1.

Table 20002-1
Common Design Parameters

Safety Factor	2.0
Soil Modulus (1)	700 psi
Soil Density (2)	120 pcf

Notes Table 20002-1:

1. In the absence of site-specific information, the City assumes a soil modulus of 700 psi.
2. In the absence of site-specific information, the City assumes a soil density of 120 pcf.

2.5 **Site Specific Parameters:** The information listed in Table 10002-2 is specific to each manhole to manhole run of pipe. The Contractor shall use for design the information provided by the City and information the Contractor collects during site visits for each manhole to manhole run.

Table 20002-2
Site-Specific Design Parameters

Ovality	Notes 1, 2
Ground Water Depth Above Invert	Notes 1, 3
Soil Depth Above Crown	Note 1
Live Load	Notes 1, 4
Design Condition (Fully Deteriorated)	Notes 1, 5
CIPP Thickness	Notes 1, 6, 7

Notes Table 20002-2:

1. Design thicknesses and complete site-specific designs, as stated herein, in accordance with ASTM F1216 **(Appendix X1)**, shall be submitted after the Notice of Award.

2. The Contractor shall estimate the ovality by viewing the DVDs/videotapes, data and notes provided in the Contract Documents, and any other information provided by the City. If DVDs/tapes are not available, and the Contract Plans do not state otherwise, the Contractor shall assume an ovality of 3%. In cases where the ovality exceeds 10%, the Contractor may consider employing alternative design methods (such as beam design methods) to determine the pipe thickness, at no additional cost to the City.
3. In the absence of accurate water table information or high water elevation observed during the site visit (stream, ponds, etc.), the Contractor shall assume a seasonal groundwater elevation of 0 feet below the ground surface.
5. CIPP is subjected to traffic live loads as calculated by AASHTO Standard Specifications for Highway Bridges, HS20 Highway Loading.
6. The Contractor shall assume the pipe segments are fully deteriorated.
7. Thicknesses specified (designed by the Contractor and approved by the City) are the final, in-ground thicknesses required. Measured sample thicknesses will not include polyurethane or polyethylene coatings, any layer of the tube not fully and verifiably impregnated with resin, or any portion of the tube not deemed by the City to be a structural component of the composite.
8. The Contractor must consider any factors necessary to ensure the final, cured-in-place pipe thickness is not less than specified (designed by the Contractor and approved by the City) above. These factors include any stress applied to the material during transportation, handling, installation and cure; the host pipe's material type, condition, and configuration; weather (including ambient temperature conditions); and any other factors which are reasonably expected to be found in existing sanitary sewer systems.

2.6 **Product-Specific Design Parameters:** Certain design inputs vary by manufacturer, processes design, or installation technique. These variables are listed in Table 20002-3 with explanatory notes that follow.

Table 20002-3
Minimum Product-Specific Design Parameters

Minimum Enhancement Factor, K[1]	K = 7
Minimum Initial Flexural Strength (ASTM D790)[2]	Φs = 4500 psi
Minimum Initial Flexural Modulus of Elasticity (ASTM D790)[2]	Es = 350,000 psi
Minimum Retention of Properties to Account for Long-Term Effects [3]	50%
Minimum Long-Term Flexural Modulus of Elasticity [3]	EL = 175,000 psi

Notes Table 10002-3:

1. Enhancement factor (K) is the additional buckling or load resistance of the rehabilitation product due to the restraining action of the host pipe. The tighter the fit of the product within the host pipe, the greater the value of K. Third party testing of external hydrostatic loading capacity of restrained pipe samples shall be conducted to verify the enhancement factor, K. The minimum values provided are based on the "Long-Term Structural Behavior of Pipeline Rehabilitation Systems," Trenchless Technology Center, 1994.
2. Initial values are defined in ASTM D790. The value indicates minimum strength both in the circumferential and longitudinal direction. The City may, at any time prior to installation, direct the Contractor to make cured samples (according to ASTM F1216) and test them in accordance with the listed ASTM standards to verify initial values of physical properties. In such tests the Contractor's samples must achieve a 95% pass-rate.
3. The initial flexural modulus is multiplied by the creep factor (or percentage retention) to obtain the long-term values used for design. Long-term values shall be verified by long-term external pressure testing of circular lengths of the pipe material by third-party labs prior to bid (e.g. Trenchless Technology Center - TTC). It is understood that the material's modulus of elasticity will not change over time; however, by convention the modulus is reduced for design purposes for all plastic pipe sections to account for the reduced ability of plastic pipe to carry loads due to the changes in pipe geometry resulting from the effects of creep over time.

2.7 **Resin Content**

A. The resin content of the liner shall be 10-15% by volume greater than the volume of air voids in the felt liner bag.

B. The resin used shall not contain fillers, except those required for viscosity control, fire retardance, or as required to obtain the necessary pot life. Thixotropic agents which will not interfere with visual inspection may be added for viscosity control.

C. Dye shall be added to resins to improve visual inspection of the cured liner. The types and quantities of dyes added shall have prior approval from resin manufacturer.

2.8 **Chemical Resistance:** The corrosion resistance of the resin system shall be tested by the resin manufacturer in accordance with ASTM D543. The result of exposure to the chemical solutions listed below shall produce loss of not more than 20 percent of the initial physical properties when tested in accordance with ASTM D543 for a period of not less than 1 year at a temperature of 73.4 ºF plus or minus 3.6 ºF. For applications other than municipal wastewater, conduct chemical resistance tests with actual samples of the fluid to be transported in the pipe and in accordance with procedures approved by the City. The cured liner shall also be chemically and physically resistant to external exposure of soil bacteria, moisture, roots, and chemical attack that may be due to material in the surrounding ground.

TABLE 20002-4 CONCENTRATIONS OF CHEMICAL SOLUTIONS FOR CHEMICAL RESISTANCE TEST	
CHEMICAL SOLUTION	**CONCENTRATION, %**
Tap Water (pH 6-9)	100
Nitric Acid	5
Phosphoric Acid	10
Sulfuric Acid	10
Petroleum Hydrocarbon Based Fuels (e.g. Gasoline, diesel, etc.)	100
Vegetable Oil[1]	100
Detergent[2]	0.1
Soap[2]	0.1
Domestic Sewage*	100

[1.] Cotton seed, corn, or mineral oil

[2.] As per ASTM D543

* Contractor to include a written statement that their material and resin combination has been successfully installed in the United States and is chemically resistant to domestic sanitary sewage.

2.9 Manufacture Information

A. The Contractor shall deliver the uncured resin impregnated liner system to the site. The bag shall not be impregnated at the site. The application of the resin to the felt tubing (wet-out) shall be conducted under factory conditions and the materials shall be fully protected against UV light, excessive heat, and contamination at all times. The liner system shall be impregnated with resin not more than 72 hours before the proposed time of installation and stored out of direct sunlight at a temperature of less than 30ºF. Continuously monitor liner materials during transport and storage with a temperature recorder and data storage. If requested, the Contractor shall furnish the City with the recorder readings before installation. Material that is exposed to temperatures outside of the manufacturer's limits will be rejected. The Contractor shall provide all appropriate transport, handling and protection equipment including refrigerated, or otherwise suitably cooled, transport equipment in accordance with the manufacturer's requirements.

B. All fabricating and Contractor testing shall be carried out under cover and no materials shall be exposed to the weather until they are ready to be inserted. All materials should be protected from the weather and exposure to ultra-violet light as practicable during the manufacture and installation process.

C. Each liner shall be accompanied by suitable documentation indicating manufacturer, trade name, time and date of manufacture, felt thickness, number of layers, diameter, length of liner, resin types, resin content, catalyst, relevant batch numbers,

storage limitations and requirements, etc. and this information shall be submitted to the City.

2.10 **Preliner.**

A. A preliner may be required to help control infiltration or accommodate other liner installation requirements. The preliner shall be as recommended by CIPP lining system manufacturer. If required for successful installation of the liner, the preliner shall be utilized and installed as part of the CIPP lining process at no additional cost to the CIPP lining work.

2.11 **Felt.**

A. Polyester fiber of at least 5 denier, with sufficient needling and cross-lapping to yield a burst strength of 100 pounds/1-inch-wide strip in both the machine and transverse direction. The felt content shall be determined by the Contractor to ensure a cured thickness of liner as determined by the Contractor and approved by the City. The thickness of the cured line may vary (+10%, -5%), and shall not include the thickness of the impermeable inner liner.

2.12 **Inside Liner Coating.**

A. To reduce the possibility of pinholes, provide a flexible thermo-plastic material bonded to the inside layer of felt forming a minimum of 0.015-inch pinhole free coating layer. Upon installation, to satisfy the City's desire to achieve maximum hydraulic conveyance, the coating layer shall be free of all deformities such has blisters and delamination.

2.13 **Catalyst.**

A. Catalyst shall be chemically compatible with resin and other materials used in the manufacture of liner as evidenced by the certification by the manufactured. The resin shall be catalyzed by the addition of sufficient catalyst to produce the aforementioned physical properties of the unfilled resin.

B. The catalyst, if in a powder form, shall be dissolved in an equal weight of the solvent styrene prior to addition to the non-promoted resin.

2.14 **Characteristics of the Liquid Resin.**

A. The liquid resin will conform, but not be limited, to the following minimum properties.

Thixotropic Index, min 4.3

2.15 **Typical Physical Properties of Polyester Felt Cured Composite Cured at 160° to 180°**

A. The installer shall submit manufacturer data to the City showing that the fully cured composite can conform, but not be limited to, the following minimum structural properties:

Flexural Strength	4,500 psi min.
Initial Modulus of Elasticity	350,000 psi min.

Barcol Hardness	40
Heat Distortion Temperatures Degrees C	82.5

B. The inside cavity of the pipe liner shall meet the following specification for a minimum 0.015 inside liner coating:

1. Liner thickness and/or strength shall be designed by the manufacturer to withstand failure, collapse and/or a maximum 5% deflection of the vertical and horizontal diameter against all existing or proposed dead and live loads transferred to proposed liner. Line should also be designed to be structurally self-supporting where any and all missing segments of existing pipe are deteriorated for any length along existing conduit. These areas will be stationed and marked by Video Taping of the existing pipe.

2. The Contractor shall provide the recommended tube thickness designs for each size pipe as noted in the submittals section. Design calculations shall be submitted indicating how the tube thickness dimensions were obtained. A minimum safety factor of 2 shall be used in the tube thickness design calculations. No work will start until liner thickness and strength design calculations have been approved by the City, in writing.

PART 3 CONSTRUCTION REQUIREMENTS

3.1 Lining Procedures.

A. The Contractor shall be responsible for confirming the length and pipe diameter of the sewer to be lined prior to installation of the liner. The Contractor will not be compensated for liners ordered without confirmation of length, pipe diameter and field conditions.

B. The liner shall be installed in accordance with ASTM F1216.

C. The installation of the liner shall be modified as required to accommodate the existing host pipe material.

D. The Contractor shall conduct operations in accordance with applicable OSHA standards, including those safety requirements involving work on an elevated platform and entry into a confined space. Take suitable precautions to eliminate hazards to personnel near construction activities when pressurized air is being used.

E. All service locations shall be measured for location prior to liner installation. All service connection measurements and the clockwise position of the openings shall be recorded in a log to aid in the reinstatement of service connections after lining. The approximate locations of identified active service taps are shown on the Contract Drawings; however, the Contractor shall determine the exact location and number of service connections by the dye test method or other methods approved by the City.

The Contractor shall accurately field locate existing service connections, whether in service or not. For rehabilitated lines, the Contractor shall use existing service locations to reconnect service lines to new liner, unless otherwise specified on the Contract Drawings or directed by the City. During the line preparation and work operation, inactive sewer house connections shall not be cut but shall be left lined over, unless directed by the City.

F. A continuous temperature monitoring system is required for all lining segments. This system shall be installed at the invert of the pipe and be installed per the manufacturer's recommended procedures. The temperature sensors shall be placed at intervals as recommended by the sensor manufacturer. Additional sensors shall be placed where significant heat sinks are likely or anticipated. The sensors shall be monitored by a computer using a tamper proof data base that is capable of recording temperatures at the interface of the liner and the host pipe. Temperature monitoring systems shall be Zia Systems, Vericure by Pipeline Renewal Technologies, or approved equal. The Contractor is responsible for providing temperature monitoring logs.

G. In the event of insertion being delayed after impregnation by unexpected site conditions but prior to the start of the insertion process, the Contractor shall store, at his own cost, the liner, for a further period of at least 72 hours, below 30ºF for use when conditions allow.

H. The liner shall be inverted into the pipeline from a suitable platform located above the manhole or other approved point of inversion. The Contractor shall be allowed to insert the liner using another process, which has been approved by the City. The free open end of the liner bag shall be firmly secured to the platform and the folded liner passed down a suitably reinforced column to a chute or bend leading to the opening of the pipe to be lined. Insert liner without twisting, cutting, tearing, separating, kinking, gouging, overstressing, resin loss, or double-ups. The loss or discharge of resin, other lining materials, or byproducts downstream is not permitted. Potable water at ambient temperature shall be supplied to the platform at a rate sufficient to cause controlled installation of the liner into the pipeline. Positive head pressure shall be maintained on the liner during the inversion/installation of the liner.

I. Liner inversion rate for the inversion method shall not exceed 32 feet per minute and the tail of the liner or the tail tag rope shall be suitably restrained to prevent liner run away, if applicable.

J. The Contractor shall supply a suitable heat source and recirculation equipment capable of delivering required curing temperature to the far end of the liner to uniformly raise the water temperature in the entire liner, once inverted in the pipeline, above the temperature required to commence the exothermic reaction of the resin as determined by the catalyst system employed.

K. The heat source shall be fitted with suitable monitors to gauge and record the pressure and temperature of the incoming and outgoing water supply to determine when uniform temperature is achieved throughout the length of the liner. Another

such gage shall be placed between the impregnated tube and the pipe invert at the termination to determine the temperatures during cure. Install thermocouples at the top and bottom (12 and 6 o'clock positions) of the liner between the liner and the host pipe. If the liner is installed through manhole structures, gages shall also be placed at each structure.

L. Initial cure will occur during temperature heat-up and shall be completed when exposed portions of the new pipe appear to be hard and sound and the remote temperature sensor indicates that the temperature is of a magnitude to realize an exotherm or cure in the resin. After initial cure is reached, the temperature shall be raised to the post-cure temperature recommended by the resin manufacturer. The post-cure temperature shall be held for a period as recommended by the resin manufacturer, during which time the recirculation of the water and cycling of the boiler to maintain the temperature shall continue. The curing of the CIPP must take into account the existing pipe material, the resin system, and ground conditions (temperature, moisture level, and thermal conductivity of soil).

M. The curing period shall be carried out under an inversion head to maintain a minimum hoop tension in the liner felt of 1 lb/in^2.

N. If cool-down is to be accomplished by the introduction of cool water into an inversion standpipe to replace the water being drained from a small hole made in the downstream end, cool the hardened pipe to a temperature below 100 degrees F (38 degrees C) before relieving static head in the inversion standpipe. Ensure that, in the release of the static head, a vacuum will not be produced that could damage the newly installed CIPP liner.

O. Vent and/or exhaust noxious fumes or odors generated during and remaining after the curing process is completed. This process shall remain in place at all manholes, laterals, etc. until noxious odors have dissipated to an acceptable level in accordance with OSHA requirements for the materials used and there is no more air pollution or potential health hazard left to the general public or the construction workers.

P. The Contractor shall maintain a curing log of CIPP temperatures at the upstream and downstream manholes during the curing process to document that proper temperatures and cure times have been achieved. The logs shall be required to be submitted to the City.

Q. Invert through Manholes. The invert shall be continuous and smooth through all manholes. If a liner is installed through a manhole, the bottom portion of the liner shall remain and the bench of the manhole shall be grouted and shaped as necessary to support the liner. If the liner terminates on either side of a manhole, the invert shall be built up to remove any flow restrictions and to form a continuous invert through the manhole. The cost of this work shall be included in the unit price bid for the liner.

R. The finished pipelining shall be continuous over the entire length of an insertion run between two manholes or structures and be as free as commercially practicable from visual defects such as fins, foreign inclusions, dry spots, air bubbles, rips, tears,

gouges, pinholes, dimples and delamination. The lining shall be impervious and free of leakage from the pipe to the surrounding ground or from the ground to the inside of the lined pipe. Defects that will impede flow or maintenance equipment will not be permissible. Pinholes and leaking patches will not be allowed. If found they must be repaired per the manufacturer's recommendations, at the Contractor's expense.

S. The inner surface shall be free of cracks and crazing with smooth finish and with an average of not over two pits per 12 inch square, providing the pits are less than 0.12 inch in diameter and not over 0.04 inch deep and are covered with sufficient resin to avoid exposure of the inner fabric. Some minor waviness, that in the City's opinion will not appreciably decrease the flow characteristics or be the cause of a possible blockage, shall be permissible.

T. Steam cure of the liner is an acceptable method and shall meet the following requirements:

1. There shall be manifolds connected at both the inlet and outlet air/steam hoses. Temperature and pressure sensors shall be located on the inlet manifold. The installation equipment shall include an inlet air/steam hose, air compressor, acceptable steam source, and monitoring and control equipment in accordance with the manufacturer's recommendations. There shall also be an outlet air/steam hose mounted to a gauge station that has a pressure adjustment valve, temperature gauge, and pressure gauge.
2. The liner shall be inflated with adequate pressure to hold the liner tightly against the pipe wall. Once the correct pressure is reached, the outlet valve shall be used to maintain this pressure. Positive head pressure shall be maintained on the liner during the inversion/installation of the liner and the liner shall not be allowed to continuously inflate/deflate during the installation.
3. Once the liner is inflated, the temperature shall be adjusted according to the manufacturer's recommendations. The temperature shall be monitored by the sensors that are attached to the liner until the recommended temperature is reached. Time, temperatures, and pressures shall be recorded continuously throughout the curing process and submitted to the City at the end of the installation. This log will ensure that the proper curing of the liner was carried out.
4. If recommended by the manufacturer, a post curing steam shall be conducted in order to fully develop the chemical resistance and resin strength of the liner.
5. The Contractor shall gradually cool the liner down by replacing the steam in the line with air and water, if necessary. The temperature, measured by the sensors attached to the liner, shall be lowered to 90°F or as recommended by the manufacturer.
6. Once the cure is complete, the manifolds and then the calibration hose shall be detached and removed from the line.

3.2 **Testing**

A. The Contractor shall collect representative coupon samples/specimens as described below. At minimum, a coupon shall be collected for each pipe diameter that is lined and each liner thickness, unless otherwise specified in writing by the City. For every 1,000 linear feet of each diameter of CIPP liner installed for the first 10,000 linear feet, the Contractor shall perform sampling and testing at his expense and shall supply results to the City. The frequency of testing may be reduced as approved by the City after sufficient tests are performed to verify the CIPP liner design, production, and installation procedures. Likewise, the frequency of testing may be increased by the City and performed by the Contractor at no additional cost to the City when the required tests show that the installed CIPP liner does not meet the specifications. After the 10,000 feet of acceptable test results are received, the test sample frequency can be reduced to one sample every 2,000 feet of each diameter as long as samples continue to meet all minimum standards and sampling results are received in a timely manner. If a test is not passed, the lining will not be accepted. The Contractor shall stamp or mark the test pieces with the date of manufacture and batch number. These samples shall be paid for under the Pay Item for sanitary sewer rehabilitation, for the respective diameter sizes.

B. Remove restrained samples of the installed CIPP liner at least 18-inches in length. The sample shall be captured by installing the CIPP liner through a section of PVC pipe (same diameter as the existing sewer diameter) within the most downstream manhole of the installation and at all intermediate manholes if multiple sewer segments are lined at the same time. The Contractor may elect to cut the sample longitudinally and provide half of the sample to the independent testing laboratory and keep the other half of the sample for additional testing if necessary.

C. Testing shall be performed by an ASTM-certified independent testing laboratory. The Contractor shall submit to the City the name and location of the independent testing laboratory, a certified statement from the laboratory indicating that they are independent from and not associated with the Contractor in any way, and the ASTM certification for the independent testing laboratory.

D. All expenses for sampling and testing of the installed liner shall be paid for by the Contractor. The cost of all manufacturer's testing to qualify products furnished to the project site shall be the responsibility of the Contractor.

E. Should the City desire to make additional independent tests, the Contractor shall, upon request of the City, furnish any reasonable number of test pieces of raw material samples as the City may require, stamped or marked with the date of manufacture and batch number if applicable.

F. The test specimen shall be conditioned in accordance with procedure 'A' of ASTM Designation D618, Standard Practice for Conditioning Plastics for Testing.

G. The test specimen shall be prepared and physical properties tested in accordance with ASTM F1216, Section 8.1. The properties shall meet or exceed the higher of the values identified in Table 1 of ASTM F1216 and Table 20002-3 of this Specification.

H. In addition to the testing requirements specified above, the Contractor shall verify that installed thickness of the CIPP is within minus 5 percent and plus 10 percent of the specified thickness. The ASTM-certified independent testing laboratory shall test the samples to determine the installed liner thickness (conditioned and prepared in accordance with ASTM D618 and ASTM D5813, and tested in accordance with ASTM D790).

I. It is preferred that all samples be shipped to the independent laboratory the same day as installation. At the Contractor's discretion, samples may be sent in batches but in no case later than 30 days after installation. The results of the measurements for each sample shall be submitted to the City within 30 days of the sample's ship date to the laboratory. The costs for testing shall be included in the bid price for rehabilitation including the cost of all manufacturer's testing to qualify products furnished to the project site.

J. Any CIPP lining that does not meet the specified installed strength and/or thickness requirements, regardless of the amount below the specified requirements, shall be corrected by the Contractor in a manner approved by the City at no additional cost to the City. The City's decision on how to correct the deficient CIPP liner installations shall be final. Options for correcting deficient CIPP liner installations that will be considered by the City include the following: removal of the existing CIPP liner and re-lining the sewer, open-cut replacement of the sewer from manhole to manhole, or re-lining the sewer with the existing CIPP liner in place.

END OF SECTION

PART 1 DESCRIPTION

1.1 **Reference.** All applicable requirements of other portions of the Contract Documents apply to the Work of this Section.

1.2 **Description of Work.** The work covered by this section consists of providing all labor, equipment, material and supplies, and performing all operations required to test and grout sanitary sewer pipe joints and/or sewer service connections, per ASTM F2304 and ASTM F2454. This specification is intended to identify the minimum requirements of the City. Unless otherwise specified, where service connections are to be tested and sealed, testing and sealing shall also include the first joint section along the lateral. The first joint section is defined as the portion of pipe/lateral from the service connection fitting to the (first) upstream lateral joint connection.

1.3 **Submittals – After Notice of Award.** The Contractor shall submit the information listed below for review and approval. The Notice to Proceed will not be issued until all of the listed information has been reviewed and approved by the City.

A. Chemical Grouting Materials

B. Chemical Root Inhibitor

C. The installer must be able to document a minimum of 1,500 joints and/or service connections successfully sealed and tested, of the type to be used on this project, in the U.S. with the past five years.

D. The Contractor shall provide a minimum 48-hour advance written notice of proposed testing schedules and testing procedures for review and concurrence by the City.

E. Certified statement from the resin or grout injection manufacturer verifying that the Contractor is an approved installer.

F. Certificates of training for each crewmember involved in the injection and/or grout process.

G. Manufacturer’s Safety Data Sheets for the resin and/or grout.

H. Material composition, specifications, physical properties and chemical resistance for resin and/or grout. Contractor must submit manufacturer’s certification for resin and/or grout demonstrating suitability for penetrating soil/bedding and voids surrounding the lateral connection.

I. Manufacturer's recommended procedures for handling, storing, and injecting resin and/or grout.

J. Product Warranty and Certification Form: To insure that all products and materials proposed for use on this project are of the highest quality and specifically designed and manufactured for the intended installation or use, a Product Warranty and Certification Form shall be completed by the rehabilitative product manufacturer(s),

manufacturer's representative or vendor as well as the grouting installer certifying that the product(s) they are proposing to use is specifically designed for the intended application, installation and/or function. Failure to complete this form may prevent the product(s) from being used on this project.

PRODUCT WARRANTY AND CERTIFICATION FORM

REFERENCE: CITY OF NEWARK – SANITARY SEWER IMPROVEMENTS 2023

THE UNDERSIGNED HEREBY ATTESTS THAT HE HAS EXAMINED ALL THE REFERENCED PROJECT INFORMATION, PROJECT INSTALLATION REQUIREMENTS AND THE CONTRACT SPECIFICATIONS AND HEREBY WARRANTS AND CERTIFIES THAT THE REHABILITATION PRODUCTS THAT THEY PROPOSE TO FURNISH, DELIVER, AND INSTALL FOR THIS PROJECT MEETS OR EXCEEDS THE REQUIREMENTS OF THESE CONTRACT SPECIFICATIONS, IS SUITABLE FOR THE INTENDED PURPOSE AND INSTALLATION, AND WILL SATISFACTORY PERFORM TO THE CRITERIA SPECIFIED. THIS WARRANTY SHALL BE IN ADDITION TO, AND NOT IN LIEU OF, ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED.

PRODUCT: _____

MANUFACTURER: _____

Address:

By: _____
(Typed Name and Title) (SEAL)

_____ /s/ _____
(Signature) (Date)

The Product Warranty and Certification must be signed by a Principal Person (President, Vice-President, etc.) of the Product's Manufacturer. In the event the manufacturer is not the Supplier then a Principal Person of the Supplier must also sign this form.

MANUFACTURER'S REPRESENTATIVE/VENDOR: _____

Address:

By: _____
(Typed Name and Title) (SEAL)

_____ /s/ _____
(Signature) (Date)

The Product Warranty and Certification must be signed by a Principal Person (President, Vice-President, etc.) of the Installation Contractor. In the event the manufacturer is not the Installation Contractor then a Principal Person of the Installation Contractor must also sign this form.

INSTALLATION CONTRACTOR: _____

Address:

By: _____
(Typed Name and Title) (SEAL)

_____ /s/ _____
(Signature) (Date)

1.4 **Submittals – Prior to Final Payment.** The Contractor shall submit the information listed below for review and approval. Final Payment will not be made until all of the listed information has been reviewed and approved by the City.

A. The Contractor shall submit records of all test results performed clearly identifying location, pipe characteristics, observations, procedures, and results data. This information shall include the test pressure before and after grouting, the pressures during grouting, the volume of grout used at each location, the gel set time used, the barrel test results, and the grouting material used (including the names and quantities of additives).

B. The contractor shall submit DVDs for joint and/or service connection grouting work for each pipeline section in accordance with Section 20006, Television Inspection, and 2738.03.04(g)(9).

PART 2 MATERIALS

2.1 **Contractor's Equipment.**

A. The Contractor shall certify that back-up equipment is available and can be delivered to the site within 48 hours and shall submit an equipment list to the City for approval before commencement of work.

B. Before commencement of work, the Contractor shall allow the City 48 hours to inspect the equipment to be used and allow the City to measure the internal dimensions of the tanks from which the sealing materials will be pumped. The Contractor shall demonstrate an acceptable technique for measuring the volume of the sealing materials in the tanks.

C. No work shall be performed or accepted if the Contractor's measurement equipment and/or measuring techniques are unacceptable to the City.

2.2 **Cleaning Equipment.** Shall be in compliance with Section 20005, Sewer Line, Lateral, and Manhole Cleaning.

2.3 **Video Inspection Equipment.** Shall be in compliance with Section 20006, Television Inspection.

2.4 **Chemical Grout Equipment.**

A. Equipment for joint grouting shall be a remote controlled grout injection rig type with continuous air impervious inflatable diaphragms or packers at each end and other suitable approved devices which can be positioned to completely isolate each joint or break in the pipe and simultaneously permit sewage flow. The grouting device shall be a cylindrical casing type of a size less than the pipe diameter with two cables connected to both ends to pull it back and forth for positioning it in the line. Diaphragms or packers which are not airtight and may require extreme pressures to "seat" against the periphery of the pipe will not be allowed. Expansion shall be

regulated by precise pressure gauges and controls. No device which is expanded mechanically will be allowed. An approved agitator shall be used during the entire sealing operation.

B. The service connection sealing packer shall be sized to accommodate the various diameters of existing sanitary sewer connections encountered. The service connection sealing inversion tubes shall accommodate four-inch and six-inch diameter service connections and laterals. The inversion tubes shall be a minimum of four feet long, and the circumference of the sealing length shall be sized to permit the passage of grout around the annulus without excess grout. Four-inch bladders will not be permitted in six-inch service connections. The last two feet of the inversion tube shall create an air-tight seal with the existing lateral pipe, so that no grout passes beyond the inversion tube. A sensing unit shall be located in the void and shall transmit pressure within an accuracy of 0.10 psi to a remote control panel.

C. The Contractor shall perform a test demonstration to verify the accuracy of calibrations of pump pressures and liquid amounts injected per stroke prior to commencing sealing operations. If this test demonstration fails to show that readings are accurate, the Contractor shall be required to make required repair or adjustments to the equipment and gauges, and retest until the results are satisfactory to the City. This test demonstration may be required at any time during the sealing operation.

2.5 **Air Test Equipment.**

A. When requested by the City, the test equipment shall be positioned on a section of sound sewer pipe and a demonstration performed as described herein. This procedure will demonstrate the authenticity of the air test equipment and verify that test requirements are within the pipe capability. If the test is not performed successfully, the Contractor shall be required to repair or otherwise modify his equipment, and re-test until the results are successful and satisfactory to the City. Test requirements will be adjusted to within the pipe integrity limits. This test may be required at any time during the Contract period.

B. The basic equipment used shall consist of a television camera, joint testing device (such as a packer), and test monitoring equipment. The equipment shall be constructed in such a way as to provide means for introducing the test medium (air), under pressure, into the void area created by the expanded ends of the testing device and means for continually measuring the actual static pressure of the test medium at and within the void area only.

C. Void pressure data shall be transmitted electrically from the void to the monitoring equipment. Example: via a TV picture of a pressure gauge located at the void, or via an electrical pressure transducer located at the void.

D. All test monitoring shall be above-ground and in a location to allow for simultaneous and continuous observation of the television monitor and test monitoring equipment by the City's representative.

2.6 Grout Materials for Joints and Service Connections.

A. General: The Contractor shall select an acrylamide base gel, urethane base gel, acrylate gel, acrylic base gel, or urethane base foam as described in the paragraphs to follow. A dye shall be added to the grouting material to allow for visual confirmation that the packer was positioned over the joint or service connection during grouting operations.

B. The chemical grout shall be a liquid of low enough viscosity to be easily pumped to the site of a leaking joint or connection and shall: react quickly to seal the joint, defect, or service connection against infiltrating ground water, be able to tolerate some dilution and react in moving water during injection, be capable of holding occurring heads of up to 20-feet of water and normal pipe movements without leaking, and able to withstand the environment of a sewage collection system.

C. Once cured, the grout shall not degrade under dry or wet conditions. When submerged in water the grout must prevent infiltration through the soil ring, the pipe joints, and service connections.

D. The cured chemical grout shall be flexible (not brittle), non-biodegradable, chemically stable, and resistant to acids, alkalis, and organics found in wastewater and storm water.

E. The packaging of grout components shall be conducive to safely handling and storing in the field. Field cleanup must be performed without an inordinate use of flammable or hazardous chemicals.

F. All mixtures for gel or foam and quantities shall be submitted to the City for approval prior to beginning the grouting operation. Additives to increase the strength, adhesion, solution density, and viscosity shall be approved by the City prior to their use. Bulk fillers such as diatomaceous earth may be added to the grout mix up to ten percent by weight of the total mix. The mixtures, quantities, and additives shall all be based on the manufacturer's recommendations.

G. Root inhibitors, such as dichlobenil, shall be incorporated in the mix when roots are present in the service connections and joints. The root inhibitor shall be compatible with the grout mixture, and shall be approved by the grout manufacturer. The Contractor specifically covenants and agrees that he shall make no claim against the City for any damages that may occur as a result of any adverse effect the chemical root inhibitors may have upon the Contractor's equipment or personnel.

    1. The active component for destroying intruding roots shall be a potent nonsystemic toxin that kills contacted roots at low concentration but does not permanently affect contacted parts of the plant a distance from the treated roots. The active ingredient must be spontaneously detoxified by natural chemical or biochemical processes in a relatively short time following its use. The active ingredients shall have no adverse effect on the performance of a wastewater

treatment plant, and shall be registered with the Environmental Protection Agency.

H. The specified materials are considered toxic and irritants to the skin and eyes. However, none of the materials in the grouting system shall present undue hazard to contract site personnel. Mixing, handling and pumping chemicals shall be done by personnel familiar with the handling of the chemicals involved. Proper protective outerwear including eye protection and respirators for inhalation protection shall be used while mixing or when otherwise exposed to close contact.

I. The chemical grout shall be mixed within the isolated area formed by the grouting rig or packer.

J. The amount of material necessary for various sizes and types of pipe joints and connections shall be calculated by the Contractor prior to injection.

K. The material selected shall have a cure time that is appropriate for the conditions encountered.

2.7 **Acrylamide Base Gel.** The acrylamide base gel shall be based on a two-part chemical grout. The material shall have the following minimum properties:

A. A minimum of 10 percent acrylamide base material by weight in the total sealant mix. A higher concentration of acrylamide base material shall be used, when directed by the City, to increase strength or offset dilution during the induction period.

B. A controllable reaction from ten seconds to no more than one hour.

C. A viscosity of approximately 2 centipoise which can be increased with additives, as approved by the manufacturer.

D. Viscosity to remain constant throughout the induction period.

E. The ability to tolerate some dilution and react in moving water.

F. The reaction (curing) shall produce a homogeneous and firm gel.

G. Latex additive to increase the strength, adhesion, solution density and viscosity shall be used when directed by the City.

H. Use of catalyst containing dimethyl amino propionitrile (DMAPN) is prohibited.

2.8 **Urethane Base Gel.** Urethane base gel materials shall have the following minimum properties:

A. One part urethane prepolymer thoroughly mixed with between five and ten parts of water by weight. The recommended mix ratio is one part urethane prepolymer to eight parts of water (11 percent prepolymer). When high flow rates from leaks are encountered, the ratio of water being pumped may be lowered.

B. A liquid prepolymer having a solids content of 75 percent to 95 percent, and a specific gravity of greater than 1.00.

C. A liquid prepolymer having a viscosity of between 100 and 1,500 centipoise at 70 ºF that can be pumped through 500 feet of ½-inch hose with a 1,000 psi head at a 1 ounce/second flow rate.

D. The water used to react the prepolymer should be in the pH range of five to nine.

E. A relatively rapid viscosity increase of the prepolymer/water mix. Viscosity increases rapidly in the first minute for one to eight prepolymer/water ratio at 50 ºF.

F. The ability to increase mix viscosity, density, gel strength, and resistance to shrinkage by the use of additives to the water is required.

2.9 **Acrylate Gel.** Acrylate Gel shall have a constant viscosity during the reaction period and have the following minimum properties:

A. Minimum 10 percent acrylate base material by weight or as specified by the manufacturer.

1. In the total grout mix, a higher concentration (percent) of acrylate base material may be used to increase strength or offset dilution during injection.

2. If acrylate base material is in 40 percent solution 27.5 percent by weight of total grout mix: 11 percent base material.

B. The viscosity of the acrylate gel shall be approximately 2 centipoises but can be increased with additives.

C. A controllable reaction time of 10 seconds to no more than 1 hour.

D. A curing reaction which produces a homogeneous gel.

E. Able to prevent dehydration and to increase mix viscosity, density, and gel strength by the use of additives.

1. Diatomaceous earth can be added to concentration of five percent, by volume.

2. Use of other additives following manufacturer's recommendations and the City's approval.

2.10 **Acrylic Base Gel.** Acrylic base gel shall have the following minimum properties:

A. A minimum of 10 percent acrylic base material by weight in the total sealant mix. A higher concentration of acrylic base material shall be used, when directed by the City, to increase strength or offset dilution during injection.

B. The ability to tolerate some dilution and react in moving water.

C. A viscosity of approximately 2 centipoise, which can be increased with additives, when directed by the City.

D. A constant viscosity during the reaction period.

E. A controllable reaction time from 10 seconds to no more than 1 hour.

F. A reaction (curing), which produces a homogeneous gel.

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

2.11 **Urethane Base Foam (Pipe Joints Only).** Urethane base foam shall have the following minimum properties:

A. One part of urethane prepolymer thoroughly mixed with one part of water by weight (50% prepolymer).

B. A liquid prepolymer having a minimum solids content of between 75 and 95 percent and a minimum specific gravity of 1.00.

C. A liquid prepolymer having a viscosity of 150 to 1,200 centipoise at 72°F that can be pumped through 500 feet of ½-inch hose with a 500 psi head at a 1 ounce/second flow rate.

D. Expansion and viscosity increases shall occur during injection foaming.

PART 3 CONSTRUCTION REQUIREMENTS

3.1 Maintaining Existing Sewage Flows.

A. Maintaining existing sewage flows during the entire rehabilitation operations shall be the responsibility of the Contractor. Precautions and methods to prevent sewage back-ups shall be employed as required. Sewage back-up damage and/or clean-up required due to the Contractor's operations shall be the responsibility of the Contractor. Violations from sewage spills shall be the sole responsibility of the Contractor and must be reported to the City Inspector.

B. Sewage flow control shall be in accordance with Specification Section 20004, Flow Control.

3.2 Cleaning Operations

A. Cleaning of the sewer lines, service connections, and laterals shall be performed as specified in Section 20005, Sewer Line, Lateral, and Manhole Cleaning.

B. Recleaning: If a pipeline, service connection, or lateral is found not to be properly cleaned in the opinion of the City, the television and grouting equipment shall be removed and the sewer recleaned at no additional expense to the City.

C. The main line, service connection and lateral shall be cleaned prior to and following the grouting operations to remove dirt, debris, mineral deposits, grease, and roots prior to grouting and excess grout material that accumulates in the sewer pipe, service connection, or lateral following grouting operations. Excess grout is defined as grout that impedes or, if dislodged, may impede flow in the line. All cleaning shall be videotaped and provided to the City for review and approval.

3.3 Air Testing

A. After the cleaning and television inspection operations are completed, as specified, the Contractor shall proceed with service connection and joint testing on the designated lines.

B. Air testing is intended to identify sewer pipe joints and service connections that are defective and that can be successfully sealed by internal pipe sealing/grouting process. Air testing is also used to test the effectiveness of the seal. Testing of joints and service connections that are visibly leaking is not required and will not be paid for by the City. Testing on cracked, broken pipe will not be required and will not be paid for by the City.

C. All testing shall be performed in the presence of the City, unless otherwise approved in writing by the City.

D. Air testing shall be performed before and after grouting operations by applying a positive air pressure to each joint and service connection and monitoring the pressure in the void.

E. Control Test. Prior to starting the air testing phase of the work, a two-part control test shall be performed, in conformance with ASTM F2304 and ASTM F2454, respectively. If the test readings are not accurate within ±0.5 psi for void pressure repeatability, the Contractor must repair or adjust the equipment.

   1. To ensure the accuracy, integrity, and performance capabilities of the testing equipment, a demonstration test shall be performed aboveground in a test cylinder constructed in such a manner that a minimum of two known leak sizes can be simulated. The technique will establish the test equipment performance capability in relationship to the test criteria and ensure that there is no leakage of the test medium from the system or other equipment defects that could affect the testing results. If this test cannot be performed successfully, the Contractor shall be instructed to repair or otherwise modify his equipment and re-perform the test until the results are satisfactory to the City. This test may be required at any other time during the testing work if the City suspects the testing equipment is not functioning properly.

   2. Joint Testing (only): After entering each manhole section with the test equipment, but prior to the commencement of joint testing, the test equipment shall be positioned on a section of sound sewer pipe between pipe joints, and a test performed as specified. This procedure will demonstrate the accuracy of the test equipment, as no joint will test in excess of the pipe capability. Should it be found that the barrel of the sewer pipe will not meet the joint test requirements (void pressure cannot be held for 60 seconds), the requirements will be modified as necessary.

F. The testing device shall be positioned over the joint or service connection to be tested by means of a measuring device and CCTV camera in the line.

G. The testing device shall be expanded so as to isolate the joint or service connection from the remainder of the line and create a void area between the testing device and the pipe joint or service connection.

H. Air shall then be introduced into the void area until a pressure equal to 0.5 psi per vertical foot of pipe depth (not exceeding a test pressure of 10 psi for pipe joints and 6 psi for service connections) is observed with the void pressure monitoring equipment. Perform testing following ASTM F2304 and ASTM F2454 respectively. If the required test pressure cannot be achieved (due to joint leakage), the joint or service connection will have failed the test and shall be sealed as specified herein.

I. 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 2 psi within 15 seconds (due to service connection leakage) and more than 1 psi in 15 seconds (due to joint leakage), the joint or service connection will have failed the test and shall be sealed as specified herein.

J. Upon completing the air testing of each individual joint or service connection tested, the packer shall be deflated with the void pressure meter maintaining the established air test pressure. Should the void pressure meter fail to drop to zero, the Contractor shall be instructed to clean his equipment of residual grout material or make the necessary equipment repairs to provide for an accurate void pressure reading.

K. Any joint or service connection failing the air test prior to grouting shall be sealed as specified herein and retested by the same void pressure method and procedures to verify the effectiveness of the sealing. This procedure will be repeated until the joint or service connection passes the test. Additional sealing and retesting after the initial sealing and retesting shall be at no cost to the City.

L. During the air testing work, the contractor shall record the following information on prepared testing logs:

1. Date.
2. Identification of the line segment or service connection tested.
3. The depth of the line segment or service connection as measured from the downstream manhole.
4. The test pressure used.
5. Location (footage) of each joint tested.
6. A statement indicating the test results (passed or failed) for each tested.

3.4 Grouting Joints, Defects, and Service Connections

A. At the direction of the City, the Contractor shall be required to grout any or all pipe joints, defects, breaks, holes and other sources of possible ground water infiltration, and service connections within a sewer line as may be observed or recorded by television inspection in existing sanitary sewers of the size stated in the Bid Schedule,

and as described herein. In addition thereto, the Contractor shall be required to seal any or all pipe joints, service connections, defects, breaks, or other portions of a sewer line, as directed by the City. Any joint, service connection, or defect that is sealed shall subsequently be tested by air testing procedures described herein. Costs related to the air test following the sealing will not be measured for payment nor constitute additional cost to the Contract Price, and shall be considered as incidental to the Contract.

B. Before the commencement of work, the Contractor shall provide a test demonstration of the fluid pumping equipment. The readings shall be accurate within ±0.1 gal of chemical pumped or else the Contractor shall repair or adjust the equipment.

C. All pipe joints, service connections, and defects directed to be grouted shall be sealed by internal chemical grouting. The method used shall not damage, break, move or cause settlement of sewer pipe or manhole structures, and shall be such that the original cross-sectional area and shape of the interior of the sewer shall not be permanently reduced or changed. Any sewer that the City may deem damaged as a result of the Contractor's operations shall be promptly repaired to the City's satisfaction at no expense to the City.

D. Sealing materials that set to a hard, rigid product capable of intrusion into the sewer line will not be acceptable. Areas of severely broken, crushed, eroded, misaligned, or otherwise damaged pipe or manholes which require excavation and replacement will be repaired within this Contract; or their exact location shall be determined and recorded by the Contractor during the conduct of the work.

E. If roots were detected during the Contractor's pre-construction CCTV inspection, these roots shall be removed immediately prior to any grouting operations. Cost related thereto will not be measured for payment nor constitute additional cost to the Contract Price, and shall be considered as incidental to the Contract. Roots must be cut. Foaming is not permitted.

F. Once the grout sealing is complete, the Contractor shall view each finished seal with a pan and tilt camera as the joint or service connection is put back into operation. The Contractor shall verify that the grout does not obstruct the flow through the pipe, service connection, or lateral. The Contractor shall correct this blockage at no cost to the City.

G. Application of Chemical Grout

1. Each time a new batch of grout chemicals is mixed, the gel time shall be measured and recorded. A small quantity of the chemicals shall be taken from the ends of the packer hose and mixed in a paper cup and witnessed by the City. The gel time shall also be measured and recorded at the end of a shift. The gel time should be within the range specified by the manufacturer. If the grout does not gel per the manufacturer's recommendations, the Contractor shall discard the batch and create a new batch at the Contractor's expense.

2. Jetting or driving pipes from the surface that could damage or cause undermining to the pipelines, will not be allowed. Excavating the pipe, which would disrupt traffic, undermine adjacent utilities and structures, will not be allowed.

3. Provide chemical grouting of sewer joints, service connections, leaks, and breaks in the pipe when directed by the City by forcing sealing materials into and through any or all pipe line joints, service connections, leaks or defects from within the sewer pipe. If grouting operations restrict or prevent simultaneous sewage flow passage, the Contractor shall provide an approved plug and/or by-pass pumping system and shall be responsible for damage caused by sewage backup that may occur during the sealing operation. Maximum interruption of existing flows shall be limited to one hour.

4. The grouting injection rig shall be positioned over the sewer joint, service connection, leak, or defect in the pipe by means of a closed circuit television camera in the line. Accurate measurement of the location of the joint or service connection to be sealed shall be made, using a portion of the grouting rig as a "Datum" or measurement point. Such measurement or point shall also be used to record measurement of the repaired joint or service connection. A tight seal shall be obtained before the grouting process begins. If a tight seal is not obtained, the Contractor shall remove the equipment and make such adjustments as are required to obtain a tight seal. The chemical sealant shall be pumped into the isolated void area, through hose lines leading from aboveground. The chemical sealants shall be pumped with instant reading, metered flow controlled, positive displacement, proportioning pumps with pressures in excess of ground water pressures.

5. The pumping and mixing of the chemical grout material shall be performed in accordance with the manufacturer's recommendations. The void pressure monitoring equipment described herein shall be operating during the sealing operations. The television, grout pumping and air pressure monitoring equipment shall be integrated so that proportions, quantities, and void pressures for materials and sealing can be instantly monitored and regulated in accordance with the type and size of the joint, service connection, and/or break in the pipe or leak.

6. In the event that large voids are encountered on the outside of the sewer, including the possibility of "piping" holes to the ground surface which could cause excessive use of grout, a change in operating pressures and pumping rates shall be made as directed by the City. In such instances, changes in operating procedures shall be accomplished by reducing pressures and pumping rates followed by a termination of pumping until a temporary "set" of the gel is obtained on the outside of the pipe. After a sufficient lapse of time, followed by an increase in pressure, resumption of pumping will occur until a proper seal of the joint or service connection is obtained.

7. Upon completion of the injection, the grouting rig shall be moved forward and backward, wiping away the excess grout and allowing the television camera to move to a suitable position for inspection and/or air test. Each joint, service connection, crack, or hole shall then be again air tested as specified hereinbefore. Should any joint, service connection, or defect fail to pass the air test, it shall be resealed and retested until the test requirement can be met. No additional payment shall be made for multiple attempts to seal a joint, service connection, or defect. No payment will be made for grouted joints and/or service connections (sealing plus sealing material) that do not meet test requirements.
8. The excess grouting material removed from the joint, service connection, or break by the grouting equipment shall be flushed or pushed forward to the next downstream manhole, removed from the sewer system and disposed of by the Contractor, and as recommended by the chemical grout manufacturer and in accordance with local, State and Federal regulations. In no case shall excess grout material from succeeding sections be allowed to accumulate and be flushed down the sewer.
9. The Contractor shall video tape the complete procedure during the sealing operation. The DVDs shall be submitted to the City for review and approval. The DVD shall display the date, manhole numbers, footage to the joint, defect, or service connection and void pressure readout. All data obtained during the sealing operation shall be recorded on the grouting log and submitted to the City. The Contractor shall record the following information on prepared testing logs:
    a. Date.
    b. Location of the service connection tested.
    c. The distance of the joint or service connection as measured from the downstream manhole.
    d. The test pressure used.
    e. A statement indicating the test results (passed or failed) for each tested joint or service connection.

3.5 Pipe Joint or Defect Grouting and Testing

A. Pipe joint and/or defect grouting shall begin with the grouting device in position to isolate the defective joint or defect. The sleeves mounted on the casing of the device shall be pneumatically expanded from the center to both ends. When in an inflated state, two widely spaced annular bladders shall have been formed, each of an elongated shape and producing an annular void around the center portion of the casing. The pneumatically expanded sleeves shall seat against the inside periphery of the pipe in such a way as to form a void area completely isolated from the remainder of the line. The grouting material shall pass throughout one end of the casing and shall be adapted to supply the sealing material, under pressure, to the space at the center of the casing. The amount of chemical grout pumped is based on the number

of strokes delivered to each pipe joint or defect. The number of strokes and amount of grout applied shall be recorded on the pipe joint or defect grouting log.

B. The gel time is typically between 20 and 40 seconds.

C. For successful sealing, the grout is pumped to refusal while under continual pressure. Refusal, as defined for pipe joint or defect repair, is up to ½ gallon per inch diameter pipe size. If the grout cannot be pumped to less than or equal to refusal, the pumping shall stop and grout staging shall be attempted, as directed by the City.

D. Once the joint or defect is sealed, the packer shall be deflated and moved at least one packer length in each direction to remove the extra gel. The grouted joints or defects shall be left reasonably flush with the existing pipe. The packer shall then be repositioned over the joint or defect and another air test shall be performed.

E. The air test shall result in a loss of less than or equal to 1 psi in 15 seconds for a successful seal. If the pressure drop is greater than 1 psi in 15 seconds, the joint or defect sealing will have failed and the Contractor shall grout the joint or defect again at no cost to the City.

3.6 Service Connection (Only) Grouting and Testing

A. Service connection grouting shall begin with the packer in position to isolate the connection. With the packer remaining in position, chemical sealant is pressure injected into the annular space between the inversion tube and the lateral pipe. Under pressure, the grout material is forced out into the soil through leaking joints, cracks and other defects in the existing connection. The amount of chemical grout pumped is based on the number of strokes delivered to each service connection. The number of strokes and amount of grout applied shall be recorded on the service connection grouting log.

B. A gel time of 25 seconds is acceptable when using a low void packer and grouting 4 feet of the lateral from the connection.

C. The pump must be able to fill the void with grout before the grout begins to gel. After the void is filled, the pump shall maintain a back pressure of 8 psi into the void at the mainline level. Once the drop in pressure from 8 to 6 psi takes longer than 20 seconds after the pumping stops, the grouting will be considered complete.

D. If the effective quantity of grout required to fill the void exceeds 1 gallon/foot of sealing distance plus 3 gallons, it will be assumed that there are large voids on the outside of the pipe. In this case, grout staging shall be attempted, as directed by the City, until the refusal pressure of 8 psi is reached. If the grout consumption is too high, the City may call for an alternate sealing method.

E. Any extra grout shall be removed after the sealing operation and the service connection and lateral shall be left flush with the existing pipes.

F. Upon completion of the grout process, each service connection shall be air tested to verify the sealing of the connection. Air pressure shall be applied to the isolated void

and recorded, and the pressure shall be recorded again after 15 seconds. If the void pressure drop is greater than 2 psi, the service connection will be considered to have failed the air test and shall be grouted a second time at no cost to the City.

3.7 **Monitoring Operations.** Shall be in compliance with Specification Section 20006, Television Inspection.

3.8 **Photographs.** Furnish all equipment and film required to take digital photographs of the views which appear on the monitor. In the course of the inspection, the City will indicate the specific views which are to be photographed as a permanent record.

3.9 **Records**

A. For each section of sewer or service connection grouted, complete, accurate and legible records of the grouting operations shall be kept by the Contractor, and copies in triplicate furnished to the City. A representative of the City shall be present during testing and sealing operations.

B. These records shall show the location of each operation or point of information relative to the centerline distance from adjacent manholes clearly defined. Measurement of location shall be readable at ground level by means of a measuring device. Marking on cable or the like will not be allowed. As each repair is accomplished, notations shall be made on the pertinent location record showing the amount of grout solution used, and any other pertinent information relative to the repair or as directed by the City.

3.10 **Obstructions.** Obstructions may be encountered during the course of the sealing operations that prevent the travel of the packer and camera. Should an obstruction not be passable, the Contractor shall withdraw the equipment and begin sealing operations from the opposite end of the sewer reach.

A. Should additional obstructions be encountered after the equipment is reset and no means are available for passing the obstructions without damage to the equipment, these locations shall be noted and corrected by the Contractor as directed by the City in accordance with the bid items. Passing material from section to section which could be detrimental to pumping equipment or cause accumulations in wet wells will not be permitted. An approved dam, weir or screening device shall be constructed in the downstream manhole in such a manner that construction debris and solids will be trapped, retained and removed from the sewer.

3.11 **Quality Assurance**

A. All sealing/grouting performed shall be guaranteed against faulty workmanship and/or materials for a period of one year after the completion and acceptance of the project.

B. Prior to the expiration of the guarantee period, an initial retest area consisting of specific line segments or service connections may be selected by the City. Line segments or service connections to be retested shall be randomly selected

throughout the project area and shall be representative of the majority of the sealing work originally performed. The initial test area shall consist of at least 5%, but not exceed 10%, of the number of joints, defects, and/or service connections in the original project.

C. At the City's option, within the initial retest area, the Contractor shall retest all previously sealed joints, defects, or service connections as specified. Any joints, defects, or service connections failing the retest shall be resealed. If the failure rate of the retested joints, defects, or service connections is less than 5% of the joints retested, the work shall be considered satisfactory and no further retesting will be required. Payment for retesting the initial area shall be at the unit price bid for each item of work required (e.g.: cleaning, TV inspection, testing, etc.). No compensation shall be provided for resealing (grouting) joints, defects, or service connections that fail.

D. If, in the initial retest area, the failure rate of the retested joints, defects, or service connections exceeds 5% of the joints, defects, or service connections retested, an additional retest area of equivalent size shall be selected and all previously sealed joints, defects, and/or service connections shall be retested. This additional retesting and sealing, if necessary, will continue until a failure rate of less than 5% is met. Any additional testing/sealing required beyond the initial retest area shall be accomplished at no cost to the City.

END OF SECTION

PART 1 DESCRIPTION

1.1 **Reference.** All applicable requirements of other portions of the Contract Documents apply to the Work of this Section.

1.2 **Description of Work.** The Contractor shall furnish all labor, materials, equipment and supplies, and shall perform all work related to the control of sewage flow. The Contractor shall provide all pumps, piping and other equipment necessary to accomplish bypass pumping; perform all construction; obtain all permits; pay all costs; and perform complete restoration of all existing facilities and areas disturbed to conditions equal to or better than pre-construction conditions and to the satisfaction of the City. Flow control and routing methods shall be subject to review by the City prior to work commencing on each portion of the system.

1.3 **General.**

A. When the depth of flow in the sewer line being televised or repaired is above the maximum allowable for the proposed work (as specified in Section 20006), then the Contractor shall reduce the flow to the levels specified by manual operation of pump stations, plugging or blocking of the flow or by pumping and bypassing of the flow as acceptable to the City. Plugging or blocking of the flow shall only be allowed when the Contractor can demonstrate that the upstream gravity collection system can accommodate the surcharging without any adverse impact to the collection system or private property.

B. The depth of flow in the sewer line being televised or repaired shall not exceed that shown below for the operations indicated. Television inspection shall be performed as specified in Section 20006 – Television Inspection.

1. **Television Inspection Before and After Lining Installation.**

   Refer to Section 20006.

2. **Pipe Lining Installation.** For the pipe lining installation the sewer line shall be blocked completely. No flow or flow depth, except infiltration, will be allowed through the sewer line. Infiltration shall be addressed as specified in the Contract Documents and on the Drawings.
3. Violations from sewage spills shall be the sole responsibility of the Contractor and must be reported to the City Inspector.
4. The bypass system shall meet the requirements of all codes and regulatory agencies having jurisdiction.
5. As part of flow control plans, the Contractor shall be responsible to notify sewer customers where that service will be disturbed for each segment of rehabilitation and replacement. The Contractor shall advise the customers by written notice that service will be interrupted. Service shall promptly be restored and will not be shut off for extended periods of time.

1.4 **Submittals.** The Contractor shall submit to the City a detailed plan and description outlining all provisions and precautions that the Contractor shall take regarding the handling of wastewater flows during sewer rehabilitation. The plan shall be submitted to the City for review and approval at least 7 days prior to commencing work on each portion of the system to be rehabilitated. Flow control includes, but is not limited to, plugging, bypass pumping or trucking as deemed appropriate for the work performed. The plan must be specific and complete, and shall include, but not be limited to, the following details:

A. Schedule for installation and maintenance of bypass pumping system.

B. Staging areas for pumps and site access point(s), including design plans and computation for access to bypass pumping locations. Contractor shall indicate locations on the drawings.

C. Bypass pump sizes, including calculations to validate size selected, capacity, number of each size to be on site, and power requirements.

D. Unless otherwise noted in the construction documents, the bypass shall be sized for 1.5 times the maximum calculated capacity of the pipe for pipes 8” in diameter and greater.

E. Calculations of static lift, friction losses, and flow velocity (pump curves showing pump operating range shall be submitted).

F. Road crossing details, where applicable.

G. Sewer plugging methods, type of plugs, and bypass time duration for each sewer section.

H. Size, number, length, material, location and method of installation for suction and discharge piping.

I. Sections showing suction and discharge pipe depth.

J. Method of noise control for each pump and/or generator.

K. Standby power generator size and location.

L. Downstream discharging plan.

M. Methods of protecting discharge manholes or structures from erosion and damage.

N. Restraining lengths for piping. Thrust blocks will not be allowed as a method of restraint for bypass pumping systems.

O. Temporary pipe supports and anchoring required.

P. Location of fuel tank(s) and other potential contaminants.

Q. Reliability methods including float switches, visual and audible alarms, and pump controls.

R. Overflow Prevention, Contaminant and Cleanup Plan.

S. Procedures to monitor upstream mains for backup impacts.

T. Procedures for setup and breakdown of pumping operations.

U. Emergency plan detailing procedures to be followed in event of pump failures, sewer overflows, service backups, and sewer spillage. Maintain a copy of this emergency plan on site for the duration of the project.

PART 2 MATERIALS

1.1 General.

A. The Contractor shall provide the necessary operating controls for each pump.

B. The Contractor shall provide either bypass redundancy for the largest pump or a minimum of 50% pump capacity of the total required flow within the system, whichever is greater with respect to flow volume. The intent of the redundant pump capacity is to ensure adequate back-up pumps are immediately available to the system. Back-up pumps shall be on-line, isolated from the primary system by a valve. Keep and maintain spare parts for pumps and piping on site, as required. Maintain adequate hoisting equipment and accessories on site for each pump.

C. Pumps shall be fully automatic, self-priming units that do not require the use of foot valves or vacuum pumps in the priming system. The pumps shall also be electric or diesel powered and constructed to allow dry running for long periods of time to accommodate the cyclical nature of effluent flows.

D. Discharge Piping. In order to prevent the accidental spillage of sewage, all discharge systems shall be temporarily constructed of rigid pipe with positive, restrained joints. Only materials that withstand pressures greater than the peak bypass system pressures, as determined according to flow calculations and system operating calculations, may be used. All materials shall be suitable for contact with domestic sanitary sewage. Under no circumstances will aluminum “irrigation” type piping or glued PVC pipe be allowed. Discharge hose will only be allowed in short sections and by specific permission from the City. The bypass pumping system shall be 100% watertight. The Contractor shall perform leakage and pressure tests on discharge piping using clean water, before operation.

E. Bypassed flows shall be discharged to the sanitary sewer system, trucked using appropriate watertight vehicles or watertight containers, or otherwise handled to prevent flows from interfering with the work to be performed on that portion of the system.

PART 3 CONSTRUCTION REQUIREMENTS

3.1 Preparation.

A. The Contractor is responsible for locating any existing utilities in the area where the Contractor selects to locate the bypass pipelines. The Contractor shall locate his bypass pipelines to minimize any disturbance to existing utilities and shall obtain approval of the pipeline locations from the City and affected utility agencies. All

cost associated with relocating utilities and obtaining all approvals are considered incidental and shall be paid by the Contractor.

B. When working inside a manhole or force main, the Contractor shall exercise caution and comply with OSHA requirements when working in the presence of sewer gases, combustible or oxygen-deficient atmospheres, and confined spaces.

C. The Contractor is responsible for obtaining any approvals for placement of the temporary pipeline within public ways from the City of Newark and DelDOT where applicable.

D. Transport, deliver, handle, and store pipe, fittings, pumps, ancillary equipment and materials to prevent damage and following the manufacturer's recommendations. Inspect all material and equipment for proper operation before initiating work.

E. Material found to be defective or damaged due to the manufacturer or shipment shall be repaired or replaced, as recommended by the manufacturer, at no cost to the City.

F. Remove manhole sections or make connections to existing sewer and construct temporary bypass pumping structures as required to provide adequate suction conduit.

3.2 **Plugging and Blocking.** Plugging or blocking of sewage flows shall incorporate a primary and secondary plugging device. Sewer line plugs shall be inserted into the line upstream of the section being televised or repaired. The plugs shall be so designed that all or any portion of the upstream flow can be released. During the television inspections and repair operations, the flow through the line being worked on shall be reduced to within the maximum limits stated in this specification section. When plugging or blocking is no longer needed for performance and acceptance of work, remove in a manner that permits the sewage flow to slowly return to normal without surge, to prevent surcharging or causing other major disturbances downstream.

3.3 **Pumping and Bypassing.**

A. When pumping and bypass pumping is required, the Contractor shall supply all necessary pumps, conduits, engines, and other equipment to divert the flow around the pipe section in which work is to be performed. The contractor shall calculate the maximum carrying capacity of the system to be rehabilitated, at the diameters and slopes provided on the Contract Drawings. The Contractor shall have backup equipment available should the primary system fail, and the pumping/bypass system shall be adequate in size to handle the existing peak use flows and additional flows that occur with rainstorms or snowmelt events.

B. The Contractor shall be responsible for furnishing the necessary labor and supervision to set up, maintain, and operate the pumping and bypassing system at all times. Pumps and equipment shall be continuously monitored by the Contractor during the periods that pumping and bypassing are required. If pumping is required on a 24-hour basis, engines shall be equipped in a manner to keep noise

to a minimum, as specified in the paragraph below.

C. The Contractor shall select pumping/bypassing equipment that will not have excessive noise levels and shall be restricted to a maximum of sixty- nine (69 dB) at a distance of 30-feet.

D. Unless otherwise approved by the City in writing, the bypass system shall remain in place until all pipeline, manholes, and lateral replacement and/or rehabilitation have been complete and tested. If tasks are not complete as per the Contract Documents, full compensation will not be received for that respective task. The City will not incur costs for re- mobilization of the bypass system due to Work deemed unacceptable.

3.4 Flow Control Precautions

A. When flow in a sewer line is plugged, blocked or bypassed by the Contractor, he shall take sufficient precautions to protect the public health and to protect the sewer lines from damage that might result from sewer surcharging. Further, the Contractor shall take precautions to ensure that sewer flow control operations do not cause flooding or damage to public or private property being served by the sewers involved. The Contractor shall be responsible for any damage resulting from his flow control operations.

B. When flow in a sewer line is plugged or blocked by the Contractor, he shall monitor the conditions upstream of the plugs and shall be prepared to immediately start bypass pumping, if needed. Any liquid or solid matter, which is bypass pumped from the sewer collection system shall be discharged to another sewer manhole or appropriate vehicle or container only. No such liquid or solid matter shall be allowed to be discharged, stored or deposited on the ground, swale, road, stormwater drainage system or open environment. The Contractor shall protect all pumps, conduit and other equipment used for bypass from traffic, vandalism, or other possible sources of damage.

C. Should any liquid or solid matter from the sewer collection system be spilled, discharged, leaked or otherwise deposited to the open environment or private property, including but not limited to basements, as a result of the Contractor's flow control operations, he shall be responsible for all cleanup and disinfection of the affected area and all associated costs, including any fines or penalties resulting from the discharge. The Contractor shall also be responsible for notifying the sewer system operating personnel and appropriate regulatory agencies and performing all required cleanup operations at no additional cost to the County.

END OF SECTION

PART 1 DESCRIPTION

1.1 **Reference.** All applicable requirements of other portions of the Contract Documents apply to the Work of this Section.

1.2 **Description of Work.** The work covered by this section consists of providing all labor, equipment, material and supplies and performing all operations required to clean sewer lines, laterals and manholes prior to the internal television inspection(s) and repair operations.

1.3 **Sewer Line and Lateral Cleaning.** The intent of sewer line cleaning is to remove foreign materials (sediment, grease, broken pipe, roots, etc.) from the pipes, laterals, and manholes to prepare the lines for television inspection and repair operations. Since the success of other phases of work depends a great deal on the cleanliness of the lines, the importance of this phase of the operation is emphasized. It is recognized that there are some conditions such as broken pipe and major blockages that prevent cleaning from being accomplished or where additional damage would result if cleaning were attempted or continued. Should such conditions be encountered, the Contractor shall immediately coordinate with the City to determine the necessary course of action.

A. Sewer cleaning is defined as the removal of debris up to 1/3 of the pipe's diameter from a sewer system, with approved cleaning equipment. Sewer cleaning may require the use of hydraulic high pressure sewer cleaners, root saws, chain cutters, etc.

B. Heavy sewer cleaning is defined as cleaning required, in addition to the aforementioned sewer cleaning, to remove large amounts of debris from a sewer system (debris over 1/3 of the pipe's diameter). Debris can include excessive grease, large stones, bricks, and heavy root growth from trees. Heavy cleaning may require the use of bucket machines and mechanical cleaning equipment such as scrapers, scooters, heavy duty brushes, metal pigs and other approved debris removing equipment. Heavy cleaning is only applicable for mainline sewers greater than 8-inches in diameter and sewer laterals as specified.

1.4 **Manhole Cleaning.** All concrete and masonry surfaces must be clean prior to repair. Grease, laitance, loose bricks, mortar, unsound concrete, wall mounted steps (cut flush with wall), and other materials must be completely removed. Water blasting (minimum 1200 psi) utilizing proper nozzles shall be the primary method of cleaning; however, other methods such as wet or dry sandblasting, acid wash, concrete cleaners, degreasers or mechanical means may be required to properly clean the surface. Surfaces on which these other methods are used shall be thoroughly rinsed, scrubbed, and neutralized to remove cleaning agents and their reactant products.

1.5 Satisfactory precautions shall be taken to protect the sewer lines and laterals from damage that might be inflicted by the improper use of cleaning equipment. Sewers,

including service laterals, damaged as a result of the Contractor's or his subcontractor's improper operations shall be promptly repaired by the Contractor at no cost to the City.

1.6 **Submittals.** The Contractor shall submit a disposal plan for review and acceptance by the City prior to beginning any work that may generate waste materials. A plan shall be submitted for each job order. The plan shall include a complete description of the materials that are expected to be encountered and their proposed disposal site(s). The Contractor may change his disposal plan only by written notice to the City. The acceptance of a plan and/or any related notice to the City must be evidenced by a written response from the City. The Contractor shall insure that all permits related to his disposal operations have been obtained, and the Contractor shall comply with all requirements of those permits. The Contractor shall show evidence that all required permits have been obtained for all disposal sites by submitting a copy of all such permits to the City as part of the Contractor's disposal plan. The Contractor shall also submit copies of records of all disposals of solids or semisolids resulting from cleaning operations. Expenses related to the disposal plan and related disposal activities, including debris disposal, shall be considered incidental and included in the cost of the project.

PART 2 MATERIALS

2.1 **General.** The Contractor shall certify that backup equipment is available and can be delivered to the site within 24 hours.

2.2 **Cleaning Equipment**

A. It is at the Contractor's discretion which type of equipment shall be used for cleaning of the manholes, mainline sewers, and service laterals. However, the equipment may be subject to approval by the City.

B. The Contractor shall provide all equipment necessary for proper rodding, bucketing, brushing, root cutting and flushing of the sewers in the sizes indicated in the Bid Schedule. When selecting the appropriate cleaning equipment, the Contractor shall note the condition and ovality of the pipe based on available data, including the Contract Plans and existing television inspection data. The Contractor shall note the dates of the television inspections and make reasonable assumptions about deterioration and root growth/intrusion in the line since the inspections. The City will not accept responsibility, nor incur additional costs for reasonable deterioration or root growth/intrusion in the line. The equipment used for cleaning shall be that of a heavy duty power rodding machine which is capable of rodding distances of up to 1,000 feet in one setup. It shall have the ability to spin the rod either clockwise or counterclockwise, be able to be pushed straight out or pulled back without rotating the machine. It shall also be capable of pulling pipe-size swabs or brushes back through the pipeline for cleaning and flushing purposes.

C. The Contractor shall also provide heavy-duty bucket machines, as necessary, for use on dragline work to clean the pipeline with buckets, brushes, scrapers, swabs or other

similar devices in order to effectively remove the debris and provide a clean sewer for the inspection. Machines shall be belt operated or have an overload device. Machines with direct drive that could cause damage to the pipe will not be allowed. The equipment used will be subject to approval by the City.

D. Hydraulic high-pressure sewer cleaners used for sanitary sewer cleaning shall be specifically designed and constructed for such cleaning. The sewer cleaner shall have a minimum usable water capacity of 600 gallons and a pump capable of delivering at least 30 gallons per minute (gpm) at 100 psi. Pressure to the nozzle shall be regulated by a relief valve adjustable from 1-1500 psi minimum. The equipment will be subject to approval by the City.

E. All high-velocity sewer cleaning equipment shall be constructed for ease and safety of operation. The equipment shall have a selection of two or more high-velocity nozzles. The nozzles shall be capable of producing a scouring action from 15 to 45 degrees in all size lines designated to be cleaned. Equipment shall also include a high-velocity gun for washing and scouring manhole walls and floor. The gun shall be capable of producing flows from a fine spray to a solid stream. The equipment shall carry its own water tank, auxiliary engines, pumps, and hydraulically driven hose reel.

F. Pigging: The hydraulically propelled equipment used shall be a movable dam type and be constructed in such a way that a portion of the dam may be collapsed at any time during the cleaning operation to protect against flooding of the sewer. The movable dam shall be equal in diameter to the pipe being cleansed and shall provide a flexible scraper around the outer periphery to insure removal of grease. If sewer cleaning balls or other equipment, which cannot be collapsed, are used, special precautions to prevent flooding of the sewers and public or private property shall be taken.

G. Lateral Cleaning: The Contractor shall have equipment specific to remove debris from laterals such as lateral launchers. Excessive water pressure force with a mainline high pressure jet is not considered an acceptable means of cleaning laterals. Cleanouts may not be available for all lateral connections; however, the Contractor will still be responsible for adequately cleaning the lateral.

H. All equipment, devices, and tools required for this Contract shall be owned (or leased) and operated by the Contractor.

PART 3 CONSTRUCTION REQUIREMENTS

3.1 General.

A. Refer to Section 20001 for Preparatory Procedures.

B. Approval for potable water withdrawn from hydrants must be obtained from the City prior to any cleaning operations. Refer to Section 20001 for additional requirements. The Contractor is responsible for hauling and delivery of all potable water.

C. The designated sewer sections shall be cleaned using hydraulically propelled, high-velocity jet, or mechanically powered equipment. The equipment shall be capable of removing loose scale, tuberculation, oil, remains of old coating materials, accumulations of debris, dirt, grease, rocks, sand, and other materials and obstructions from the sewer lines, laterals, and manholes. A minimum of three passes of the cleaning equipment shall be required.

D. If cleaning of an entire sewer section cannot be successfully performed from one manhole, the equipment shall be set up on the other manhole and cleaning again attempted**.** If, again, successful cleaning cannot be performed or the equipment fails to traverse the entire manhole section, it will be the responsibility of the Contractor to provide CCTV evidence to the City for further instruction. If successful cleaning cannot be performed, then supplemental heavy cleaning may be required upon approval by the City.

E. Cleaning shall be performed immediately before in-situ repair or lining of the sanitary sewer line, manhole, and/or lateral. If deemed necessary by the City, cleaning shall also be performed prior to post-CCTV inspections.

F. Existing flows shall not be interrupted for periods longer than one hour. The Contractor shall take necessary precautions to prevent sewage backup and shall be responsible if damage results therefrom. Sewage diverted during cleaning operations shall be returned to the sanitary system and not discharged into the streams, any surface, or storm drain system.

G. Debris accumulated during the cleaning operations shall be removed from the sewer and properly disposed of in accordance with the approved disposal plan. Debris shall not be returned to the sanitary system, streams or storm drain system.

3.2 **Cleaning Precautions.**

A. During all cleaning and preparation operations all necessary precautions shall be taken to protect the sewer from damage. During these operations, precautions shall be also taken to ensure that no damage is caused to public or private property adjacent to or served by the sewer or its branches. Any damage caused to public or private property as a result of such cleaning and preparation operations shall be restored to preexisting conditions by the Contractor at no additional costs to the City.

B. Satisfactory precautions shall be taken in the use of cleaning equipment. When hydraulically propelled cleaning tools (which depend upon water pressure to provide their cleaning force) or tools which retard the flow in the sewer line are used, precautions shall be taken to ensure that the water pressure created does not damage or cause flooding of public or private property being served by the sewer. When possible, the flow of sewage in the sewer shall be utilized to provide the necessary pressure for hydraulic cleaning devices.

C. Violations from sewage spills shall be the sole responsibility of the Contractor and must be immediately reported to the City Inspector.

D. Contractor shall not surcharge the sewer beyond the elevation that could cause overflow of sewage into area waterways, homes, or buildings or onto the ground.

E. Sewers/laterals damaged, as a result of the Contractor or his subcontractors' improper operations, shall be promptly repaired by the Contractor at no cost to the City.

F. Contractor shall avoid damage to rehabilitated sewers when performing cleaning operations. To avoid damage to rehabilitated sewers, all lateral root removal/heavy cleaning shall be completed prior to the mainline lining.

G. Chemical, mechanical, and herbicidal cleaning shall be completed prior to any repair or relining work.

3.3 **Obstruction Removal.** The line shall be cleared of obstructions such as solids, dropped joints or collapsed pipe that may prevent liner installation. If inspection reveals an obstruction that cannot be removed by conventional remote in-situ sewer cleaning equipment, then a point repair excavation shall be made to remove or repair the obstruction. Point repairs shall be made only after cleaning methods were performed and shall be approved in advance by the City.

3.4 Protruding service connections shall be removed prior to liner installation. These connections shall be removed using remote in-situ removal equipment. Point repairs shall be made only after remote protruding service removal methods were attempted and shall be approved in advance by the City.

3.5 **Root Removal.** Roots shall be removed in all pipe sections, laterals, and manholes where root intrusion is a problem and where authorized by the City. Special attention should be used during the cleaning operation to assure almost complete removal of roots from the joints. Any roots which could prevent the proper seating of the packer or could prevent the proper application of chemical sealants, or could prevent the proper seating and application of liners, shall be removed. Procedures may include, but are not limited to, the use of equipment that can be used and operated remotely, mechanical equipment such as rodding machines, bucket machines and winches using root cutters and porcupine, and equipment such as high-velocity jet cleaners. Contractor shall capture and remove all roots from the line at the downstream manhole.

3.6 **Waste Material Removal and Disposal.**

A. All sludge, dirt, sand, rocks, grease, roots, and other solid or semisolid waste material resulting from the cleaning operation shall be removed at the downstream manhole of the section being cleaned. When hydraulic cleaning equipment is used a suitable dam or weir shall be placed in the downstream manhole to trap all such materials. Passing material from pipeline section to pipeline section, which could cause line stoppages, accumulations of debris in wet wells, or damage pumping equipment, shall not be permitted.

B. Under no circumstances shall sludge or other debris removed during these operations be dumped or spilled into streets, ditches, storm drains or other sanitary sewers. All

solids or semisolids resulting from the cleaning operations shall be removed from the site and disposed of by the Contractor in a legal and sanitary manner, in accordance with the approved disposal plan, as approved by appropriate authorities at the Contractor's cost. In addition to the disposal plan, the Contractor shall furnish copies of disposal records to the City, indicating disposal site, date, amount and a brief description of material disposed. All materials shall be removed from the site no less often than the end of each workday. Under no circumstances will the Contractor be allowed to accumulate debris, etc., on the site of work beyond the stated time, except in totally enclosed containers and as acceptable to the City. The Contractor is advised that he shall not dispose of this material by legal or illegal dumping on private or public property, by sale to others, or any means other than those given above.

C. The Contractor shall keep his haul route and work area(s) neat and clean and reasonably free of odor, and shall bear all responsibility for the cleanup of any spill which occurs during the transport of cleaning/surface preparation by-products and the cleanup of any such material which is authorized by or pursuant to this Contract and in accord with applicable law and regulations. The Contractor shall immediately clean up any such spill, or waste. If the Contractor fails to clean up such spill, or waste immediately, the City shall have the right to clean up or arrange for its cleanup and shall charge to the Contractor all costs, including administrative costs and overhead, incurred by the City in connection with such cleanup. The City shall also charge to the Contractor any costs incurred or penalties imposed on the City as a result of any spill, dump or discard. Under no circumstances is this material to be discharged into the waterways or any place other than where authorized to do so by the appropriate authority. The term "Contractor" as used in this section shall include the Contractor's subcontractors and other Contractors.

D. The general requirements for vehicles hauling such waste material are as follows: Transport vehicles must be of type(s) approved for this application by the political jurisdictions involved. General requirements are that the vehicles have watertight bodies, that they be properly equipped and fitted with seals and covers to prohibit material spillage or drainage, and that they be cleaned as often as is necessary to prevent deposit of material on roadways. Vehicles must be loaded within legal weight limits and operated safely within all traffic speed regulations.

E. The routes used by the Contractor for the conveyance of this material on a regular basis shall be subject to approval by the governing authority having jurisdiction over such routes.

3.7 **Acceptance of Cleaning Operation.**

A. In Support of Pre- and/or Post-Rehabilitation Activities: In support of pre-rehabilitation activities, sewer line and lateral cleaning shall be deemed acceptable when the pipe is clean enough for installation of the particular rehabilitation method, in accordance with the manufacturer's recommendations and to the satisfaction of the City. Installation of the rehabilitation method shall serve as confirmation by the Contractor that the pipe/manhole/lateral was sufficiently cleaned to support the

particular method of rehabilitation. If internal sealing is to follow the television survey, particular attention should be given to the adequacy of the cleaning to ensure that proper seating of the sealing packer can be achieved. In support of post-rehabilitation activities, acceptance of sewer line cleaning shall be deemed sufficient when the pipe is clean enough for post-CCTV inspections, per Section 20006, and the City's approval.

1. CCTV inspection shall be performed immediately following cleaning of the line and in no case more than 24 hours later. If the television inspection shows the cleaning to be unsatisfactory, the Contractor shall be required to re-clean and re-inspect the sewer line and/or laterals until the cleaning is shown to be satisfactory, at the Contractor's expense.

B. Sewer Cleaning Only: Sewer line cleaning shall be accepted when all debris has been removed from the sewer line section.

C. In addition, on all sewer lines which have sags or dips, to an extent that the television camera lens becomes submerged for two (2) or more feet during the television inspection, the Contractor shall pull double squeegee and/or sponges through the line in order to remove the water from the dips or sags. Water removal through squeegees and/or sponges shall be performed until the television camera lens will no longer be submerged. This requirement may be waived by the City if the water in which the camera lens is submerged, is clear enough to allow the identification of pipe defects, cracks, holes and location of service connections. The Contractor shall notify the City of any dips or sags in excess of two feet in length.

END OF SECTION

PART 1 DESCRIPTION

1.1 **Reference.** All applicable requirements of other portions of the Contract Documents apply to the Work of this Section.

1.2 **Description of Work.** The work covered by this section consists of providing all labor, equipment, material and supplies and performing all operations required to conduct the internal closed-circuit television inspection of designated sewer lines, manholes, and/or laterals.

1.3 **Submittals.**

A. Copies of video for each pipeline section inspected, **including video and report**.

B. Sample of television survey log, CCTV inspection, and equipment list for approval before commencement of work, if requested.

C. TV Inspection Log: Each TV Inspection Log shall include all pertinent information for the respective inspection section and shall be submitted to the City, accompanied by the respective inspection video.

D. PACP Operator Certification: Prior to initiating CCTV Inspection work associated with condition assessment assignments, the Contractor shall present the City with copies of PACP certifications of operators that will be performing the work.

1.4 **Definitions.**

A. Pre-Installation TV Inspection. Pre-installation TV is a video inspection by the Contractor of sewer lines specified for rehabilitation to confirm cleaning, location of service connections, and constructability of line rehabilitation according to the Specifications.

B. Post-Installation TV Inspection. Post-installation TV is a video inspection to determine that rehabilitation and/or replacement of a sanitary sewer main(s), manhole(s), and/or laterals including service connections, as required, has been completed.

C. Final Acceptance TV Inspection. Final Acceptance TV is a complete PACP video inspection to determine that all work on a segment of pipe, including rehabilitation and/or replacement of a sanitary sewer main(s), manhole(s), and/or laterals including service connections, as required, has been completed according to the Specifications.

D. TV Inspection Log. Information collected and recorded by each TV operator for any TV inspection effort that is submitted to the City. All TV inspection logs shall be submitted in electronic and hard copy format.

E. PACP: Pipeline Assessment and Certification Program. A CCTV inspection standardization certification and observation coding system sponsored by the

National Association of Sewer Service Companies (NASSCO).

F. MACP: Manhole Assessment and Certification Program. A voluntary manhole inspection standardization certification and observation coding system sponsored by NASSCO.

G. LACP: Lateral Assessment and Certification Program. A voluntary standardization certification and coding system for defects in laterals, sponsored by NASSCO.

PART 2 MATERIALS

2.1 **Closed Circuit Television Equipment.** Select and use closed-circuit television equipment that will produce a color video on DVD, flash drive or portable hard drive.

2.2 **Pipe Inspection Camera.** Produce a video using a pan-and-tilt, radial viewing, pipe inspection camera that pans ± 275 degrees and rotates 360 degrees. The television camera used for the inspection shall be specifically designed and constructed for such inspection. The camera shall be operative in 100% humidity conditions and shall have either automatic or remote focus and iris control. The camera shall be able to inspect laterals as small as 4-inches, up to 70 feet from the sewer mainline. Use a camera with an accurate footage counter which displays on the monitor the exact distance of the camera (to the nearest tenth of a foot) from the centerline of the starting manhole. Use a camera with camera height adjustment so that the camera lens is always centered at one-half the inside diameter, or higher, in the pipe being televised. Additional lighting may be required to allow a clear picture of the entire periphery of the pipe. A reflector extending at least 10 feet in front of the camera may be required to enhance lighting in dark or large diameter pipes, including black High Density Polyethylene (HDPE) pipe. Operator narration shall follow NASSCO Standards. Vehicles capable of transporting TV equipment and accessing remote easements shall also be provided. The video camera shall be capable of showing the Owner name, Contractor name, date, line size and material, line identification (Owner's manhole numbers at both ends) and ongoing footage counter. The camera, television monitor, and other components of the video system shall be capable of producing picture quality to the satisfaction of the City (minimum 470H-line resolution color video picture); and if unsatisfactory, equipment shall be removed and replaced with adequate equipment. No payment will be made for an unsatisfactory inspection.

2.3 **Data Media.**

A. **The television inspection software shall be PACP version 7.0 or later, as accepted by the City. The data shall be exported as a PACP export, including database and media files.** The submittal shall include the inspection video, inspection logs in pdf format, PACP database in version 7.0 or later and observation photos in jpeg format. The submittal shall be equipped with an appropriate software viewer, to be supplied by the Contractor at no additional cost to the City. All programming to accomplish the download shall be borne by the Contractor. Use observation

terminology during audio narration consistent with PACP, MACP, and LACP. The video and inspection logs shall be submitted to the City within 10 working days of the inspection. All submittals will become the property of the City.

B. So that the City can import data from different contractors, the following steps must be completed:

1. Complete a NASSCO compliant PACP/MACP/LACP inspection utilizing NASSCO certified software.

2. Import the completed inspection database into the NASSCO exchange server. This is a free service provided by NASSCO (410-442-7473). The purpose of the exchange server is to ensure that the completed inspection is PACP/MACP/LACP compliant and to convert the inspection database from a particular vendor's format to a format that can be read by all vendors.

C. Filenames. The filenames for the CCTV inspections shall be provided in the following format: Upstream Manhole ID_Downstream Manhole ID_Date. The Date shall be provided in the following format: month day year (mmddyyyy).

PART 3 CONSTRUCTION REQUIREMENTS

3.1 **Service Locations.** All service locations shall be measured for location prior to liner installation. All service connection measurements and the clockwise position of the openings shall be recorded in a log to aid in the reinstatement of service connections after lining. The approximate locations of identified active service taps are shown on the Contract Drawings; however, the Contractor shall determine the exact location and number of service connections by the dye test method or other methods approved by the City. The Contractor shall accurately field locate existing service connections, whether in service or not. For rehabilitated lines, the Contractor shall use existing service locations to reconnect service lines to new liner, unless otherwise specified on the Contract Drawings or directed by the City. During the line preparation and work operation, inactive sewer house connections shall not be cut but shall be left lined over, unless otherwise directed by the City.

3.2 **Pre-Installation Inspection.**

A. **Procedure.**

1. Where point repairs are identified, the Contractor shall televise the entire sewer line (from manhole to manhole) prior to the point repair work. This inspection shall be used to confirm the location, length, and nature of the defects to be repaired, and to confirm that the point repair is appropriate for the defects observed.

2. Perform pre-installation TV inspection immediately after all point repairs and line and/or lateral cleaning and immediately before line and/or lateral rehabilitation work. Pre-installation TV is not required for sewer lines designated as remove

and replace from manhole to manhole. Verify that the line and/or lateral is clean and ready to accept the line and/or lateral rehabilitation. Prepare Television Inspection Logs. Maintain copies of CCTV inspections and reports for reference by the City for the duration of the project.

3. Prior to any repair work, the entire sewer line (from manhole to manhole) shall be televised. The pre-installation TV inspection shall be used to determine whether the line and/or laterals has been cleaned sufficiently; to confirm the location and nature of defects; and to confirm that the proposed method of repair is proper for the defects observed.
4. The camera shall be moved through the line in either direction at a moderate rate, stopping when necessary to permit proper documentation of the sewer's condition. In no case shall the television camera be pulled at a speed greater than 30 feet per minute. Maintain technical quality, sharp focus, and a distortion free picture. Manual winches, power winches, TV cable, and powered rewinds or other devices that do not obstruct the camera view or interfere with proper documentation of the sewer conditions shall be used to move the camera through the sewer line.
5. The camera shall be placed at the center of manhole and video shall commence before entering the pipe. Show the inside of manhole walls, manhole channel, and pipe connection to wall at both upstream and downstream manhole and lateral connections. For mainlines, the camera shall be mounted on a transport platform that will keep it centered along the longitudinal axis of sewer mainline and above water. Footage for laterals shall commence before entering laterals at connection.
6. Use a hydraulic jet nozzle if necessary to remove standing water from the line. Eliminate steam in the line for the duration of the inspection.
7. Lateral inspections may be conducted from the main line or an upstream lateral access point, such as a cleanout.
8. If, during the inspection operation, the television camera will not pass through the entire pipe section due to blockage or pipe defect, the Contractor shall set up his equipment so that the inspection can be performed from the opposite manhole or access point, at no additional cost to the City. If, again, the camera fails to pass through the entire pipe section, the inspection shall be considered complete and no additional inspection will be required at that time. If a protruding tap impedes a main line inspection, trim protruding tap to ½ inch or less. Improper cleaning will not be a reason for incomplete televising of a line section. If the line is determined impassable, the Contractor shall contact the City to identify subsequent actions.
9. When manually operated winches are used to pull the television camera through the line, telephones or other suitable means of communication shall be set up

between the two manholes of the section being inspected to insure good communication between members of the crew.

10. The importance of accurate distance measurements is emphasized. Measurements for location of defects shall be above ground by means of a meter device. Marking on the cable, or the like, which would require interpolation for depth of manhole, will not be allowed. Accuracy of the distance meter shall be checked by the use of a walking meter, roll-a-tape, or other suitable device. The meter device shall be accurate to tenths of a foot.

11. During the internal inspection the television camera shall be temporarily stopped at each defect along the line. The Contractor shall record the nature and location of the defect. Where defects are also active infiltration sources, the rate of infiltration in gallons per minute (gpm) shall be estimated by the Contractor and recorded. The camera shall also be stopped at active service connections where flow is discharging. Flows from service connections which are determined to be infiltration shall also be recorded. The camera shall be stopped at all service connections and identified by footage and clock orientation. All service connections shall be "panned" 360 degrees so that the complete connection to the mainline pipe can be viewed.

12. Camera operator shall slowly pan and tilt at beginning and ending manholes and/or access points, each service connection, joints, visible defects and when pipe material transitions from one material to another.

13. TV inspection videos shall be continuous for pipe segments between manholes. Any inspection videos received with gaps in the pipe segments or footages will be considered incomplete and will be rejected. Do not leave gaps in the inspection of a segment between manholes and do not show a single segment on more than one inspection video, unless specifically allowed by the City.

14. Inspections displaying poor video quality (including but not limited to: grease or debris on lens, camera under water, image too dark, washed out, distorted or out of focus, lines improperly cleaned or poor/no audio) shall be re-televised and resubmitted at no cost to the City.

B. **Flow Control.**

1. Perform flow control as specified in Section 20004, Flow Control, of these Contract Documents.

2. Pre- and Post-Installation and Final Acceptance Inspections: Perform survey TV inspection on one pipeline section or lateral at a time. Adequately control the flow in the section being televised. Do not exceed the depth of wastewater flow shown below:

Pipe Diameter (Inches)	Depth of Flow (Percent of Pipe Diameter) -
10	5
12 - 24	10
Over 24	15

3. If during survey TV inspection of a pipeline section, the wastewater flow depth exceeds that specified previously, reduce the flow depth by performing the survey TV inspection during minimum flow hours, by diversion pumping, plugging and/or by pulling a camera with swab, high-velocity jet nozzle or other acceptable dewatering device. A video made while floating the camera is not acceptable unless approved by the City.

C. **Documentation of Television Inspection.**

1. The Television Inspection shall be documented using a computerized datalogger and reporting system that is NASSCO certified and also PACP, MACP, or LACP certified, respective of the structure being televised.

2. Television Inspection Logs: CCTV Inspection logs shall be kept by the Contractor and shall clearly show the location and orientation in relation to an adjacent manhole of each infiltration point observed during inspection. In addition, other points of significance such as locations, orientations, and activity of service connections, building sewers, unusual conditions, roots, storm sewer cross connections, broken pipe, presence of scale and corrosion, and other discernible features shall be recorded and a copy of such records shall be supplied to the City. Logs shall be prepared for the pre- and post-installation and final acceptance TV inspections. This includes any inspections conducted to address repairs made to the new or rehabilitated pipeline section(s).

3. Video Recordings: The purpose of video recording shall be to supply a visual and audio record of problem areas of the lines that may be replayed. Video recordings shall include an audio track recorded by the inspection technician during the actual inspection work describing the parameters of the line being inspected (i.e. location, depth, diameter, pipe material), as well as describing connections, defects and unusual conditions observed during the inspection. Video recording playback shall be at the same speed that it was recorded. Slow motion or stop-motion playback features may be supplied at the option of the Contractor. Once recorded, the submittal becomes the property of the City. The Contractor shall have all media and necessary playback equipment readily accessible for review by the City during the project.

3.3 **Post-Installation TV Inspection.**

A. **Procedure.**

1. Post-Installation TV inspection shall be completed and submitted when lining work is complete on a section of line. The Post- Installation TV inspection videos

shall be submitted to the City within ten (10) working days of the inspection. If defects are observed during the Post-Installation inspection, the Contractor shall make the repairs as specified herein.

2. Follow procedures as specified for pre-installation TV inspection, except as specified below.

3. The Post-Installation TV inspection shall be completed by the Contractor in the presence of the City. The Post-Installation TV inspection shall be completed to confirm completion of rehabilitation and replacement work and any repairs, review the location and nature of any defects, and to verify that the rehabilitation work is free of defects and conforms to the requirements of these Specifications. Provide a color CCTV inspection video showing the completed work, including the condition of restored service connections and replaced laterals as specified on the contract drawings and/or required by the City. Prepare and submit Television Inspection Logs providing location of service connections along with location of any discrepancies.

4. For Post-Installation TV inspection, exercise the full capabilities of the camera equipment to document the completion of the rehabilitation and replacement work and the conformance of the work to the Specifications. Provide a full 360 degree view of pipe, manhole, joints, service connections, and laterals.

5. Digital Photographs: Noted post-rehabilitation defects and lateral connections shall be documented as digital files. Photo logs shall accompany each photo submitted.

3.4 **Final Acceptance TV Inspection.**

A. **Procedure.**

1. **Final Acceptance TV inspection shall not be completed until all work, including lateral replacement or rehabilitation, is complete on a section of line.** The Final Acceptance TV inspection shall be submitted to the City within ten (10) working days of the inspection. If defects are observed during the Final Acceptance inspection, the Contractor shall make the repairs as specified herein. Final Completion will not be given until all defects are repaired, television inspected, and approved by the City.

2. Follow procedures as specified for pre-installation TV inspection, except as specified below.

3. The Final Acceptance TV inspection shall be completed by the Contractor in the presence of the City. The Final Acceptance TV inspection shall be completed to confirm completion of rehabilitation and replacement work and any repairs, review the location and nature of any defects, and to verify that the rehabilitation work is free of defects and conforms to the requirements of these Specifications. Provide a color video inspection showing the completed work, including the condition of manholes, restored service connections, service

connection sealing and/or rehabilitation, lateral rehabilitation, and replaced laterals as specified on the contract drawings and/or required by the City. Prepare and submit Television Inspection Logs providing location of service connections along with location of any discrepancies. All manhole work, including benches, inverts and pipe penetrations into manhole, shall be complete prior to Final Acceptance TV work.

4. Length of Final Acceptance TV Inspections: If the entire pipe is being lined, regardless of whether there is other work being performed, the TV inspection shall be the entire length of pipe. If only a point repair is being performed or a segmental liner is being installed, the TV inspection shall be from the closest manhole to just beyond the end of the repair or segmental liner, with the realization that reverse set-up may be needed. If the only work is being performed on the laterals and the pipe is already CIPP lined, the TV inspection shall be the entire length of pipe. If the only work is being performed on the laterals and the pipe is not lined, the TV inspection shall be to the farthest lateral on which work is being performed.
5. For Final Acceptance TV inspection, exercise the full capabilities of the camera equipment to document the completion of the rehabilitation and replacement work and the conformance of the work to the Specifications. Provide a full 360 degree view of pipe, manhole, joints, service connections, and laterals.
6. Digital Photographs: Noted post-rehabilitation defects and lateral connections shall be documented as digital files. Photo logs shall accompany each photo submitted.
7. Final Acceptance Television inspection results will be accepted by the City when the inspection video in mpeg4 format, inspection logs in pdf format, PACP database in version 7.0 or later and observation photos in jpeg format meet the requirements of this and related specification sections and upon review and approval by the City.

END OF SECTION

PART 1 DESCRIPTION

1.1 Work Of This Section.

This section includes general repairs and lining of newly installed manholes and similar structures by a monolithic application of a high build barrier liner of epoxy-modified-mortar and a topcoat of high performance, solvent-free UME (Urethane-Modified-Epoxy) hybrid novolac epoxy coating resulting in a UME composite lining system to eliminate infiltration/exfiltration, repair voids and deterioration, and provide corrosion protection as a total rehabilitative lining system.

Procedures for surface preparation, cleaning, application, inspection and testing are described herein. In addition to the lining system, different repair methods and procedures are listed in this section. All structures scheduled for rehabilitation shall be cleaned, prepared, repaired, patched and/or sealed as required by engineer prior to the application of the UME composite lining system.

1.2 Scope Of Work

The Contactor shall be responsible for furnishing all labor, supervision, materials, and equipment required to complete all rehabilitation work, testing, and surface restoration in accordance with this Specification.

All Sections of this Specification are mutually complimentary and the overall intent is that the Contractor shall provide for everything in his portion of the work required to make a complete and operable job in every respect unless specifically noted otherwise.

It is the intent of this Specification to ensure that the work, as completed shall meet all applicable codes, ordinances, rules and regulations of every authority having jurisdiction in the area where the project(s) is located. Failure of the Contractor to point out items that do not meet such requirements does not relieve the Contractor or the Subcontractors of the responsibility of meeting them.

All supplies shall be stored and maintained by the Contractor in accordance with manufacturer's recommendations. Materials shall not be exposed to adverse conditions prior to the work. All materials shall be kept in secured area and away from general public access. The Contractor shall review and maintain all Safety Data Sheets (SDS), product labeling, and technical literature at the project site.

1.3 References.

A. The latest codes and standards referenced herein and belonging to the following organizations shall be followed:

   1. American Society for Testing and Materials (ASTM)
   2. National Association of Corrosion Engineers, NACE International (NACE)
   3. The Society for Protective Coatings (SSPC)

4. Occupational Safety and Health Administration (OSHA)
5. Resource Conservation and Recovery Act (RCRA)
6. United States Environmental Protection Agency (EPA)
7. Environmental Technology Verification (ETV)
8. International Concrete Repair Institute (ICRI)
9. National Association of Sewer Service Companies (NASSCO)
10. National Sanitation Foundation (NSF)
11. Center for Innovative Grouting Materials and Technology (CIGMAT)
12. American Association of State Highway and Transportation Officials (AASHTO)

1.4 Submittals

A. Product Data

1. Technical data sheets and material safety data sheets on each product proposed shall be furnished. The technical data, with quantitative and qualitative values based on ASTM testing results, and/or other 3rd party testing methods shall demonstrate performance conformity with these specifications.
2. Contractor/applicator shall submit pH level, moisture content, abrasive media type and/or preparation methods, and ICRI conditions to engineer for approval.
3. Contractor/applicator shall submit epoxy coating thickness reading with a wet file thickness gage.

B. Application Data

1. Project specific guidelines and recommendations.
2. Proof of any required federal, state or local permits or licenses necessary for the project.
3. Design details for any ancillary systems and equipment to be used on site for surface preparation, application and testing.
4. Confined space entry, flow diversion and/or bypass plans shall be presented by Contractor to Owner as necessary to perform the specified work.
5. Applicator: Company specializing in performing work of this section with minimum one (1) year documented experience and approved by coating material manufacturer.
6. Three (3) recent references of Applicator indicating successful application of coating product(s) of the same or similar material type as specified herein, within municipal sanitary sewer manhole environments.
7. Confined space plan shall be submitted to the Owner to verify that the Contractor has a plan.

8. Written warranty.
    i. Materials and labor shall be warranted with bond by the Contractor of applied material systems for a period of five (5) years from the date of final acceptance of the project.
    ii. Failure will be deemed to have occurred if the protective system fails to (a) prevent the internal damage or corrosion of the underlying structure due to bacteriological, chemical, gaseous, erosive, and abrasive attack. It does not include excessive atypical non-wastewater induced chemical abuse or atypical acts of God which cause structural damage, (b) seal and protect the substrate and environment from contamination by effluent, (c) seal and protect from infiltration.
    iii. Contractor shall, within one month after receipt of written notice thereof, develop a plan acceptable to the Owner to repair defects in materials or workmanship which may develop during said warranty period, and any damage to other work caused by such defects or the repairing of same, at his own expense and without cost to the Owner. After approval of the plan, the Contractor shall immediately proceed with the approved plan.

C. Or Equal Submittal
    1. See specification 013300 for requirements.

PART 2 MATERIAL REQUIREMENTS

2.1 General

A. All work shall be in strict accordance with the specifications and recommendation including application of all products as required and in accordance with manufacturer's directions.

B. Contractor shall conform to all local, state and federal regulations including those set forth by OSHA, RCRA and the EPA and any other applicable authorities.

C. Products are to be kept dry, in a climate controlled environment, protected from weather and stored under cover. Products are to be stored and handled according to their safety data sheets. When freezing temperatures are expected in the area, the Contractor shall take measures to keep applied materials warm (as per manufacturer's guidelines) and provide the required heat in the structure before repair work is started.

D. Any invert(s), channels, drains, or other openings shall be covered during construction operations to prevent loose materials from collecting.

E. Bypassing and/or blocking of flow shall be done only with prior approval of the Owner. Contractor shall be responsible for transporting or pumping water to

maintain operation of any flow, treatment, collection or distribution system while repairs or lining to structures are made.

F. The contractor shall supply water necessary for the project. Contractor shall be responsible for transporting the water.

G. It shall be the contactor's responsibility to provide traffic control required by the particular location and/or jurisdiction. Contractor is responsible to obtain all DelDOT required permits.

H. Use approved equipment designed, recommended and/or manufactured by the material supplier specifically for the application of all materials.

I. Examine surface to receive rehabilitation prior to applying any materials. Notify Owners in writing if surfaces are not acceptable for rehabilitation and/or lining.

J. Applicator shall initiate and enforce quality control procedures consistent with applicable ICRI, NACE, and/or SSPC standards and the repair/coating manufacturer's recommendations.

2.2 Cleaning And Preparation Of Substrate

A. Surface preparation must be achieved immediately prior to utilizing any repair material and/or coatings. Re-inspection and/or subsequent surface preparation may need to be repeated should conditions change after initial preparation.

B. All receiving surfaces shall be thoroughly cleaned and made free of all foreign materials including dirt, grit, roots, grease, sludge and all debris or material that may be attached to the substrate.

C. Surface preparation shall be performed on all specified surfaces to be lined or rehabilitated. Unless otherwise noted, all newly installed concrete structures should first undergo curing a minimum of 28 days prior to surface preparation and rehab/lining execution.

D. The objective of surface preparation is to produce a surface that is suitable for application and adhesion of the specified protective coating system and repair products.

1. Protrusions such as from burrs, sharp edges, fins, and concrete spatter shall be removed during surface preparation.

2. Voids and other defects that are at or near the surface shall be exposed during surface preparation.

3. All concrete that is not sound shall be removed so that only sound concrete remains.

4. Patching, it required, shall be in accordance with the manufactures recommendations.

E. Surface preparation must achieve a clean and sound substrate in accordance with SSPC-SP13/NACE No. 6 "Surface Preparation of Concrete."

1. High pressure water cleaning or waterjetting, and/or pre-approved dry or wet abrasive blasting may be necessary in order to achieve acceptable surface preparation free of all foreign material, laitance, oils, grease, incompatible existing coatings, waxes, form release, curing compounds, efflorescence, sealers, salts, and/or other contaminants.
2. An ICRI profile of CSP 3 or higher shall be achieved.
3. For existing structures, surface preparation shall yield a pH of 7 or higher.
4. No surface water or active leaks are to be present. Prepared concrete surfaces shall be tested for residual moisture after cleaning and drying, and prior to the application of the coating. Drying may be required with forced air and/or dry heat to achieve moisture levels below 30% prior to coating.
5. When grease and oil are present within the structure, an approved detergent or degreaser may be used integrally with the high pressure cleaning water if conditions dictate.

F. All materials resulting from the cleaning shall be caught at the base of each structure and removed prior to applying specified products.

G. All loose or defective concrete, mortar, brick, grout, ledges, steps and protruding ledges shall be removed to provide an accessible and uniformed surface prior to application of materials.

2.3 **Lining**

A. General

1. It is the intent of this specification to provide for the waterproofing, sealing, structural enhancement and corrosion protection of existing or newly installed manholes and similar underground structures by the safe, quick and economical application of a composite created from a uniform and densely compacted epoxy-modified-cementitious layer of design formulated epoxy-modified-mortar combined with 100% solids UME hybrid epoxy – the result is a UME composite lining system.
2. This specification establishes the minimum standard for material and method of application for sealed corrosion protection for existing and newly installed manholes.
3. The system is two phase. The high performance epoxy-modified-mortar liner is first applied onto the interior substrate prior to coating. The material will create a high bond strength layer of protection to the repairs and substrate, minimize the occurrence of outgassing, seal as a barrier to moisture vapor transmission (MVT) and hydrostatic pressure, and be a failsafe as a part of the first layer to seal I&I and chemical attack. The UME composite lining system is then completed with the application of a 100% solids UME hybrid epoxy at a

minimum thickness of 40 mils DFT. The UME composite lining system will be installed on all specified manhole surfaces in order to seal and protect.

4. All structures to be lined and coated shall be readily accessible to the Applicator.
5. Appropriate actions shall be taken to comply with local, state and federal regulatory and other applicable agencies with regard to environment, health and safety.
6. Any active flows shall be dammed, plugged or bypassed as required to ensure that the liquid flow is maintained below the surfaces to be lined and coated and that substrate to be coated has not reached moisture levels surpassing 60%. Flows should be plugged and/or diverted when lining any invert or channel. All extraneous flows into the structures at or above the area lined shall be plugged and/or diverted until all materials fully cure.
7. Temperature of the surface to be lined must be maintained between 65F and 110F during application. Prior to and during application, care should be taken to avoid exposure of direct sunlight or other intense heat source to the structure being lined. Specified surfaces should be shielded to avoid exposure of direct sunlight or other intense heat source. Where varying surface temperatures do exist, lining and coating installation should be scheduled when the temperature is falling versus rising.
8. New Portland cement concrete structures shall have endured a minimum of 28 days since installation, prior to commencing the resurfacing and coating installation.
9. Prior to commencing any application procedures, Contractor shall inspect all surfaces specified to receive the coating and notify Engineer of any noticeable disparity in the site, structure or surfaces which may interfere with the work, use of materials or procedures as specified herein. Application procedures shall conform to the recommendations of the lining manufacturer, including material handling, mixing, safety, and application equipment.

B. Phase 1- Epoxy-modified-mortar lining

1. This section establishes the minimum standard for material and method of application for the high performance design formulated epoxy-modified-mortar liner part of the system (Phase 1 of 2). The high performance epoxy-modified-mortar liner shall be first applied onto the specified interior surfaces, and, depending on existing conditions, may be applied in one application or in successive applications. The material shall offer applicators resurfacing and lining in-one-shot on existing structures, from low build to high build by hand-application or shotcrete applied.
2. The materials shall be trowel-applied or spray-applied utilizing proper equipment on to specified surfaces. The material thickness is determined based on bridging and uniformly covering peaks and irregularities resulting from

deteriorated concrete, spalls, cracks, bugholes in order to achieve an acceptable profile for the UME (Urethane-Modified-Epoxy) hybrid epoxy composite system to be applied.

i. Thickness is further determined based on depth of peak to valley of voids, exposed aggregate, and returning surfaces to an acceptable profile.

ii. Minimum and maximum thickness shall range between 1/4 inch and 1/2 inch (1/4" – 1/2") for existing structures. For newly installed concrete structures, thicknesses shall be between 1/16 inch to 1/8 inch (1/16" – 1/8"). Should the substrate and structure require repair beyond a ½", refer to Section 2.4 (B) "Concrete repair" for repairing methods beyond half-inch thickness.

3. Materials

i. The material shall be a fiber-reinforced, high build, corrosion resistant epoxy-modified-mortar, fortified with silica fume and micro silica.

ii. The performance is achieved by a complex formulation of mineral, organic epoxide resin and blended hardening agents with sophisticated chemical additives combined with next generation water-borne epoxy curing agents.

iii. Graded quartz sands are used to enhance particle packing and further improve the fluidity and hardened density.

iv. The composition also possesses thin-section toughness, high modulus of elasticity and is self-bonding

v. The epoxy-modified-mortar shall exhibit thin-section toughness and be suitable for application thickness of 1/16" to a build-up of 1-inch.

vi. The epoxy-modified-mortar shall be designed to accept the top coat epoxy at a minimum of two (2) hours after application at 77F.

vii. The epoxy-modified-mortar can be applied by hand and/or wet-shot spray applied.

viii. The epoxy-modified-mortar shall not require any further preparation or conditioning within 36 hours (at 77F) to accept UME hybrid epoxy top coat applications. The window and condition to apply the top coat UME hybrid epoxy coating remains open for 36 hours. Should this window expire, consult with manufacturer for written and approved guidance and instruction.

a) Execution

1) Follow mixing, application and handling instructions as written per materials product technical data sheets and SDS.

2) If mortar kits come pre-proportioned, for hand applications- use full kits as supplied, do not any extra water.

3) For spray applications, water may be added, but limited, as specified by the Manufacturer.

4) When mixed, a paste-like material will develop which may be troweled, sprayed, cast, pumped or gravity-flowed applied.

5) This mortar will harden quickly without any need for special curing. Therefore, execute finishing work by trowel immediately after applying or disbursing onto the substrate.

6) Either commence spraying or hand applying.

7) The epoxy-modified-mortar shall be applied in layers at a 1/4 inch minimum, and 1/2 inch maximum (1/4" – 1/2") for existing infrastructure, and between 1/16 inch and 1/8 inch (1/16" – 1/8") for newly installed structures.

8) Finish with trowel for a smooth, uniform finish.

9) Allow at least two (2) hours (77F) to cure, minimum, before applying the specified hybrid epoxy coating, but do not exceed thirty-six (36) hours.

C. Phase 2- Top coating/lining

1. This section establishes the minimum standard for material and method of application for the second part (Phase 2 of 2) of the composite lining system- the UME hybrid epoxy top coat.

2. The UME epoxy top coat completes the UME composite lining system, and delivers a sealed, ultra- high novolac-based epoxy resistant liner to protect all the underlying materials and infrastructure from high level of H_2S and sulfuric by-products.

3. The UME hybrid epoxy coating system must be a hybrid epoxy exhibiting the following features:

   i. The hybrid epoxy coating must be a urethane-modified-epoxy (UME) incorporating novolac.

   ii. The hybrid epoxy coating must be self-priming, requiring no primer.

   iii. The hybrid epoxy coating must adhere to concrete with adhesion testing results in PSI that outperformed the cohesion of concrete (CIGMAT CT-2/3).

   iv. Hybrid epoxy coating must be moisture tolerant to moisture levels of concrete up to 90%.

   v. The hybrid epoxy coating must withstand freeze-thaw and wet-dry cycles without causing adverse changes to the cure and performance properties.

vi. The hybrid epoxy coating must be able to be applied by brush, roller, or spray in order to have options in mobilization requirement and apply in limited access areas.

vii. The hybrid epoxy coating must hang with vertical and overhead thickness capability of 40 mils in one pass without sag.

viii. The hybrid epoxy coating must have an indefinite recoat window without preparation for simple repair requirements.

ix. The hybrid epoxy coating shall be resistant to all forms of chemical or bacteriological attack found in municipal sanitary sewer systems, including severe hydrogen sulfide (up to 800ppm).

x. The hybrid epoxy coating must have undergone testing and been verified by the University of Houston's CIGMAT program for verification of technology exposed to underground sanitary sewer environments.

xi. The hybrid epoxy coating must be a modified epoxy (epoxide) coating system exhibiting elongation (ASTM D2370) of 30% (minimum) to 40% (maximum) to ensure properties which withstand movement, vibration, and access induced mechanical impact.

4. Polymer elastomer

i. The polymer elastomer chimney seal material shall be corrosion resistant and applied to the inside wall of the entire chimney area as specified in the contract documents.

ii. The material must be a 2-component, hand-applied high build polyurethane.

iii. Approved material shall exhibit the following physical properties:

a)	Shore Hardness ASTM C92	45 A
b)	Freeze / Thaw ASTM C666	300 cycles - no damage
c)	Bond Durability ASTM C920-87	No failure after 25% extension
d)	Tear Resistance ASTM D624-86	44 lbs./in.
e)	Ultimate Elongation ASTM D412	800%

D. Execution

1. On the metal surfaces, prepare surface to a SSPC-SP3 "Power Tool Cleaning" standard so that the preparation removes all loose mill scale, loose rust, loose paint, and other loose detrimental foreign matter by power wire brushing, power sanding, power grinding, power tool chipping, and power tool descaling.

i. After preparation, clean with SSPC-SP1 "Solvent Cleaning" method to remove dust and debris.

ii. Allow solvent or cleaner to dry out.

iii. Apply one coat of epoxy primer.

a) Primer shall be applied as directed on manufacturer published data sheets at 2-3 mils WTF.

b) Allow primer to cure until it is tack-free. This time depends on conditions; blowing forced air will assist the cure time.

2. To prepare other substrates, following concrete specifications as described in Section 2.2 for cemetitious/brick/or mortar substrates. Should you have to prepare installed liner, solvent rub prior to top coating with polymer elastomer**.**

3. Once the primer is tack-free, apply polymer elastomer as directed on manufacturer published data sheets at 125 mils DFT for peak to valley.

2.4 Quality Assurance and Acceptance

A. Surface preparation inspection must take place prior to proceeding to material applications. Applicator must record pH level, record moisture content, abrasive media type and/or preparation methods, and ICRI conditions and submit to coating manufacturer's representative or designated inspector.

B. During application, applicator shall regularly perform and record epoxy coating thickness readings with a wet film thickness gage, such as those meeting ASTM D4414 - Standard Practice for Measurement of Wet Film Thickness of Organic Coatings by Notched Gages, to ensure uniform thickness during application or other similar measuring probe.

C. Applicator shall perform holiday detection on all surfaces coated with the UME hybrid epoxy coating in the presence of the coating manufacturer's representative or designated inspector. After the UME epoxy coating has set hard to the touch, surfaces shall first be dried, an induced holiday shall then be made on to the coated concrete surface and shall serve to determine the minimum/maximum voltage to be used to test the coating for holidays at that particular area. The spark tester shall be initially set at 100 volts per 1 mil (25 microns) of film thickness applied but may be adjusted as necessary to detect the induced holiday (refer to NACE RPO188-99). All detected holidays shall be marked by the coating manufacturer's approved marking methods and repaired by abrading the coating surface with grit disk paper or other hand tooling method. After abrading and cleaning, additional epoxy coating material can be hand applied to the repair area. All touch-up/repair procedures shall follow the coating manufacturer's recommendations.

D. A final visual inspection shall be made by the Applicator, coating manufacturer's representative or designated inspector. Any deficiencies in the finished coating shall be marked and repaired by Applicator according to the procedures set forth herein.

END OF SECTION

1. SCOPE OF WORK

The Scope of Work consists of furnishing all materials and equipment and performing all labor necessary for the installation of the sanitary sewer mains, and manholes complete to the limits shown on the plans and as specified. The work shall include any removal of old concrete curbs and gutters, all ditching, diking, shoring and bracing, pumping, bailing, draining, flushing and testing, and all provisions necessary to protect and maintain buildings, fences, water and waste water and gas pipes, power and telephone lines and cables and other structures. The work shall also include replacing of the necessary pavements, curbs, curb ramps, and sidewalks, topsoil and seeding and the cleaning away of all rubbish and surplus material, and the furnishing of all material and tools, implements and labor required to build and put in complete working order the sanitary sewer main, services and all structures pertaining thereto.

2. BACKFILLING AND COMPACTION

All trenches and excavation of roads and streets shall be backfilled immediately after the pipes are laid therein, unless other protection of the pipe lines is directed. The backfilling material shall be selected and deposited with special reference to the future safety of the pipe. Except where special methods of bedding and tamping are provided for, clean granular stone shall be solidly tamped above the pipe up to a level one foot above the top of the pipes, and shall be carefully deposited in uniform 6" layers, each layer solidly tamped or rammed with proper tools so as not to injure or disturb the pipe line. The remainder of the backfilling of the trench shall be carried on simultaneously on both sides of the pipes in such a manner that injurious side pressures do not occur. After placing the backfill up to a level below the natural ground surface, surplus excavation shall be windrowed and maintained in a suitable manner to concentrate and pond surface run-off from rains over the trench; after sufficient settlement has been obtained, in the opinion of the City, the contractor shall complete the dressing of the sub soil to four (4) inches below existing grade, apply top soil and seed to match surrounding finish grade, remove surplus material and perform surface cleanup in accordance with these specifications.

Backfilling across City-owned and DelDOT owned paved surfaces and streets shall be as shown on the contract drawings. Backfilling across state owned streets shall be per the DelDOT road utility permit and shall meet the requirements set forth by DelDOT.

3. MAINTENANCE OF TRAFFIC

The road, while undergoing improvements, shall be kept open to all traffic by the contractor unless otherwise directed by the City. The contractor shall keep the portion of the road being used by public traffic in such condition that traffic will be adequately accommodated. He shall also provide and maintain in a safe condition temporary approaches to crossings, intersections, roads, streets, businesses, parking lots, residences, garages, etc.

In carrying on the work, the contractor shall interfere as little as possible with traffic. The contractor

shall provide and maintain ingress and egress for all residences and places of business located along the construction route. So far as practicable, materials stored upon the roadway shall be placed so as to cause as little obstruction to the traveling public as possible. If it is necessary to keep the road or any portion of it closed to travel during the construction thereof, the contractor shall so carry on the work and provide such means that travel will not be obstructed or endangered. Buses and emergency vehicles shall have access to the road at all times during construction. The contractor shall provide and maintain in an acceptable condition such temporary roadways and bridges as may be necessary to accommodate the traffic using or diverted from the roadway under construction and shall provide and maintain in a safe condition temporary approaches to and crossing of intersecting highways. Fire hydrants on or adjacent to the roadway shall be kept accessible within 15 feet of any such hydrant. The contractor shall not disturb the surface of an existing road farther in advance of the new construction than can be completed in a reasonable length of time as determined by the engineer. The contractor shall provide and maintain properly illuminated signs and barricades for the information, protection, and safety of the traveling public, conforming to the City's practices for street and road construction and DelDOT's Manual on Uniform Traffic Controls for Streets and Highway Construction (MUTCD).

4. TEST PITS

The location, size, and depth of existing utilities shown on the plan is based on best available information. Test pits, shall be the responsibility of the contractor and be completed as necessary to determine the location and elevation of utilities in the construction area. The contractor should rely on its own expertise to determine need for test pits. Restoration of test pit areas shall be as per the details on the drawings and return the test pitted area back to the ground surface elevation, conditions, structures, and vegetative coverage back to its existing conditions prior to test pitting or as detailed on the project plans.

5. MAINTAINING SEWER SERVICE

Existing sewer service shall be maintained at all times. The contractor shall conduct its operations so as to maintain flows in existing sewers draining through the project area. This will require the proper coordination between construction replacement and abandonment so as not to block the flow in existing sewers that are to remain in service.

When necessary to pump sewage while replacing and installing relief sewers, the material pumped shall be carried by means of approved hose or other closed, watertight conveyors to the downstream sewer or manhole designated by the Owner. Sewage shall not be allowed to flow into or over the street surfaces.

The contractor shall provide all pumps, piping, hose ramps and other equipment necessary to accomplish bypass pumping around the manhole and/or sewer section; perform all construction and obtain all permits necessary for bypass pumping operations. Contractor shall provide a backup pump with capacity to handle 100% of the anticipated peak flow rate for each location

and made available on site to protect against instances of unexpected high flows or primary pump failure.

The contractor shall bypass all flows around the sections of line that are to be rehabilitated. The contractor shall schedule this work during dry weather conditions. The bypass shall be made by plugging an existing upstream manhole, if necessary, and pumping the flow into a downstream manhole or adjacent system. The pump and bypass line shall be of adequate size and capacity to handle the flow. The contractor shall perform all work during dry weather flow periods and provide to the engineer a schedule and plan for conducting bypass pumping operations of sewage flow. Pumping schemes are subject to the Owners approval.

Where the sewage flow is blocked or plugged, sufficient precautions must be taken to protect the public health. Upstream flow shall be monitored. The sewer lines shall also be protected from damage. The following occurrences shall not be allowed:

a. No sewage shall be allowed to back up into any homes or buildings.
b. No sewage shall overflow any manholes, cleanouts or any other access to the sewers.
c. Users upstream of the repair area are not able to use their water and sewer utilities without interruption.

If any of the above occur or are expected to occur, the contractor shall alleviate the situation. The contractor shall take appropriate steps to ensure that all pumps, piping and hoses that carry sewage are protected from vehicular traffic and pedestrian traffic. The contractor shall size his bypassing operation to convey dry weather peak flows. For the contractor's convenience, a schedule of Bypass Pumping Flows at selected manholes is included in the Contract Drawings. The contractor shall not undertake repair work prior to a forecasted storm event that may adversely affect his efforts or the sewer system operations.

6. GRAVITY MAIN INSTALLATION

All pipe shall be installed in accordance with the recommendations of the pipe manufacturer and as specified herein. These recommendations shall include maximum trench width, if more restrictive than that shown in the Standard Details; bedding requirements; backfill material and compaction, where applicable. In addition, the following shall apply unless otherwise noted:

a. Where indicated, provide erosion checks and concrete anchors in accordance with the Standard Details. If no method for securing pipe is indicated, secure with wooden wedges or braces and concrete to the satisfaction of the engineer.
b. Unless otherwise indicated, joint opening for push on and mechanical joints, horizontal or vertical deflections shall not exceed four degrees (4°) for pipe twelve inch (12") and smaller diameter.
c. Deflections horizontal or vertical greater than these shall be made with fittings

approved by the engineer.

1) Polyvinyl chloride (PVC) pipe shall be installed in accordance with the latest City of Newark Water and Wastewater Standards and Specifications and the following:
2) PVC pipe shall be handled with care to avoid severe impact blows, abrasion damage, gouging and cutting by metal surfaces or rocks, and never handled with individual chain or single cable, even if padded. Exposure to sources of heat or hot objects such as heaters, boilers, steam lines, and engine exhaust shall be avoided. Gaskets shall be protected from excessive exposure to heat, direct sunlight, ozone, oil and grease. Handling techniques in cold weather require more care than during hot weather. Each pipe unit will be inspected for straightness and damage before being installed in the work. Defective pipe and fittings shall be removed and replaced with approved materials at no additional cost to the City.
3) Assembly of the gasket joint shall be performed as recommended by pipe manufacturer. All joint surfaces shall be cleaned immediately before joining; the bell and beveled spigot shall be lubricated with an approved lubricant, and then carefully pushed into place. A suitable device shall be used to force the pipe units together. Good alignment of the pipe is essential for ease of assembly. Align the spigot to the bell and insert the spigot into the bell until it contacts the gasket uniformly; do not swing spigot into bell. Generally, the spigot end of the pipe is marked by the manufacturer to indicate the proper depth of insertion. If undue resistance to insertion of the end is encountered or the reference mark does not position properly, disassemble the joint and check the position of the gasket. If it is twisted or pushed out of its seat, inspect components, repair or replace damaged items, clean components, and repeat the assembly steps. If gasket was not out of position, verify proper location of the reference mark. Relocate the reference mark if it is out of position.
4) To join field cut pipe, the pipe end shall be prepared first; a square cut is required for proper assembly. The pipe can be cut with a hacksaw, handsaw, or a power handsaw with a steel blade or abrasive disc. The pipe shall be marked around its entire circumference prior to cutting to insure a square cut. Use a factory finished beveled end as a guide for proper bevel angle, depth of bevel, plus the distance to the insertion reference mark. The end shall be beveled using a pipe beveling tool or a wood rasp to the correct taper. A portable sander or abrasive disc also may be used to bevel the pipe end. Round off any sharp edges on the leading edge of the bevel with a pocketknife or a file, and then assemble as stated above.
5) Only PVC adapters shall be used to connect to the various other types of pipe. In addition, only PVC caps or plugs shall be used to bulkhead the ends.
6) Pipe bedding material shall be carefully placed in accordance with the

Standard Detail and the Backfilling and Compaction section of this specification.

7) Material shall not be dropped directly on the pipe. After first course is placed to pipe grade, attention shall be given to carefully placing pipe and excavating for socket joints. Bedding gravel shall then be placed around pipe haunch in second course to provide correct alignment. Then, third course and finally fourth course shall be placed and consolidated to avoid pipe deflection.

8) Compaction equipment shall not be used directly over pipe until sufficient backfill has been placed to ensure that such equipment will not damage or disturb pipes, usually a minimum of thirty-inch (30") depth.

Proper and suitable tools and appliances for safe and convenient handling and joining of pipes shall be used.

Pipe shall be carefully handled and lowered into the trench. Pipe shall be installed with special care to ensure that each length abuts against the next to produce no shoulder or unevenness of any kind along the inside bottom half of the pipeline. No wedging or blocking will be permitted in installing any pipe unless directed by written order or permission in writing is obtained from the engineer.

No pipe shall be brought into position until the preceding length has been thoroughly bedded and secured in place. Care shall be used to assure water tightness and prevent damage to, or disturbing of, the joints during the refilling process. After pipes have been installed and joints have been made, there shall be no walking on or working over the pipe, except as may be necessary in tamping the backfill material, until the backfill is at least two feet (2') over the top of the pipe.

The pipes shall be thoroughly cleaned before being installed and shall be kept clean until acceptance of the completed work. Open ends of all pipelines shall be provided with a stopper carefully fitted to keep dirt and other substances from entering. This stopper shall be kept in the end of the pipeline at all times when installation is not in progress.

7. FORCE MAIN INSTALLATION

All pipe shall be installed in accordance with the recommendations of the pipe manufacturer and as specified herein:

a. Force mains shall have a minimum of eighteen-inch (18”) clearance from drains, electric lines, gas mains, and all other utilities.
b. All force mains shall be wrapped in V-Bio Enhanced Polyethylene Encasement manufactured by McWane Ductile or approved equal as determined by the PWWR Department. Information on the V-Bio product can be found here:
    a. http://mcwaneductile.com/upl/downloads/library/mcwane-ductile-v-bio.pdf

c. DIP force main shall be Class 52, Protecto 401 ceramic epoxy lined with outside surface bituminous coated.
d. All Fittings shall be 350psi rated, ANSI/AWWA – C153/A21.53, ductile or gray iron. Protecto 401 ceramic epoxy lined.
e. Pipe to Pipe Joint restraints shall be Megalugs, TR FLEX, or approved equal and be able to be deflected as required per approved plans.
f. At no point shall anyone other than authorized City personnel operate any force main valves unless permission in writing is granted by the City.

8. TESTING AND ACCEPTANCE

Prior to the request for inspection by the Owner, it shall be the Contractor's responsibility to examine all completed pipe lines to insure that they are laid to the proper alignment and grade and free from foreign material. After this has been done to the satisfaction of the Owner, he/she will order tests to be made on all portions of the sewers built under the Contract.

The Contractor shall cooperate and furnish all assistance necessary to perform the tests as specified herein and as further required and directed by the Owner.

A. Pressure Testing

1. All gravity sewer pipes will be tested through a low pressure air test. The air test will be made by plugging all branch fittings and ends of lateral stubs to withstand internal pressures. The section of line being tested shall also be securely plugged at each manhole.
2. Air shall slowly be supplied to the plugged pipe line until the internal air pressure reaches 5.0 pounds per square inch (PSI). At least two minutes shall be allowed for temperature stabilization before proceeding further.
3. The rate of air loss shall not decreased more than .5 psi during the testing time period of 15 minutes.
4. Force mains shall be tested with shutoff valves in place. Test shall be for two (2) hours at 100 pounds per square inch (PSI) hydrostatic pressure.

B. CCTV Inspections

1. The Contractor shall perform pre and post installation internal television inspections of the installed sanitary main to PACP standards. Each reach of sewer shall have audio description with appropriate stationing of services indicated. The data and stationing are to be on the video. All such inspections shall be performed by personnel trained in locating breaks, obstacles and service connections by closed circuit color television. Pipes shall be cleaned prior to CCTV inspections to ensure quality of inspection.

2. Post construction video shall be submitted to the Engineer and Owner for

review prior to final payment. Should any portion of the inspection tapes be of inadequate quality or coverage, as determined by the Owner, the Contractor will have that portion re-inspected at no additional expense to the Owner. All original video tapes remain property of the Owner. The Contractor may, at the discretion of the Owner retain second copy.

9. SANITARY SEWER MANHOLE

A. Sanitary sewer manhole shall be constructed per the detail on the drawing. All work required to complete installation of sanitary sewer manhole and connection to the existing gravity sewer system, including service laterals shall be incidental to unit cost of installation.

10. FLOWABLE FILL

When specified in the Contract Documents or when directed by the engineer, abandoned pipes shall be plugged using flowable fill.

Flowable fill shall also be used in areas where a minimum distance of 12 inches cannot be maintained between proposed sanitary sewer and adjacent utilities and upon approval from the City.

The flowable backfill shall consist of a mixture of fly ash, cement, and water and shall be certified by the manufacturer. Toxic or deleterious components shall not be used in the backfill mixture. The mixture shall have a twenty-eight (28) day, unconfirmed compressive strength of one hundred (100) psi minimum based on the manufacturer's certification. Certification shall include the actual test data for each mixture to be used.

Placement of flowable backfill material shall conform to the manufacturer's recommendations or as directed by the engineer. Utility trenches shall be backfilled full depth to the top of the subgrade using the mixture as specified in the Contract Documents or as directed by the engineer. The mixture shall fill all voids during the backfill operation. The backfilled utility cut shall be protected from freezing and traffic for twenty-four (24) hours. Paving operations shall not begin for at least twenty-five (24) hours after backfilling is completed and has been approved by the engineer. The contractor shall keep detailed records of all flowable backfill placed. Records shall include the source of the fly ash, date placed, the location, depth, and the quantity used. The records shall be submitted to the engineer.

11. AS-BUILT DRAWINGS

The Contractor shall submit field sketch as-built plans of all installed items. The plans shall contain the measured location of the sanitary sewer mains installed within the

project. The City shall contract separately for the final certified as-built survey.

12. HANDICAP RAMPS

All Handicap Ramps must comply with current Americans with Disability Act and contractor must notify Newark's Inspector of all ramp installations a minimum of 24 hours prior to curb ramp installation. HC Ramp work on State maintained roadways shall be in accordance with the latest DelDOT specifications.

13. METHOD OF MEASUREMENT AND INCIDENTALS DETERMINATION

The measurement of payment shall be for the installation of the materials listed in the Proposal in accordance with the units indicated as Lump Sum, complete and accepted by Owner.

Roadway and easement restoration is incidental to the cost of installing the sanitary sewer main.

14. BASIS OF PAYMENT

Payment for these items shall be included in the unit prices for each item as described in the Proposal.

All other items, methods, and materials necessary to complete the work as described above shall be incidental to the bid item the work is being completed under.

The Owner reserves the right to delete from the Contract one or more items listed and the right to add or subtract from the quantity of each item. The total price to be paid will be adjusted in accordance with the Contractor's unit prices as required above. There will be no extra compensation or increase in unit prices in the Proposal if such additions and/or deletions are made to quantities.

Application and Certification for Payment shall be made on proper AIA Documents.

END OF SECTION

CITY OF NEWARK
DELAWARE

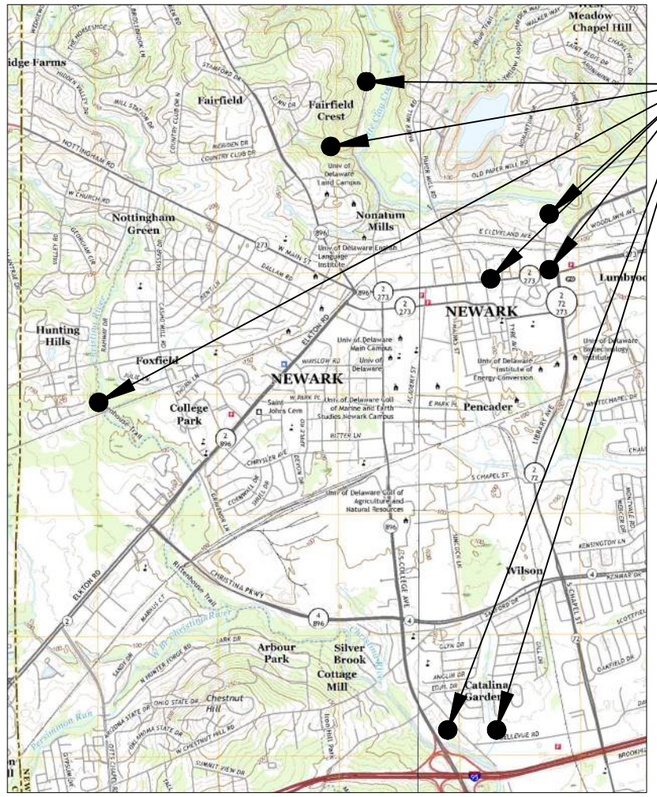
ATTACHMENT 1
Project Drawings, Sheets 1-22

CITY OF NEWARK
PUBLIC WORKS & WATER RESOURCES DEPARTMENT
NEW CASTLE COUNTY, DELAWARE

SANITARY SEWER IMPROVEMENTS - 2023

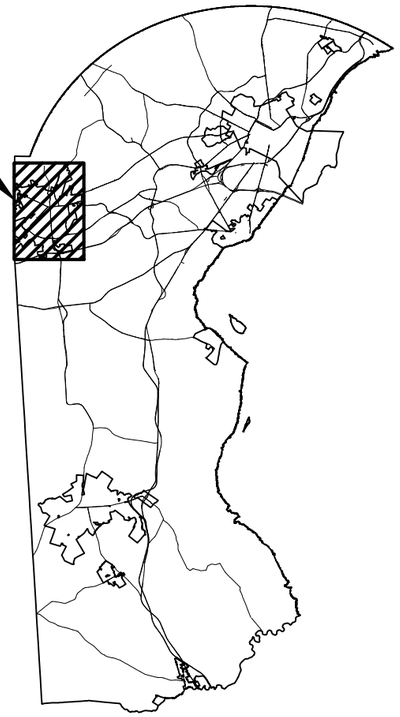
CONTRACT NO. 23-15

DRAWING INDEX



LOCATION MAP
NOT TO SCALE

PROJECT LOCATIONS



NOT TO SCALE

ISSUED FOR BIDDING
NOT FOR CONSTRUCTION

MISS UTILITY OF DELMARVA

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PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

REV.	DESCRIPTION	DRAWN	DATE
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ENGINEER SEAL
CHRISTOPHER R. BRENDZA
LICENSE
No. 18168
DELAWARE
PROFESSIONAL ENGINEER

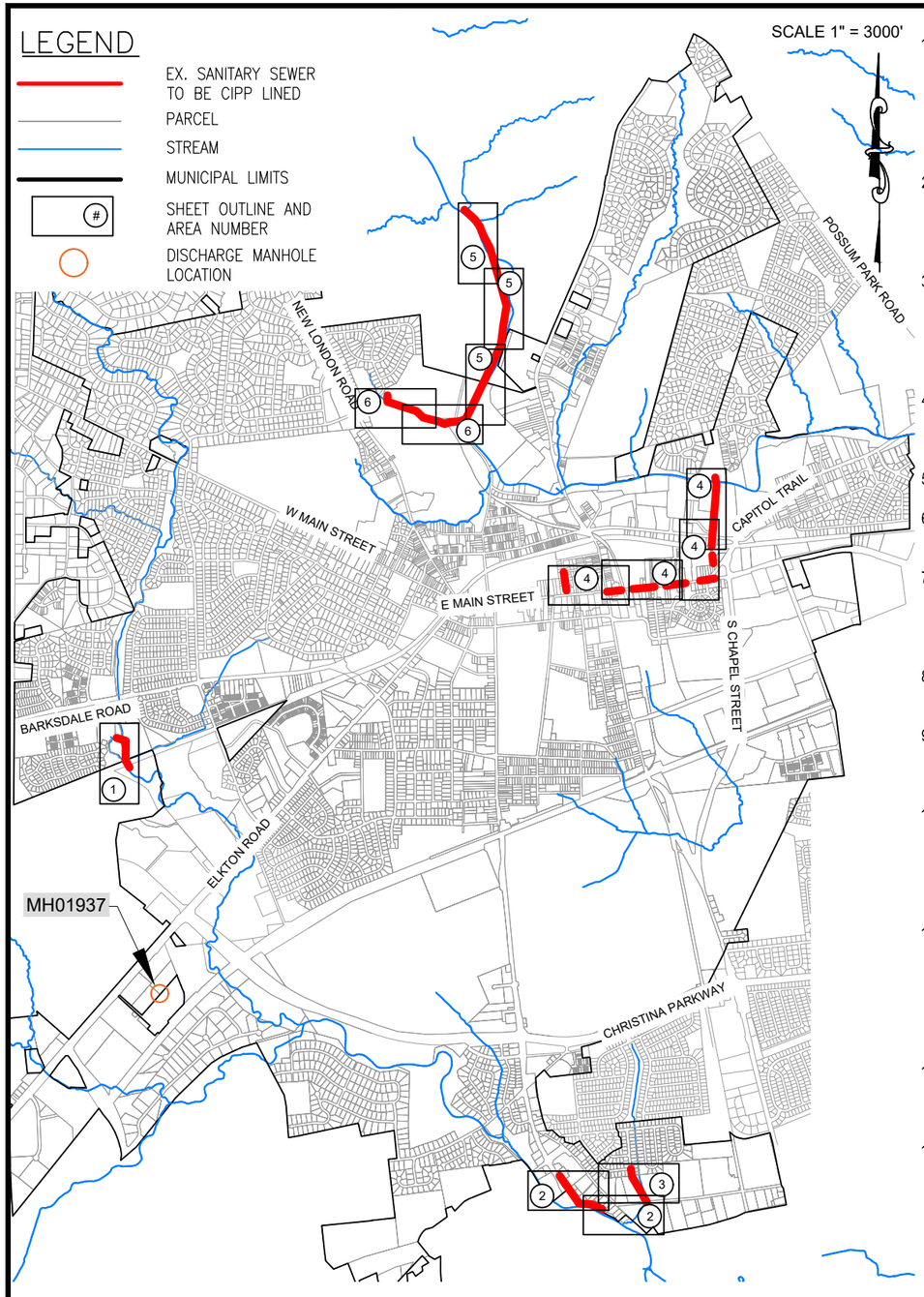
NEWARK DELAWARE

JMT

CONTRACT	23-15
AREA	TITLE SHEET
SHEET NO.	1 OF 22

LEGEND

- EX. SANITARY SEWER TO BE CIPP LINED
- PARCEL
- STREAM
- MUNICIPAL LIMITS
- # — SHEET OUTLINE AND AREA NUMBER
- DISCHARGE MANHOLE LOCATION



GENERAL NOTES

1. DRAWINGS WERE CREATED USING THE FIRST MAP GEOSPATIAL DATA EXCHANGE, GIS INFORMATION, AND SANITARY SEWER PLANS. ADDITIONAL BURIED UTILITIES OR STRUCTURES MAY BE ENCOUNTERED. NO EXCAVATIONS WERE CONDUCTED DURING THE PREPARATION OF THESE PLANS. THE CONTRACTOR SHALL VERIFY ALL INFORMATION TO HIS OR HER OWN SATISFACTION. EXACT LOCATION AND COMPLETENESS IS NOT GUARANTEED. CONTRACTOR SHALL BE AWARE THAT A MISS UTILITY TICKET WAS NOT SUBMITTED FOR THE PREPARATION OF THESE PLANS. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL INFORMATION THAT MAY AFFECT WORK.
2. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH HAVE OCCURRED BY HIS OR HER FAILURE NOT TO EXACTLY LOCATE AND PRESERVE ANY AND ALL EXISTING UTILITIES, STRUCTURES, AND OTHER FEATURES AFFECTING HIS OR HER WORK. ITEMS SHALL BE REPLACED WITH THE SAME TYPE OF MATERIAL THAT WAS REMOVED OR DAMAGED DURING CONSTRUCTION OR AS DIRECTED BY THE ENGINEER.
3. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE LOCATION AND ACTIVITIES OF HIS OR HER FORCES WITH THE OWNER, AND ABUTTING PROPERTY OWNERS TO MINIMIZE INTERFERENCE WITH EXISTING UTILITIES, PEDESTRIAN TRAFFIC, AND PROPERTY ACCESS. PEDESTRIAN AND VEHICLE ACCESS SHALL BE MAINTAINED AT ALL TIMES. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE CITY OF NEWARK, DEPARTMENT OF PUBLIC WORKS AND WATER RESOURCES PROJECT MANAGER ETHAN ROBINSON AT 302-366-7000, 48-HOURS PRIOR TO THE START OF CONSTRUCTION.
4. CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT ALL EXISTING UTILITIES, CURBS, SIDEWALK, PAVING, SHRUBS, FENCING, ETC, AND MINIMIZE DISTURBANCES TO PRIVATE PROPERTY. ANY AND ALL DAMAGE DONE TO SAME SHALL BE IMMEDIATELY AND COMPLETELY REPAIRED AT CONTRACTORS EXPENSE.
5. METHODS, PROCEDURES, AND THE SEQUENCE OF CONSTRUCTION ARE THE RESPONSIBILITY OF THE CONTRACTOR.
6. ROADWAYS SHALL BE KEPT CLEAN AT ALL TIMES. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED ONTO ROADWAYS OR OTHER IMPERVIOUS SURFACES MUST BE REMOVED IMMEDIATELY.
7. ALL COSTS FOR MODIFICATIONS TO MANHOLES, RISER SECTIONS, ETC. SHALL BE INCIDENTAL TO THE COST OF LINING THE SEGMENT UNDER WHICH THE MODIFICATION WAS PERFORMED. ALL MODIFICATIONS TO EXISTING STRUCTURES, OR INSTALLATION OF NEW STRUCTURES, MUST BE APPROVED BY THE CITY OF NEWARK AND SHALL BE IN CONFORMANCE WITH CURRENT CITY OF NEWARK WATER AND WASTEWATER STANDARDS AND SPECIFICATIONS.
8. UNLESS OTHERWISE NOTED, THE CITY MAINTAINS A 20-FOOT UTILITY EASEMENT CENTERED OVER THE SANITARY SEWER SEGMENTS IDENTIFIED FOR CIPP LINING.
9. ALL WORK SHALL BE CONDUCTED IN THE PUBLIC RIGHT OF WAY OR WITHIN EXISTING UTILITY EASEMENTS. IF THE CONTRACTOR DESIRES TO WORK OUTSIDE OF THE PUBLIC RIGHT OF WAY OR EXISTING UTILITY EASEMENTS, THEY SHALL BEAR ALL COSTS FOR OBTAINING TEMPORARY CONSTRUCTION EASEMENTS TO PERFORM THE WORK.
10. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT ADJOINING PROPERTY OWNERS AND DETERMINE ANY SPECIFIC ACCESS OR LAND USE REQUIREMENTS AS NEEDED TO COMPLETE THE WORK. ALL COSTS ASSOCIATED WITH LAND USE INCLUDING PERMITS, INSTALLING ACCESS ROUTES SUITABLE FOR COMPLETION OF THE WORK, WORK SCHEDULES, SITE RESTORATION, ETC. SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. CONTACT WITH PROPERTY OWNERS SHALL BE COMPLETED EARLY IN THE PROJECT SO AS NOT TO IMPACT THE COMPLETION OF WORK.
11. IT IS THE INTENT OF THIS PROJECT TO UTILIZE MANHOLES FOR THE INSTALLATION OF CIPP LINERS. ANY ALTERATIONS MADE TO AN EXISTING MANHOLE TO ACCOMODATE THE CIPP LINER INSTALLATION SHALL BE REPAIRED/REBUILT FOLLOWING THE LINING OPERATION. CONTRACTOR SHALL MAKE ALL ATTEMPTS TO LIMIT ALTERATIONS TO EXISTING MANHOLES FOR THE INSTALLATION OF THE CIPP LINERS. ALL MODIFICATIONS TO EXISTING STRUCTURES, OR INSTALLATION OF NEW STRUCTURES, MUST BE APPROVED BY THE CITY OF NEWARK AND SHALL BE IN CONFORMANCE WITH CURRENT CITY OF NEWARK WATER AND WASTEWATER STANDARDS AND SPECIFICATIONS.
12. THE INSTALLED CIPP LINER SYSTEM SHALL BE WATERTIGHT AND SHALL BE SEALED AT THE PIPE PENETRATIONS INTO THE MANHOLES WITH END SEALS. ACCEPTABLE END SEALS ARE THE INSIGNIA™ END SEAL SLEEVE BY LMK, OR PRE-APPROVED EQUAL.
13. THE CONTRACTOR SHALL PERFORM ALL REQUIRED CLEANING AND CLOSED CIRCUIT TELEVISION (CCTV) INSPECTION OF ALL PIPE SEGMENTS TO BE REPAIRED AS PART OF THIS PROJECT IN ADVANCE OF INITIATING CONSTRUCTION ACTIVITIES. CLEANING AND CCTV INSPECTIONS SHALL BE AS DESCRIBED IN THE CONTRACT SPECIFICATIONS TO DETERMINE ACCURATE DIMENSIONS, ALIGNMENT, IDENTIFY CONNECTIONS, SEVERELY DETERIORATED OR DEFORMED SEGMENTS OR ANY OTHER ABNORMALITIES OR CONDITIONS THAT WOULD AFFECT THE PROPOSED REHABILITATION PROCESS. INSTALLATION OF THE REHABILITATION METHOD SHALL SERVE AS CONFIRMATION BY THE CONTRACTOR THAT THE PIPE WAS SUFFICIENTLY CLEANED TO SUPPORT THE PARTICULAR METHOD OF REHABILITATION. THE REPAIR OF ANY DAMAGE CAUSED BY THE CLEANING EQUIPMENT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND PERFORMED AT NO COST TO THE OWNER.

GENERAL NOTES (CONTINUED)

14. EXISTING SEWAGE FLOWS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. AT NO TIME WILL IT BE PERMITTED FOR SEWAGE TO BE DISCHARGED ONTO THE GROUND, STREAM, OR ANY OTHER AREAS OTHER THAN A SANITARY SEWER. ALL COSTS TO MAINTAIN FLOW SHALL BE INCLUDED IN THE UNIT PRICE BID FOR SANITARY SEWER REHABILITATION. THE CONTRACTOR SHALL FURNISH ALL NECESSARY EQUIPMENT (PLUGGING, PUMPING, CONTAINMENT, ETC.) FOR THIS PURPOSE.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR AVOIDING THE SPILLAGE OF RAW SEWAGE OR OTHER SUBSTANCES WHICH WOULD BE CONSIDERED DANGEROUS TO THE ENVIRONMENT DURING THEIR CONSTRUCTION OPERATIONS. THE CONTRACTOR SHALL FURNISH ALL NECESSARY EQUIPMENT (PLUGGING, PUMPING, CONTAINMENT, ETC.) TO PREVENT SAID SPILLAGE. SPILLED SEWAGE SHALL BE REPORTED IMMEDIATELY TO THE DNREC EMERGENCY RESPONSE LINE AT 800-662-8802 AND TO THE CITY INSPECTOR.
16. THE CONTRACTOR SHALL REPORT TO THE CITY INSPECTOR ALL INCIDENTS/COMPLAINTS FROM RESIDENTS REGARDING PROPERTY DAMAGE RESULTING FROM CONTRACTOR WORK OR ANY BACKUPS OF SEWAGE INTO DWELLINGS/BUSINESSES. AN INCIDENT REPORT NEEDS TO BE FILLED OUT AND PROVIDED TO THE CITY INSPECTOR AT THE TIME OF THE SPILL. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE AND TO THE SATISFACTION OF THE PROPERTY OWNER.
17. THE CITY HAS PROVIDED THE CCTV INSPECTION VIDEOS UTILIZED TO MAKE SEWER REHABILITATION RECOMMENDATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLETING PREREHABILITATION CCTV INSPECTIONS AND DETERMINING IF ANY OF THE SEWER CONDITIONS HAVE SIGNIFICANTLY CHANGED SINCE THE CCTV INSPECTIONS WERE ORIGINALLY CONDUCTED THAT WOULD IMPACT THE WORK. ANY DIFFERING CONDITIONS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE CITY OF NEWARK PUBLIC WORKS AND WATER RESOURCES DEPARTMENT AND ALTERNATIVE REPAIR RECOMMENDATIONS SUBMITTED FOR CONSIDERATION.
18. CONTRACTOR SHALL MAKE ALL ATTEMPTS TO LIMIT ALTERATIONS TO EXISTING MANHOLES FOR THE INSTALLATION OF CIPP LINERS. USING A SINGLE MANHOLE FOR MULTIPLE PIPE LININGS IS SUGGESTED.
19. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE INTERNAL CONFIGURATION OF EACH MANHOLE OR SEWER STRUCTURE SCHEDULED FOR REHABILITATION AND PROVIDE APPROPRIATE MATERIALS, FLOW CONTROL, INSTALLATION REQUIREMENTS, AND EQUIPMENT NECESSARY TO COMPLETE THE PROPOSED WORK.
20. ALL LINING WORK SHALL BE COMPLETED DURING DRY WEATHER DUE TO HIGH RATES OF INFLOW/INFILTRATION DURING WET WEATHER. NO LINING SHALL BE PERMITTED DURING RAIN EVENTS.
21. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL DRIVEWAYS AT ALL TIMES.
22. CONTRACTOR SHALL RESTRICT CLEARING AND ACCESS PATH TO LIMITS SHOWN IN PLANS.

EROSION & SEDIMENT CONTROL NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADHERING TO THE CONSTRUCTION SITE POLLUTION PREVENTION SPECIFICATIONS AS DETAILED IN SECTION 3.6 OF THE "DELAWARE EROSION AND SEDIMENT CONTROL HANDBOOK". ALL COSTS ASSOCIATED WITH ADHERING TO THE STANDARDS SHALL BE INCIDENTAL TO THE PROJECT SITE CONSTRUCTION COSTS.
2. EROSION AND SEDIMENT CONTROL DEVICES SHALL BE PLACED AS NECESSARY IN ACCORDANCE WITH THE LATEST EDITION OF THE DELAWARE SEDIMENT AND CONTROL HANDBOOK FOR CONSTRUCTION SITE ACCESS, MATERIAL STORAGE, TEMPORARY LAY DOWN AREAS AND DISTURBED AREAS ON SITE. PAYMENT SHALL BE INCIDENTAL TO THE PROJECT SITE CONSTRUCTION COSTS.

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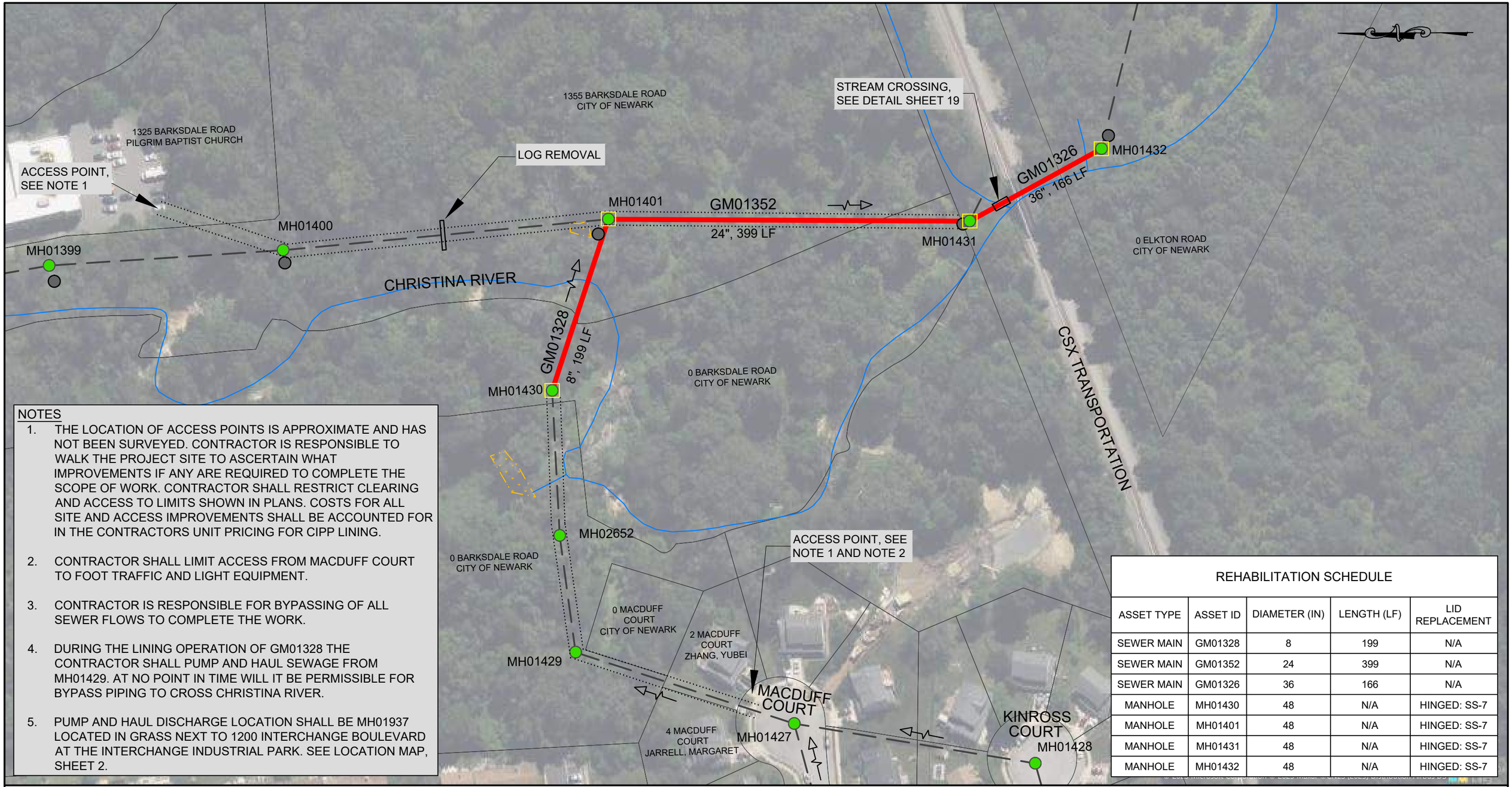
ENGINEER SEAL
CHRISTOPHER R. BRENDEL
LICENSE
No. 18168
DELAWARE
PROFESSIONAL ENGINEER

NEWARK DELAWARE

JMT

CONTRACT	23-15
AREA	KEY SHEET AND NOTES
SHEET NO.	2 OF 22



NOTES

1. THE LOCATION OF ACCESS POINTS IS APPROXIMATE AND HAS NOT BEEN SURVEYED. CONTRACTOR IS RESPONSIBLE TO WALK THE PROJECT SITE TO ASCERTAIN WHAT IMPROVEMENTS IF ANY ARE REQUIRED TO COMPLETE THE SCOPE OF WORK. CONTRACTOR SHALL RESTRICT CLEARING AND ACCESS TO LIMITS SHOWN IN PLANS. COSTS FOR ALL SITE AND ACCESS IMPROVEMENTS SHALL BE ACCOUNTED FOR IN THE CONTRACTORS UNIT PRICING FOR CIPP LINING.
2. CONTRACTOR SHALL LIMIT ACCESS FROM MACDUFF COURT TO FOOT TRAFFIC AND LIGHT EQUIPMENT.
3. CONTRACTOR IS RESPONSIBLE FOR BYPASSING OF ALL SEWER FLOWS TO COMPLETE THE WORK.
4. DURING THE LINING OPERATION OF GM01328 THE CONTRACTOR SHALL PUMP AND HAUL SEWAGE FROM MH01429. AT NO POINT IN TIME WILL IT BE PERMISSIBLE FOR BYPASS PIPING TO CROSS CHRISTINA RIVER.
5. PUMP AND HAUL DISCHARGE LOCATION SHALL BE MH01937 LOCATED IN GRASS NEXT TO 1200 INTERCHANGE BOULEVARD AT THE INTERCHANGE INDUSTRIAL PARK. SEE LOCATION MAP, SHEET 2.

REHABILITATION SCHEDULE

ASSET TYPE	ASSET ID	DIAMETER (IN)	LENGTH (LF)	LID REPLACEMENT
SEWER MAIN	GM01328	8	199	N/A
SEWER MAIN	GM01352	24	399	N/A
SEWER MAIN	GM01326	36	166	N/A
MANHOLE	MH01430	48	N/A	HINGED: SS-7
MANHOLE	MH01401	48	N/A	HINGED: SS-7
MANHOLE	MH01431	48	N/A	HINGED: SS-7
MANHOLE	MH01432	48	N/A	HINGED: SS-7

SANITARY SEWER IMPROVEMENTS - 2023

Legend

- SEWER MANHOLE
- SEWER MANHOLE ABANDONED
- MANHOLE LID REPLACEMENT
- MANHOLE TO BE LINED
- WETLANDS
- SEWER TO BE CIPP LINED
- GRAVITY MAIN
- SERVICE LATERAL
- LIMITS OF CLEARING & ACCESS
- PARCEL LINE
- RIVER/STREAM

REV.	DESCRIPTION	DRAWN	DATE
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4	–	–	–
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6	–	–	–

ENGINEER SEAL

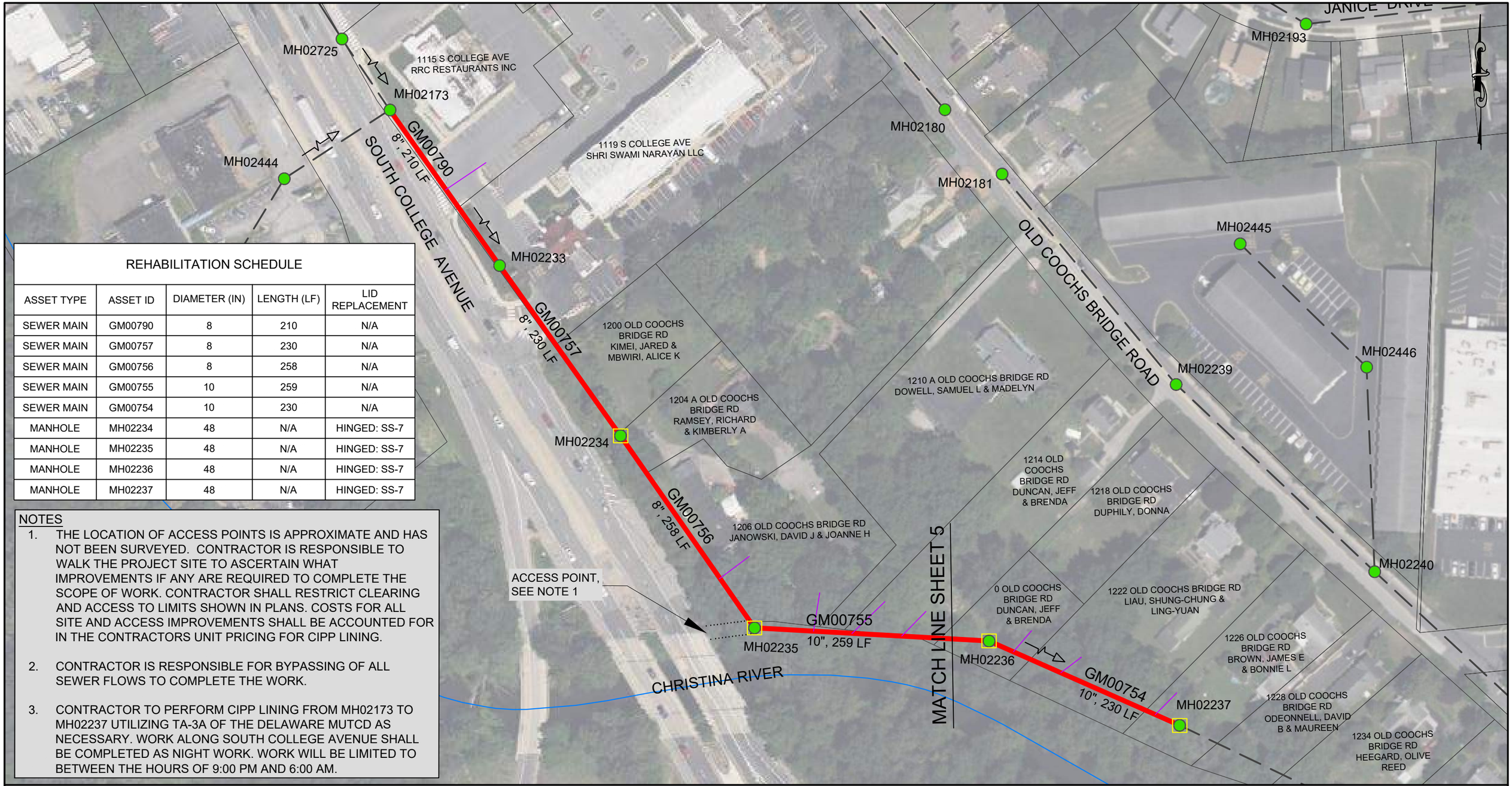
CHRISTOPHER R. BRENDEL
LICENSE
No. 18168
PROFESSIONAL ENGINEER
DELAWARE

NEWARK DELAWARE

JMT

1 in = 100 ft

CONTRACT	23-15
AREA	1 - MACDUFF COURT
SHEET NO.	3 OF 22



REHABILITATION SCHEDULE

ASSET TYPE	ASSET ID	DIAMETER (IN)	LENGTH (LF)	LID REPLACEMENT
SEWER MAIN	GM00790	8	210	N/A
SEWER MAIN	GM00757	8	230	N/A
SEWER MAIN	GM00756	8	258	N/A
SEWER MAIN	GM00755	10	259	N/A
SEWER MAIN	GM00754	10	230	N/A
MANHOLE	MH02234	48	N/A	HINGED: SS-7
MANHOLE	MH02235	48	N/A	HINGED: SS-7
MANHOLE	MH02236	48	N/A	HINGED: SS-7
MANHOLE	MH02237	48	N/A	HINGED: SS-7

NOTES

1. THE LOCATION OF ACCESS POINTS IS APPROXIMATE AND HAS NOT BEEN SURVEYED. CONTRACTOR IS RESPONSIBLE TO WALK THE PROJECT SITE TO ASCERTAIN WHAT IMPROVEMENTS IF ANY ARE REQUIRED TO COMPLETE THE SCOPE OF WORK. CONTRACTOR SHALL RESTRICT CLEARING AND ACCESS TO LIMITS SHOWN IN PLANS. COSTS FOR ALL SITE AND ACCESS IMPROVEMENTS SHALL BE ACCOUNTED FOR IN THE CONTRACTORS UNIT PRICING FOR CIPP LINING.
2. CONTRACTOR IS RESPONSIBLE FOR BYPASSING OF ALL SEWER FLOWS TO COMPLETE THE WORK.
3. CONTRACTOR TO PERFORM CIPP LINING FROM MH02173 TO MH02237 UTILIZING TA-3A OF THE DELAWARE MUTCD AS NECESSARY. WORK ALONG SOUTH COLLEGE AVENUE SHALL BE COMPLETED AS NIGHT WORK. WORK WILL BE LIMITED TO BETWEEN THE HOURS OF 9:00 PM AND 6:00 AM.

SANITARY SEWER IMPROVEMENTS - 2023

Legend

- SEWER MANHOLE
- SEWER MANHOLE ABANDONED
- MANHOLE LID REPLACEMENT
- MANHOLE TO BE LINED
- WETLANDS
- SEWER TO BE CIPP LINED
- GRAVITY MAIN
- SERVICE LATERAL
- LIMITS OF CLEARING & ACCESS
- PARCEL LINE
- RIVER/STREAM

REV.	DESCRIPTION	DRAWN	DATE
0	ISSUED FOR BIDDING	ORS	7-26-23
1	–	–	–
2	–	–	–
3	–	–	–
4	–	–	–
5	–	–	–
6	–	–	–

ENGINEER SEAL

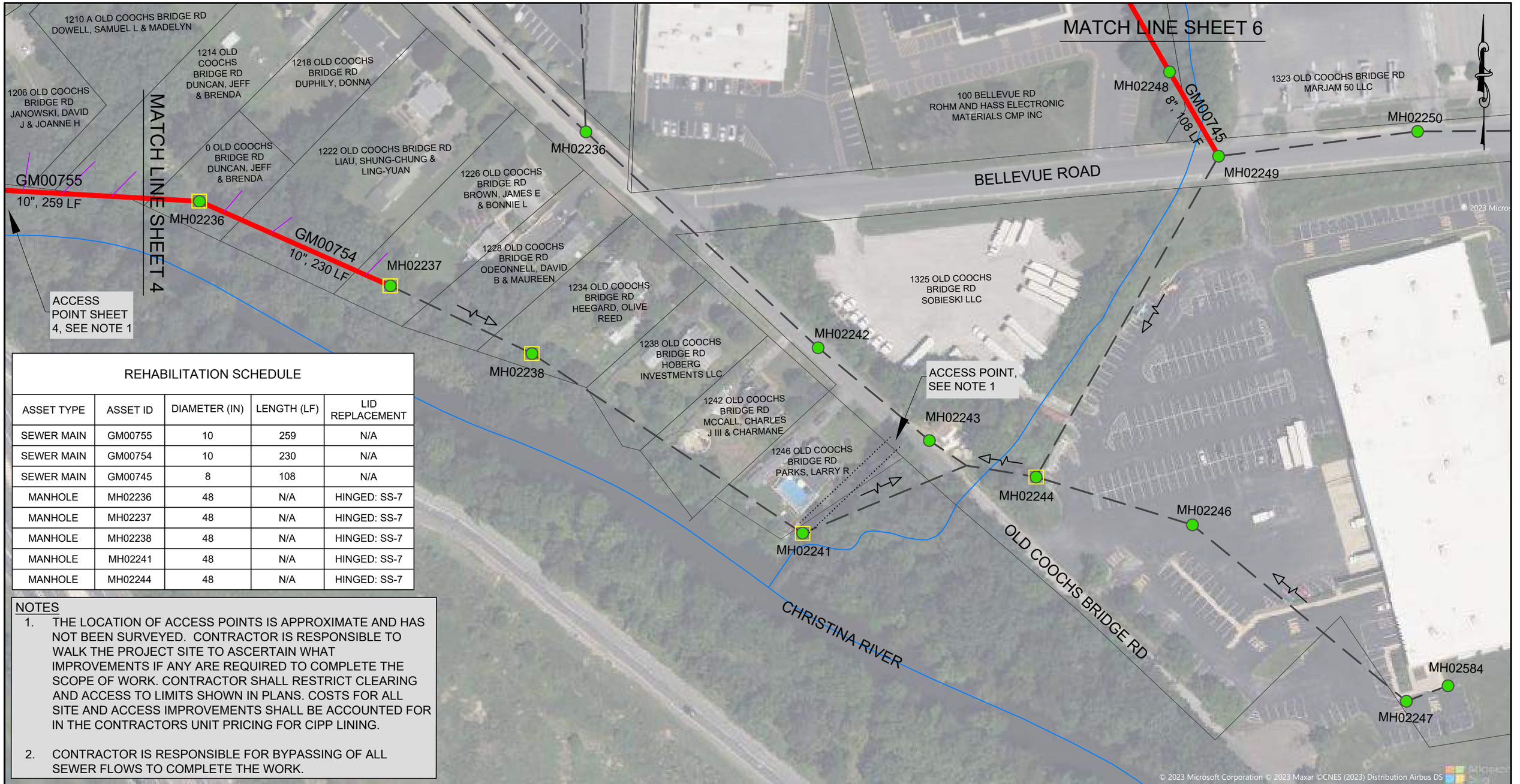
CHRISTOPHER R. BRENDA LICENSE No. 18168 DELAWARE PROFESSIONAL ENGINEER

NEWARK DELAWARE

JMT

1 in = 100 ft

CONTRACT	23-15
AREA	2 - COLLEGE AVENUE
SHEET NO.	4 OF 22



REHABILITATION SCHEDULE

ASSET TYPE	ASSET ID	DIAMETER (IN)	LENGTH (LF)	LID REPLACEMENT
SEWER MAIN	GM00755	10	259	N/A
SEWER MAIN	GM00754	10	230	N/A
SEWER MAIN	GM00745	8	108	N/A
MANHOLE	MH02236	48	N/A	HINGED: SS-7
MANHOLE	MH02237	48	N/A	HINGED: SS-7
MANHOLE	MH02238	48	N/A	HINGED: SS-7
MANHOLE	MH02241	48	N/A	HINGED: SS-7
MANHOLE	MH02244	48	N/A	HINGED: SS-7

NOTES

1. THE LOCATION OF ACCESS POINTS IS APPROXIMATE AND HAS NOT BEEN SURVEYED. CONTRACTOR IS RESPONSIBLE TO WALK THE PROJECT SITE TO ASCERTAIN WHAT IMPROVEMENTS IF ANY ARE REQUIRED TO COMPLETE THE SCOPE OF WORK. CONTRACTOR SHALL RESTRICT CLEARING AND ACCESS TO LIMITS SHOWN IN PLANS. COSTS FOR ALL SITE AND ACCESS IMPROVEMENTS SHALL BE ACCOUNTED FOR IN THE CONTRACTORS UNIT PRICING FOR CIPP LINING.
2. CONTRACTOR IS RESPONSIBLE FOR BYPASSING OF ALL SEWER FLOWS TO COMPLETE THE WORK.

SANITARY SEWER IMPROVEMENTS - 2023

Legend

- SEWER MANHOLE
- SEWER MANHOLE ABANDONED
- MANHOLE LID REPLACEMENT
- MANHOLE TO BE LINED
- WETLANDS
- SEWER TO BE CIPP LINED
- GRAVITY MAIN
- SERVICE LATERAL
- LIMITS OF CLEARING & ACCESS
- PARCEL LINE
- RIVER/STREAM

REV.	DESCRIPTION	DRAWN	DATE
0	ISSUED FOR BIDDING	ORS	7-26-23
1	–	–	–
2	–	–	–
3	–	–	–
4	–	–	–
5	–	–	–
6	–	–	–

ENGINEER SEAL

CHRISTOPHER R. BRENDZEL
LICENSE
No. 18168
DELAWARE
PROFESSIONAL ENGINEER

NEWARK DELAWARE

JMT

1 in = 100 ft	
CONTRACT	23-15
AREA	2 - COLLEGE AVENUE
SHEET NO.	5 OF 22

REHABILITATION SCHEDULE

ASSET TYPE	ASSET ID	DIAMETER (IN)	LENGTH (LF)/ DEPTH (VF)	LID REPLACEMENT
SEWER MAIN	GM00772	8	160	N/A
SEWER MAIN	GM00771	8	254	N/A
SEWER MAIN	GM00770	8	241	N/A
SEWER MAIN	GM00745	8	108	N/A
MANHOLE	MH02220	48	N/A	HINGED: SS-7
MANHOLE	MH02221	48	N/A	STANDARD: SS-6

NOTES

1. CONTRACTOR IS RESPONSIBLE FOR BYPASSING OF ALL SEWER FLOWS TO COMPLETE THE WORK. AT NO POINT IN TIME WILL IT BE PERMISSIBLE FOR BYPASS PIPING TO CROSS CREEK.

SANITARY SEWER IMPROVEMENTS - 2023

Legend

- SEWER MANHOLE
- SEWER MANHOLE ABANDONED
- MANHOLE LID REPLACEMENT
- MANHOLE TO BE LINED
- WETLANDS
- SEWER TO BE CIPP LINED
- GRAVITY MAIN
- SERVICE LATERAL
- LIMITS OF CLEARING & ACCESS
- PARCEL LINE
- RIVER/STREAM

REV.	DESCRIPTION	DRAWN	DATE
0	ISSUED FOR BIDDING	ORS	7-26-23
1	–	–	–
2	–	–	–
3	–	–	–
4	–	–	–
5	–	–	–
6	–	–	–

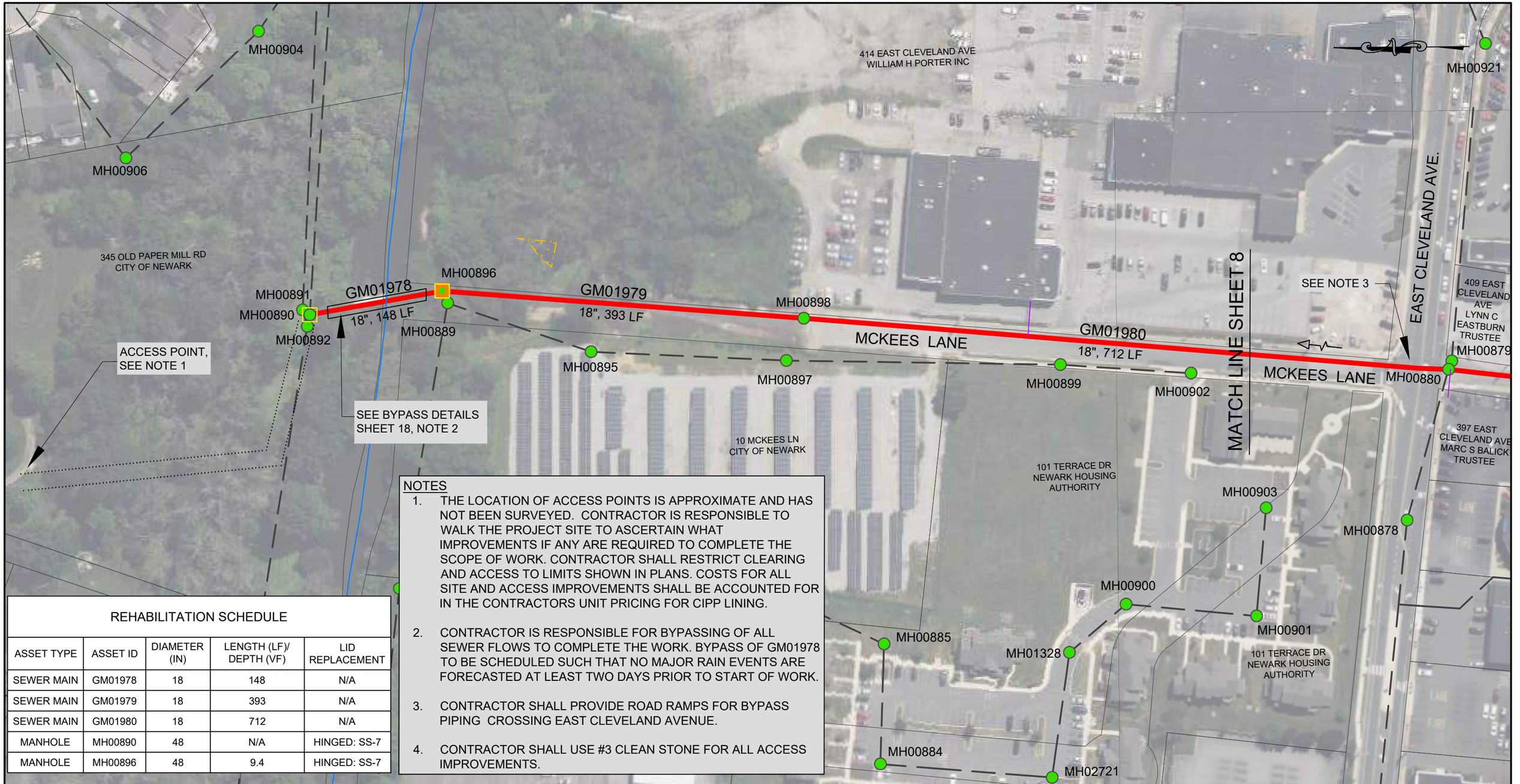
ENGINEER SEAL

CHRISTOPHER R. BRENDEL
LICENSE
No. 18168
DELAWARE
PROFESSIONAL ENGINEER

NEWARK DELAWARE

JMT

1 in = 100 ft	
CONTRACT	23-15
AREA	3 - BELLEVUE ROAD
SHEET NO.	6 OF 22



NOTES

1. THE LOCATION OF ACCESS POINTS IS APPROXIMATE AND HAS NOT BEEN SURVEYED. CONTRACTOR IS RESPONSIBLE TO WALK THE PROJECT SITE TO ASCERTAIN WHAT IMPROVEMENTS IF ANY ARE REQUIRED TO COMPLETE THE SCOPE OF WORK. CONTRACTOR SHALL RESTRICT CLEARING AND ACCESS TO LIMITS SHOWN IN PLANS. COSTS FOR ALL SITE AND ACCESS IMPROVEMENTS SHALL BE ACCOUNTED FOR IN THE CONTRACTORS UNIT PRICING FOR CIPP LINING.
2. CONTRACTOR IS RESPONSIBLE FOR BYPASSING OF ALL SEWER FLOWS TO COMPLETE THE WORK. BYPASS OF GM01978 TO BE SCHEDULED SUCH THAT NO MAJOR RAIN EVENTS ARE FORECASTED AT LEAST TWO DAYS PRIOR TO START OF WORK.
3. CONTRACTOR SHALL PROVIDE ROAD RAMPS FOR BYPASS PIPING CROSSING EAST CLEVELAND AVENUE.
4. CONTRACTOR SHALL USE #3 CLEAN STONE FOR ALL ACCESS IMPROVEMENTS.

REHABILITATION SCHEDULE

ASSET TYPE	ASSET ID	DIAMETER (IN)	LENGTH (LF)/ DEPTH (VF)	LID REPLACEMENT
SEWER MAIN	GM01978	18	148	N/A
SEWER MAIN	GM01979	18	393	N/A
SEWER MAIN	GM01980	18	712	N/A
MANHOLE	MH00890	48	N/A	HINGED: SS-7
MANHOLE	MH00896	48	9.4	HINGED: SS-7

SANITARY SEWER IMPROVEMENTS - 2023

Legend

- SEWER MANHOLE
- SEWER MANHOLE ABANDONED
- MANHOLE LID REPLACEMENT
- MANHOLE TO BE LINED
- WETLANDS
- SEWER TO BE CIPP LINED
- GRAVITY MAIN
- SERVICE LATERAL
- LIMITS OF CLEARING & ACCESS
- PARCEL LINE
- RIVER/STREAM

REV.	DESCRIPTION	DRAWN	DATE
0	ISSUED FOR BIDDING	ORS	7-26-23
1	–	–	–
2	–	–	–
3	–	–	–
4	–	–	–
5	–	–	–
6	–	–	–

ENGINEER SEAL

CHRISTOPHER R. BRENDA LICENSE No. 18168 DELAWARE PROFESSIONAL ENGINEER

NEWARK DELAWARE

JMT

1 in = 100 ft

CONTRACT	23-15
AREA	4 - EAST MAIN STREET & MCKEES LANE
SHEET NO.	7 OF 22

SANITARY SEWER IMPROVEMENTS - 2023

NOTES

1. CONTRACTOR IS RESPONSIBLE FOR BYPASSING OF ALL SEWER FLOWS TO COMPLETE THE WORK.
2. LATERALS HAVE NOT BEEN SURVEYED. LOCATIONS ALONG PIPE AND DIRECTIONS HAVE BEEN APPROXIMATED.
3. CLOSE ONE-WAY SECTION OF MCKEES LANE BETWEEN KIRKWOOD HIGHWAY AND EAST CLEVELAND AVENUE WHEN CONTRACTOR TO PERFORM CIPP LINING FROM MH00883 TO MH00879 UTILIZING TA-20 OF THE DELAWARE MUTCD AS NECESSARY. PERFORM CIPP LINING FROM MH01318 TO MH01316 UTILIZING TA-33 OF THE DELAWARE MUTCD AS NECESSARY.
4. WORK ALONG EAST MAIN STREET SHALL BE COMPLETED AS NIGHT WORK. WORK WILL BE LIMITED TO BETWEEN THE HOURS OF 9:00 PM AND 6:00 AM, WITH ONLY ONE SET UP ALLOWED PER NIGHT.

REHABILITATION SCHEDULE

ASSET TYPE	ASSET ID	DIAMETER (IN)	LENGTH (LF)
SEWER MAIN	GM01980	18	712
SEWER MAIN	GM01981	18	156
SEWER MAIN	GM01983	18	170
SEWER MAIN	GM01985	18	156
SEWER MAIN	GM00056	18	143

Legend

- SEWER MANHOLE
- SEWER MANHOLE ABANDONED
- MANHOLE LID REPLACEMENT
- MANHOLE TO BE LINED
- WETLANDS
- SEWER TO BE CIPP LINED
- GRAVITY MAIN
- SERVICE LATERAL
- LIMITS OF CLEARING & ACCESS
- PARCEL LINE
- RIVER/STREAM

REV.	DESCRIPTION	DRAWN	DATE
0	ISSUED FOR BIDDING	ORS	7-26-23
1	–	–	–
2	–	–	–
3	–	–	–
4	–	–	–
5	–	–	–
6	–	–	–

ENGINEER SEAL

CHRISTOPHER R. BRENDZA LICENSE No. 18168 PROFESSIONAL ENGINEER DELAWARE

NEWARK DELAWARE

JMT

1 in = 100 ft

CONTRACT	23-15
AREA	4 - EAST MAIN STREET & MCKEES LANE
SHEET NO.	8 OF 22

NOTES

1. CONTRACTOR IS RESPONSIBLE FOR BYPASSING OF ALL SEWER FLOWS TO COMPLETE THE WORK.
2. LATERALS HAVE NOT BEEN SURVEYED. LOCATIONS ALONG PIPE AND DIRECTIONS HAVE BEEN APPROXIMATED.
3. CONTRACTOR TO PERFORM CIPP LINING FROM MH01315 TO MH01242 UTILIZING TA-27 AND TA-33 OF THE DELAWARE MUTCD AS NECESSARY.
4. WORK ALONG EAST MAIN STREET SHALL BE COMPLETED AS NIGHT WORK. WORK WILL BE LIMITED TO BETWEEN THE HOURS OF 9:00 PM AND 6:00 AM, WITH ONLY ONE SET UP ALLOWED PER NIGHT.

REHABILITATION SCHEDULE

ASSET TYPE	ASSET ID	DIAMETER (IN)	LENGTH (LF)
SEWER MAIN	GM00058	18	403
SEWER MAIN	GM00061	18	188
SEWER MAIN	GM01550	18	190
SEWER MAIN	GM02142	18	76
SEWER MAIN	GM02140	18	298

MH01314 MH01315 MH02523 MH02683 MH02522 MH01302 MH01301 MH01298 MH01297 MH01312 MH01311 MH01313 MH01310 MH01299 MH01303 MH01300 MH01243 MH01242 MH02771 MH02760 MH01334 MH02533 MH01332 MH01309 MH01331

GM00058 18", 403 LF
GM00061 18", 188 LF
GM01550 18", 190 LF
GM02142 18", 76 LF
GM02140 18", 298 LF

EAST MAIN STREET

MATCH LINE SHEET 8
MATCH LINE SHEET 10

274 E MAIN ST NEWARK DEVELOPMENT GROUP LLC
300 E MAIN ST NEWARK UNITED CHURCH
324 E MAIN ST COMMUNITY HEALTH INSURANCE
314 E MAIN ST KELWAY PLAZA SERVICE CORP
268 E MAIN ST PRIYA REALTY CORP
270 E MAIN ST NTINAS LLC
280 E MAIN ST NEWARK DEVELOPMENT GROUP LLC
256 E MAIN ST FRENG ENTERPRISES LLC
258 E MAIN ST YEE CHEUNG
14 N CHAPEL ST ST JOHN R C CHURCH
212 E MAIN ST 212 EAST DEVELOPMENT CORP
230 E MAIN ST NEWARK SHOPPING CENTER OWNER LLC
287 E MAIN ST DELAWARE NATIONAL BANK
313 E MAIN ST NEWARK HOUSING AUTHORITY
317 E MAIN ST BA FARRALL LLC
323 E MAIN ST TIPTON REAL ESTATE HOLDINGS LLC
325 E MAIN ST 325 EAST MAIN LLC
273 E MAIN ST FUNK, VANCE A IV & ASHLEY
263 E MAIN ST OREILLY, JOHN J & ELEANOR M
257 EAST MAIN STEET ASSOCIATES LLC
253 E MAIN ST THOMAS BAKERY SHOP LLC
235 E MAIN ST DAVID F FARMER TRUSTEE
249 E MAIN ST HEAVENLY LLC
209 E MAIN ST GAHUNIA LLC
221 E MAIN ST MAIN STREET COURT LLC
203 E MAIN ST TSIONAS PROPERTIES LLC
295 E MAIN ST GAHUNIA, JASBIR S
299 E MAIN ST FERRY, THOMAS B & ELIZABETH B
269 E MAIN ST MALEY, WILLIAM L & MARGARET L
TYRE AVE.

SANITARY SEWER IMPROVEMENTS - 2023

Legend

- SEWER MANHOLE
- SEWER MANHOLE ABANDONED
- MANHOLE LID REPLACEMENT
- MANHOLE TO BE LINED
- WETLANDS
- SEWER TO BE CIPP LINED
- GRAVITY MAIN
- SERVICE LATERAL
- LIMITS OF CLEARING & ACCESS
- PARCEL LINE
- RIVER/STREAM

REV.	DESCRIPTION	DRAWN	DATE
0	ISSUED FOR BIDDING	ORS	7-26-23
1	–	–	–
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ENGINEER SEAL

CHRISTOPHER R. BRENDZA LICENSE No. 18168 PROFESSIONAL ENGINEER DELAWARE

NEWARK DELAWARE

JMT

1 in = 100 ft

CONTRACT	23-15
AREA	4 - EAST MAIN STREET & MCKEES LANE
SHEET NO.	9 OF 22

REHABILITATION SCHEDULE			
SEWER MAIN	GM02140	18	298
SEWER MAIN	GM00117	8	375

NOTES

1. CONTRACTOR IS RESPONSIBLE TO WALK THE PROJECT SITE ALONG CENTER STREET AND DETERMINE WHAT TRAFFIC CONTROL WILL BE REQUIRED.
2. CONTRACTOR IS RESPONSIBLE FOR BYPASSING OF ALL SEWER FLOWS TO COMPLETE THE WORK.
3. LATERALS HAVE NOT BEEN SURVEYED. LOCATIONS ALONG PIPE AND DIRECTIONS HAVE BEEN APPROXIMATED.
4. MH01237 AND MH01236 WERE NOT SURVEYED AS PART OF THE PROJECT DESIGN. SEGMENT GM00117 LENGTH MAY VARY.
5. CONTRACTOR TO PERFORM CIPP LINING FROM MH01301 TO MH01242 UTILIZING TA-27 AND TA-33 OF THE DELAWARE MUTCD AS NECESSARY.
6. WORK ALONG EAST MAIN STREET SHALL BE COMPLETED AS NIGHT WORK. WORK WILL BE LIMITED TO BETWEEN THE HOURS OF 9:00 PM AND 6:00 AM, WITH ONLY ONE SET UP ALLOWED PER NIGHT.
7. CONTRACTOR TO REMOVE OBJECT PRIOR TO LINING.

43 CENTER ST
21 CENTER STREET ASSOCIATES LLC
40 CENTER ST
BLYTHE, DIANE L K
LINDEN STREET
MH01237
MH01238
32 CENTER ST
BURKE, DANIEL P
28 CENTER ST
ENGLISH CREEK LLC
29 CENTER STREET
DALLAM GROUP LLC
24 CENTER ST
ENGLISH CREEK LLC
17 CENTER STREET
CITY OF NEWARK
GM00117
8", 375 LF
20 CENTER ST
CITY OF NEWARK
11 CENTER ST
LISA & JAMES P
MH01239
CHOATE STREET
MH02601
14 N CHAPEL ST
ST JOHN R C CHURCH
212 E MAIN ST
212 EAST DEVELOPMENT CORP
MATCH LINE SHEET 9
110 E MAIN ST
USPS
US OF AMERICA
CENTER STREET
MH01236
124 E MAIN ST
CENTER STREET ASSOCIATES LLC
MH01242
GM02140
18", 298 LF
MH01301
MH02913
MH02602
EAST MAIN STREET
MH01240
MH02603
MH01232
MH01233
MH01235
MH01248
DEFECT,
SEE NOTE 7
209 E MAIN ST
GAHUNIA LLC
221 E MAIN ST
MAIN STREET COURT LLC
MH02604
203 E MAIN ST
TSIONAS PROPERTIES LLC
MH01243

SANITARY SEWER IMPROVEMENTS - 2023

Legend

- SEWER MANHOLE
- SEWER MANHOLE ABANDONED
- MANHOLE LID REPLACEMENT
- MANHOLE TO BE LINED
- WETLANDS
- SEWER TO BE CIPP LINED
- GRAVITY MAIN
- SERVICE LATERAL
- LIMITS OF CLEARING & ACCESS
- PARCEL LINE
- RIVER/STREAM

REV.	DESCRIPTION	DRAWN	DATE
0	ISSUED FOR BIDDING	ORS	7-26-23
1	–	–	–
2	–	–	–
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ENGINEER SEAL

CHRISTOPHER R. BRENDZA LICENSE No. 18168 PROFESSIONAL ENGINEER DELAWARE

NEWARK DELAWARE

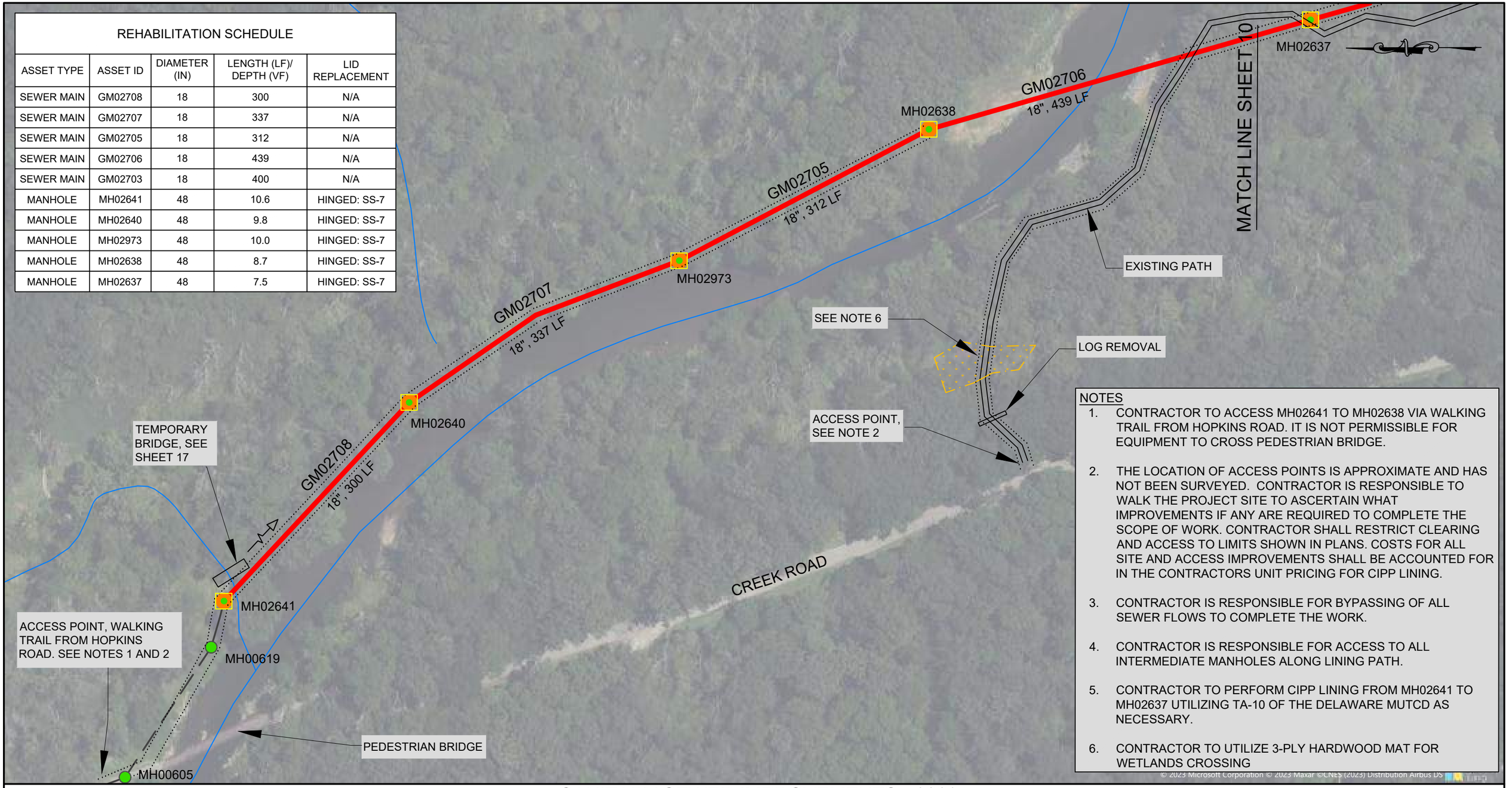
JMT

1 in = 100 ft

CONTRACT	23-15
AREA	4 - EAST MAIN STREET & MCKEES LANE
SHEET NO.	10 OF 22

REHABILITATION SCHEDULE

ASSET TYPE	ASSET ID	DIAMETER (IN)	LENGTH (LF)/ DEPTH (VF)	LID REPLACEMENT
SEWER MAIN	GM02708	18	300	N/A
SEWER MAIN	GM02707	18	337	N/A
SEWER MAIN	GM02705	18	312	N/A
SEWER MAIN	GM02706	18	439	N/A
SEWER MAIN	GM02703	18	400	N/A
MANHOLE	MH02641	48	10.6	HINGED: SS-7
MANHOLE	MH02640	48	9.8	HINGED: SS-7
MANHOLE	MH02973	48	10.0	HINGED: SS-7
MANHOLE	MH02638	48	8.7	HINGED: SS-7
MANHOLE	MH02637	48	7.5	HINGED: SS-7



NOTES

1. CONTRACTOR TO ACCESS MH02641 TO MH02638 VIA WALKING TRAIL FROM HOPKINS ROAD. IT IS NOT PERMISSIBLE FOR EQUIPMENT TO CROSS PEDESTRIAN BRIDGE.
2. THE LOCATION OF ACCESS POINTS IS APPROXIMATE AND HAS NOT BEEN SURVEYED. CONTRACTOR IS RESPONSIBLE TO WALK THE PROJECT SITE TO ASCERTAIN WHAT IMPROVEMENTS IF ANY ARE REQUIRED TO COMPLETE THE SCOPE OF WORK. CONTRACTOR SHALL RESTRICT CLEARING AND ACCESS TO LIMITS SHOWN IN PLANS. COSTS FOR ALL SITE AND ACCESS IMPROVEMENTS SHALL BE ACCOUNTED FOR IN THE CONTRACTORS UNIT PRICING FOR CIPP LINING.
3. CONTRACTOR IS RESPONSIBLE FOR BYPASSING OF ALL SEWER FLOWS TO COMPLETE THE WORK.
4. CONTRACTOR IS RESPONSIBLE FOR ACCESS TO ALL INTERMEDIATE MANHOLES ALONG LINING PATH.
5. CONTRACTOR TO PERFORM CIPP LINING FROM MH02641 TO MH02637 UTILIZING TA-10 OF THE DELAWARE MUTCD AS NECESSARY.
6. CONTRACTOR TO UTILIZE 3-PLY HARDWOOD MAT FOR WETLANDS CROSSING

SANITARY SEWER IMPROVEMENTS - 2023

Legend

- SEWER MANHOLE
- SEWER MANHOLE ABANDONED
- MANHOLE LID REPLACEMENT
- MANHOLE TO BE LINED
- WETLANDS
- SEWER TO BE CIPP LINED
- GRAVITY MAIN
- SERVICE LATERAL
- LIMITS OF CLEARING & ACCESS
- PARCEL LINE
- RIVER/STREAM

REV.	DESCRIPTION	DRAWN	DATE
0	ISSUED FOR BIDDING	ORS	7-26-23
1	–	–	–
2	–	–	–
3	–	–	–
4	–	–	–
5	–	–	–
6	–	–	–

ENGINEER SEAL

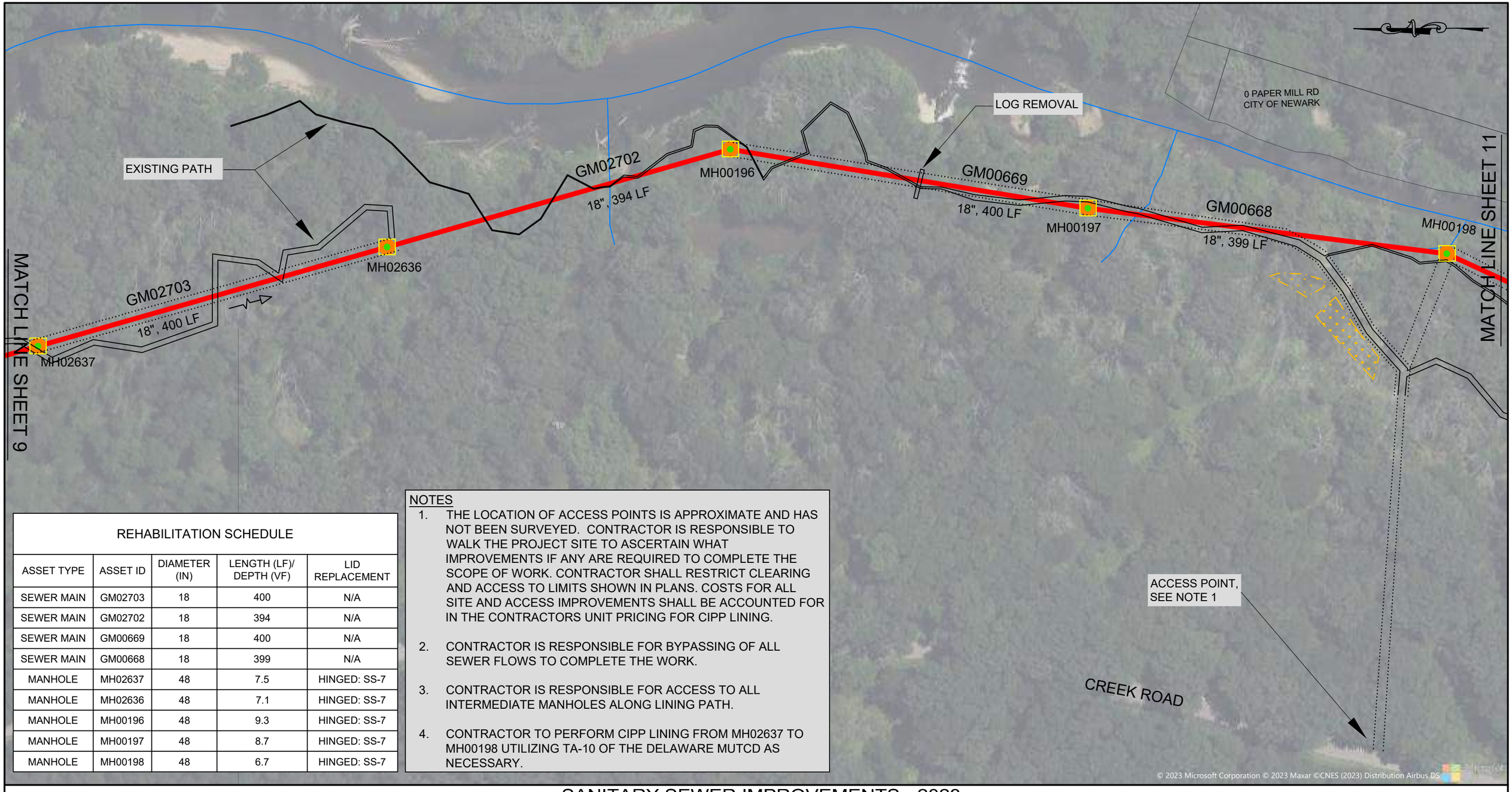
CHRISTOPHER R. BRENDZA LICENSE No. 18168 PROFESSIONAL ENGINEER DELAWARE

NEWARK DELAWARE

JMT

1 in = 100 ft

CONTRACT	23-15
AREA	5 - CREEK ROAD
SHEET NO.	11 OF 22



REHABILITATION SCHEDULE

ASSET TYPE	ASSET ID	DIAMETER (IN)	LENGTH (LF)/ DEPTH (VF)	LID REPLACEMENT
SEWER MAIN	GM02703	18	400	N/A
SEWER MAIN	GM02702	18	394	N/A
SEWER MAIN	GM00669	18	400	N/A
SEWER MAIN	GM00668	18	399	N/A
MANHOLE	MH02637	48	7.5	HINGED: SS-7
MANHOLE	MH02636	48	7.1	HINGED: SS-7
MANHOLE	MH00196	48	9.3	HINGED: SS-7
MANHOLE	MH00197	48	8.7	HINGED: SS-7
MANHOLE	MH00198	48	6.7	HINGED: SS-7

NOTES

1. THE LOCATION OF ACCESS POINTS IS APPROXIMATE AND HAS NOT BEEN SURVEYED. CONTRACTOR IS RESPONSIBLE TO WALK THE PROJECT SITE TO ASCERTAIN WHAT IMPROVEMENTS IF ANY ARE REQUIRED TO COMPLETE THE SCOPE OF WORK. CONTRACTOR SHALL RESTRICT CLEARING AND ACCESS TO LIMITS SHOWN IN PLANS. COSTS FOR ALL SITE AND ACCESS IMPROVEMENTS SHALL BE ACCOUNTED FOR IN THE CONTRACTORS UNIT PRICING FOR CIPP LINING.
2. CONTRACTOR IS RESPONSIBLE FOR BYPASSING OF ALL SEWER FLOWS TO COMPLETE THE WORK.
3. CONTRACTOR IS RESPONSIBLE FOR ACCESS TO ALL INTERMEDIATE MANHOLES ALONG LINING PATH.
4. CONTRACTOR TO PERFORM CIPP LINING FROM MH02637 TO MH00198 UTILIZING TA-10 OF THE DELAWARE MUTCD AS NECESSARY.

SANITARY SEWER IMPROVEMENTS - 2023

Legend

- SEWER MANHOLE
- SEWER MANHOLE ABANDONED
- MANHOLE LID REPLACEMENT
- MANHOLE TO BE LINED
- WETLANDS
- SEWER TO BE CIPP LINED
- GRAVITY MAIN
- SERVICE LATERAL
- LIMITS OF CLEARING & ACCESS
- PARCEL LINE
- RIVER/STREAM

REV.	DESCRIPTION	DRAWN	DATE
0	ISSUED FOR BIDDING	ORS	7-26-23
1	–	–	–
2	–	–	–
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6	–	–	–

ENGINEER SEAL

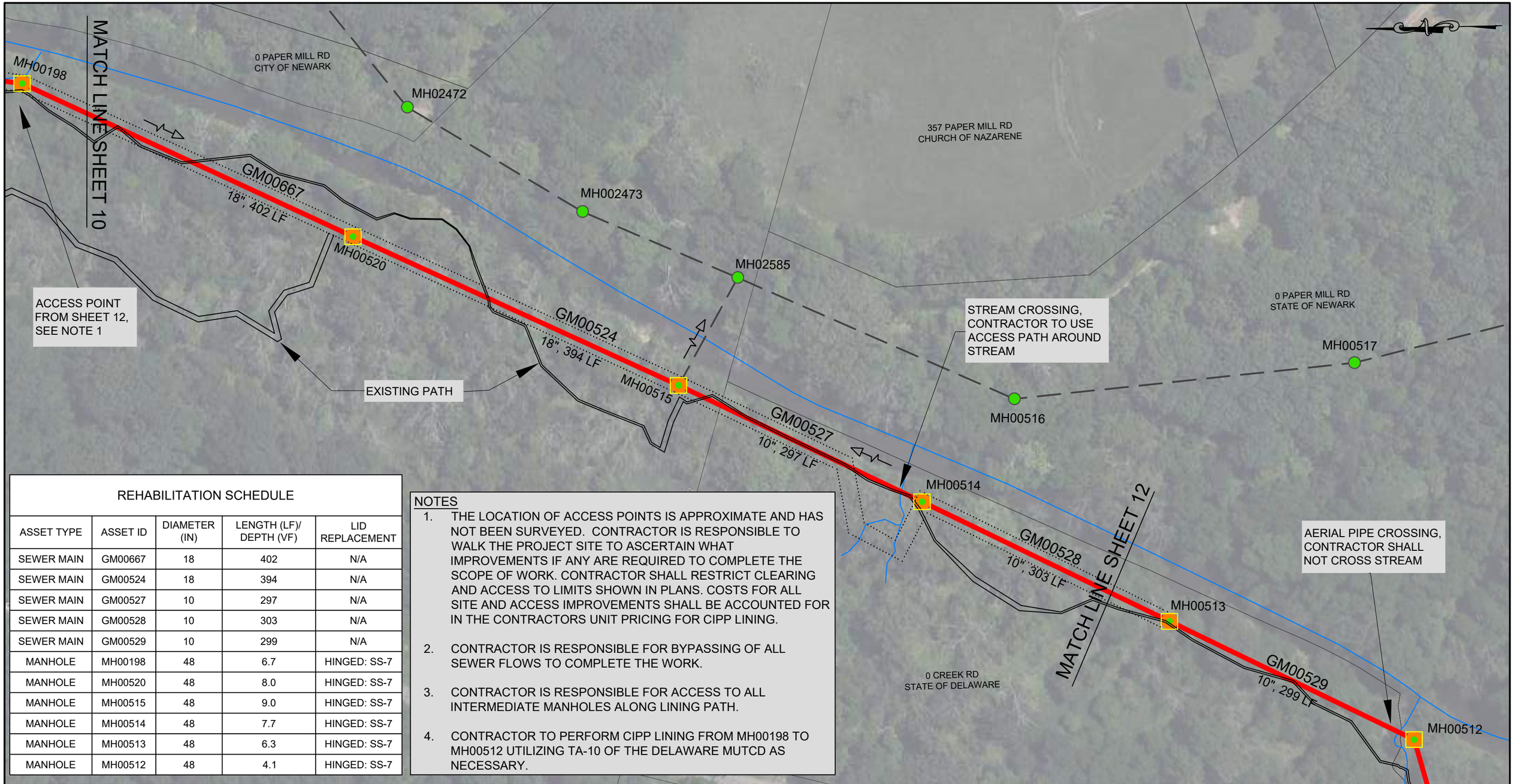
CHRISTOPHER R. BRENZA
LICENSE
No. 18168
DELAWARE
PROFESSIONAL ENGINEER

NEWARK DELAWARE

JMT

1 in = 100 ft

CONTRACT	23-15
AREA	5 - CREEK ROAD
SHEET NO.	12 OF 22



REHABILITATION SCHEDULE

ASSET TYPE	ASSET ID	DIAMETER (IN)	LENGTH (LF)/ DEPTH (VF)	LID REPLACEMENT
SEWER MAIN	GM00667	18	402	N/A
SEWER MAIN	GM00524	18	394	N/A
SEWER MAIN	GM00527	10	297	N/A
SEWER MAIN	GM00528	10	303	N/A
SEWER MAIN	GM00529	10	299	N/A
MANHOLE	MH00198	48	6.7	HINGED: SS-7
MANHOLE	MH00520	48	8.0	HINGED: SS-7
MANHOLE	MH00515	48	9.0	HINGED: SS-7
MANHOLE	MH00514	48	7.7	HINGED: SS-7
MANHOLE	MH00513	48	6.3	HINGED: SS-7
MANHOLE	MH00512	48	4.1	HINGED: SS-7

NOTES

1. THE LOCATION OF ACCESS POINTS IS APPROXIMATE AND HAS NOT BEEN SURVEYED. CONTRACTOR IS RESPONSIBLE TO WALK THE PROJECT SITE TO ASCERTAIN WHAT IMPROVEMENTS IF ANY ARE REQUIRED TO COMPLETE THE SCOPE OF WORK. CONTRACTOR SHALL RESTRICT CLEARING AND ACCESS TO LIMITS SHOWN IN PLANS. COSTS FOR ALL SITE AND ACCESS IMPROVEMENTS SHALL BE ACCOUNTED FOR IN THE CONTRACTORS UNIT PRICING FOR CIPP LINING.
2. CONTRACTOR IS RESPONSIBLE FOR BYPASSING OF ALL SEWER FLOWS TO COMPLETE THE WORK.
3. CONTRACTOR IS RESPONSIBLE FOR ACCESS TO ALL INTERMEDIATE MANHOLES ALONG LINING PATH.
4. CONTRACTOR TO PERFORM CIPP LINING FROM MH00198 TO MH00512 UTILIZING TA-10 OF THE DELAWARE MUTCD AS NECESSARY.

SANITARY SEWER IMPROVEMENTS - 2023

Legend

- SEWER MANHOLE
- SEWER MANHOLE ABANDONED
- MANHOLE LID REPLACEMENT
- MANHOLE TO BE LINED
- WETLANDS
- SEWER TO BE CIPP LINED
- GRAVITY MAIN
- SERVICE LATERAL
- LIMITS OF CLEARING & ACCESS
- PARCEL LINE
- RIVER/STREAM

REV.	DESCRIPTION	DRAWN	DATE
0	ISSUED FOR BIDDING	ORS	7-26-23
1	–	–	–
2	–	–	–
3	–	–	–
4	–	–	–
5	–	–	–
6	–	–	–

ENGINEER SEAL

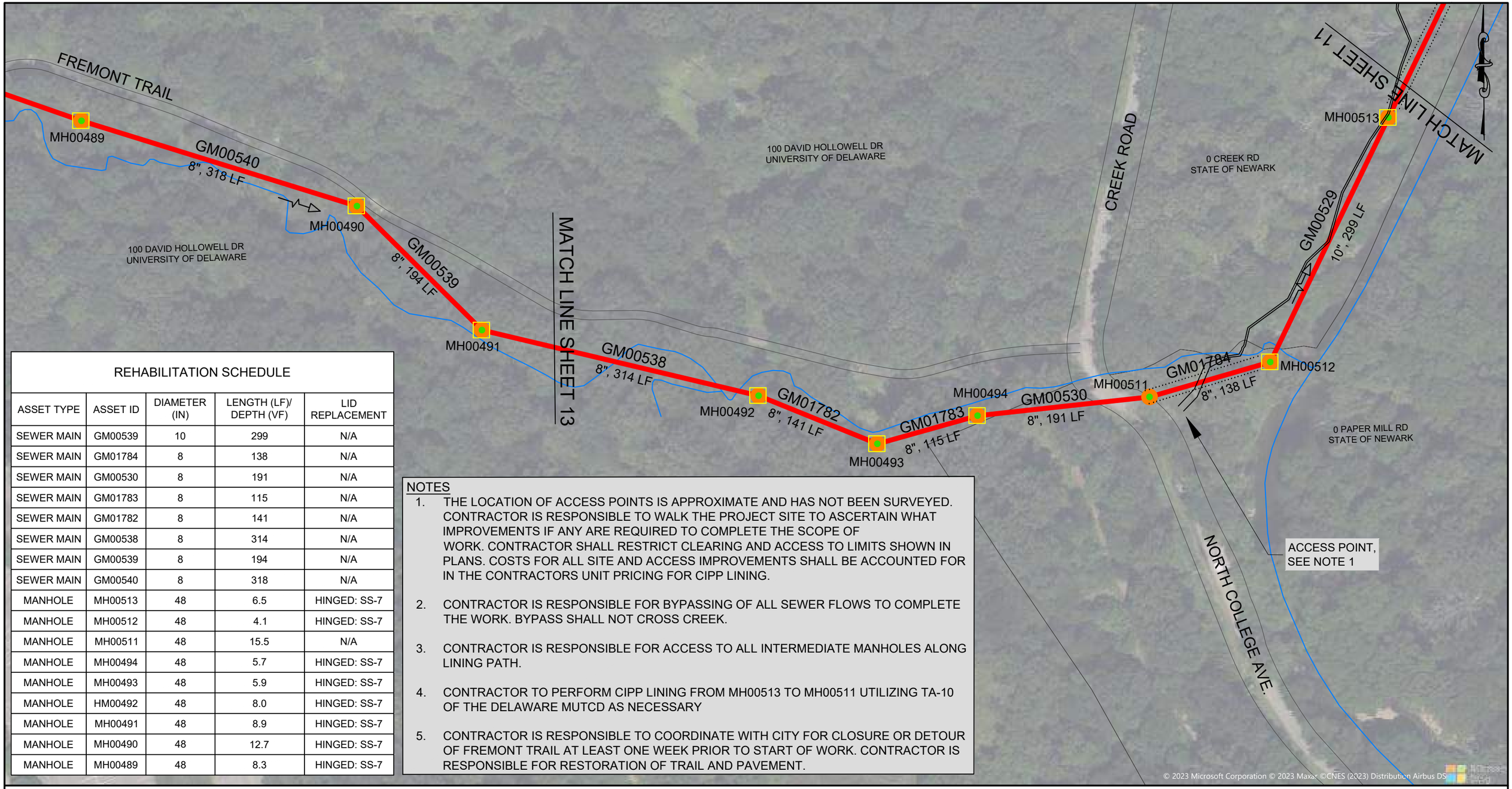
CHRISTOPHER R. BRENDZA
LICENSE
No. 18168
DELAWARE
PROFESSIONAL ENGINEER

NEWARK DELAWARE

JMT

1 in = 100 ft

CONTRACT	23-15
AREA	5 - CREEK ROAD
SHEET NO.	13 OF 22



REHABILITATION SCHEDULE

ASSET TYPE	ASSET ID	DIAMETER (IN)	LENGTH (LF)/ DEPTH (VF)	LID REPLACEMENT
SEWER MAIN	GM00539	10	299	N/A
SEWER MAIN	GM01784	8	138	N/A
SEWER MAIN	GM00530	8	191	N/A
SEWER MAIN	GM01783	8	115	N/A
SEWER MAIN	GM01782	8	141	N/A
SEWER MAIN	GM00538	8	314	N/A
SEWER MAIN	GM00539	8	194	N/A
SEWER MAIN	GM00540	8	318	N/A
MANHOLE	MH00513	48	6.5	HINGED: SS-7
MANHOLE	MH00512	48	4.1	HINGED: SS-7
MANHOLE	MH00511	48	15.5	N/A
MANHOLE	MH00494	48	5.7	HINGED: SS-7
MANHOLE	MH00493	48	5.9	HINGED: SS-7
MANHOLE	HM00492	48	8.0	HINGED: SS-7
MANHOLE	MH00491	48	8.9	HINGED: SS-7
MANHOLE	MH00490	48	12.7	HINGED: SS-7
MANHOLE	MH00489	48	8.3	HINGED: SS-7

NOTES

1. THE LOCATION OF ACCESS POINTS IS APPROXIMATE AND HAS NOT BEEN SURVEYED. CONTRACTOR IS RESPONSIBLE TO WALK THE PROJECT SITE TO ASCERTAIN WHAT IMPROVEMENTS IF ANY ARE REQUIRED TO COMPLETE THE SCOPE OF WORK. CONTRACTOR SHALL RESTRICT CLEARING AND ACCESS TO LIMITS SHOWN IN PLANS. COSTS FOR ALL SITE AND ACCESS IMPROVEMENTS SHALL BE ACCOUNTED FOR IN THE CONTRACTORS UNIT PRICING FOR CIPP LINING.
2. CONTRACTOR IS RESPONSIBLE FOR BYPASSING OF ALL SEWER FLOWS TO COMPLETE THE WORK. BYPASS SHALL NOT CROSS CREEK.
3. CONTRACTOR IS RESPONSIBLE FOR ACCESS TO ALL INTERMEDIATE MANHOLES ALONG LINING PATH.
4. CONTRACTOR TO PERFORM CIPP LINING FROM MH00513 TO MH00511 UTILIZING TA-10 OF THE DELAWARE MUTCD AS NECESSARY
5. CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH CITY FOR CLOSURE OR DETOUR OF FREMONT TRAIL AT LEAST ONE WEEK PRIOR TO START OF WORK. CONTRACTOR IS RESPONSIBLE FOR RESTORATION OF TRAIL AND PAVEMENT.

SANITARY SEWER IMPROVEMENTS - 2023

Legend

- SEWER MANHOLE
- SEWER MANHOLE ABANDONED
- MANHOLE LID REPLACEMENT
- MANHOLE TO BE LINED
- WETLANDS
- SEWER TO BE CIPP LINED
- GRAVITY MAIN
- SERVICE LATERAL
- LIMITS OF CLEARING & ACCESS
- PARCEL LINE
- RIVER/STREAM

REV.	DESCRIPTION	DRAWN	DATE
0	ISSUED FOR BIDDING	ORS	7-26-23
1	–	–	–
2	–	–	–
3	–	–	–
4	–	–	–
5	–	–	–
6	–	–	–

ENGINEER SEAL

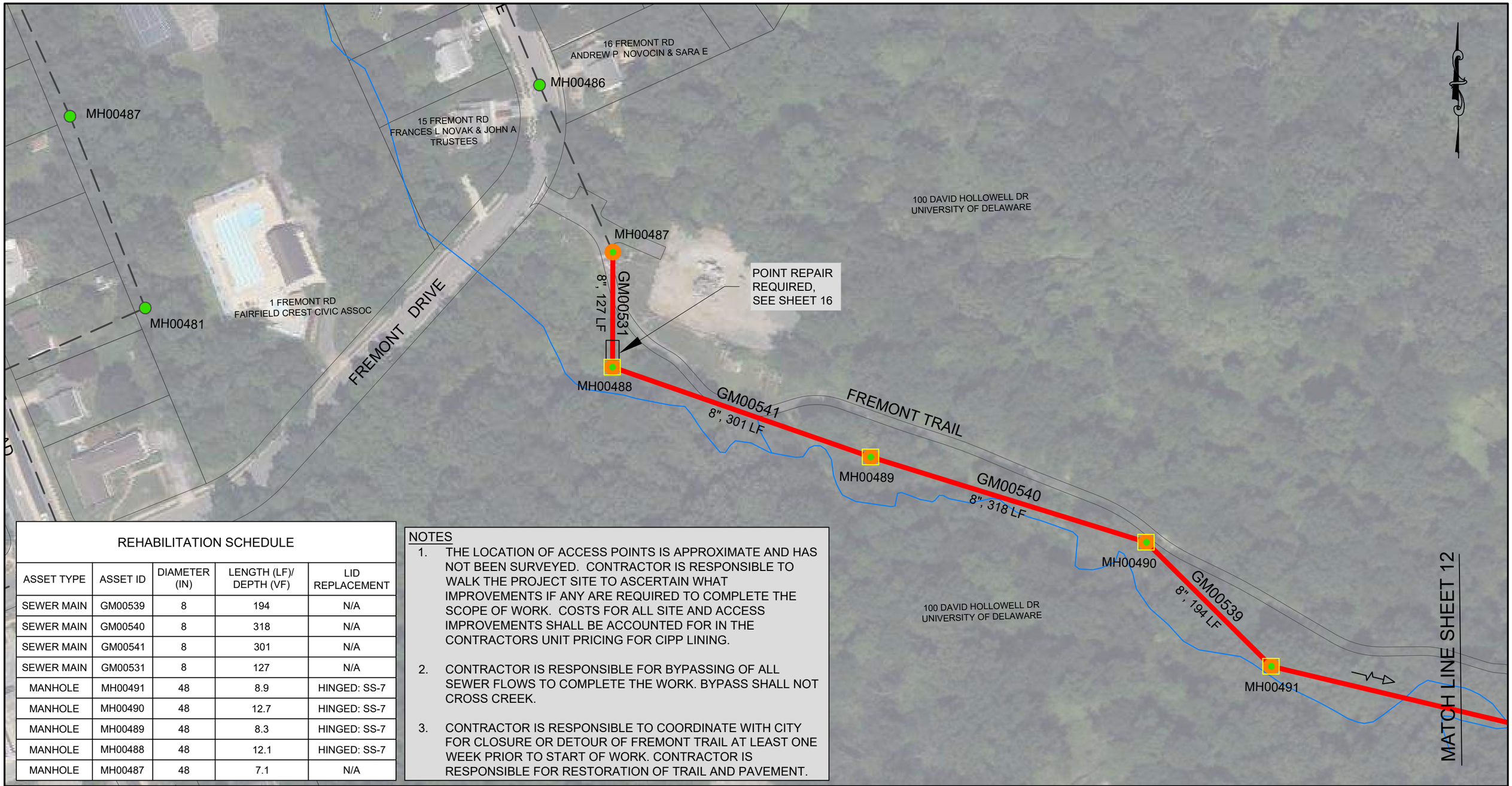
CHRISTOPHER R. BRENDA LICENSE No. 18168 DELAWARE PROFESSIONAL ENGINEER

NEWARK DELAWARE

JMT

1 in = 100 ft

CONTRACT	23-15
AREA	6 - FREMONT TRAIL
SHEET NO.	14 OF 22



REHABILITATION SCHEDULE

ASSET TYPE	ASSET ID	DIAMETER (IN)	LENGTH (LF)/ DEPTH (VF)	LID REPLACEMENT
SEWER MAIN	GM00539	8	194	N/A
SEWER MAIN	GM00540	8	318	N/A
SEWER MAIN	GM00541	8	301	N/A
SEWER MAIN	GM00531	8	127	N/A
MANHOLE	MH00491	48	8.9	HINGED: SS-7
MANHOLE	MH00490	48	12.7	HINGED: SS-7
MANHOLE	MH00489	48	8.3	HINGED: SS-7
MANHOLE	MH00488	48	12.1	HINGED: SS-7
MANHOLE	MH00487	48	7.1	N/A

NOTES

1. THE LOCATION OF ACCESS POINTS IS APPROXIMATE AND HAS NOT BEEN SURVEYED. CONTRACTOR IS RESPONSIBLE TO WALK THE PROJECT SITE TO ASCERTAIN WHAT IMPROVEMENTS IF ANY ARE REQUIRED TO COMPLETE THE SCOPE OF WORK. COSTS FOR ALL SITE AND ACCESS IMPROVEMENTS SHALL BE ACCOUNTED FOR IN THE CONTRACTORS UNIT PRICING FOR CIPP LINING.
2. CONTRACTOR IS RESPONSIBLE FOR BYPASSING OF ALL SEWER FLOWS TO COMPLETE THE WORK. BYPASS SHALL NOT CROSS CREEK.
3. CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH CITY FOR CLOSURE OR DETOUR OF FREMONT TRAIL AT LEAST ONE WEEK PRIOR TO START OF WORK. CONTRACTOR IS RESPONSIBLE FOR RESTORATION OF TRAIL AND PAVEMENT.

SANITARY SEWER IMPROVEMENTS - 2023

Legend

- SEWER MANHOLE
- SEWER MANHOLE ABANDONED
- MANHOLE LID REPLACEMENT
- MANHOLE TO BE LINED
- WETLANDS
- SEWER TO BE CIPP LINED
- GRAVITY MAIN
- SERVICE LATERAL
- LIMITS OF CLEARING & ACCESS
- PARCEL LINE
- RIVER/STREAM

REV.	DESCRIPTION	DRAWN	DATE
0	ISSUED FOR BIDDING	ORS	7-26-23
1	–	–	–
2	–	–	–
3	–	–	–
4	–	–	–
5	–	–	–
6	–	–	–

ENGINEER SEAL

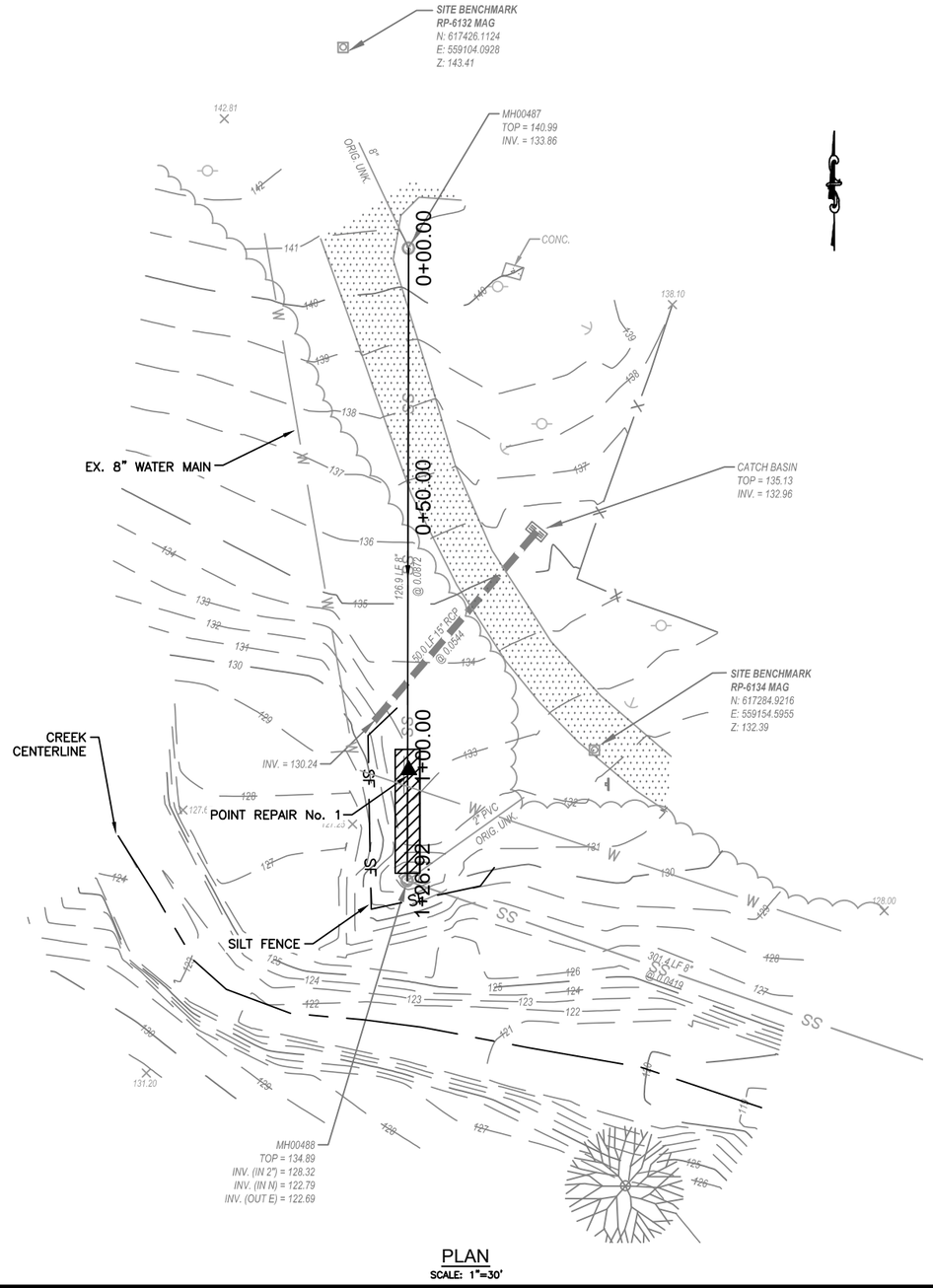
CHRISTOPHER R. BRENDZA
LICENSE
No. 18168
DELAWARE
PROFESSIONAL ENGINEER

NEWARK DELAWARE

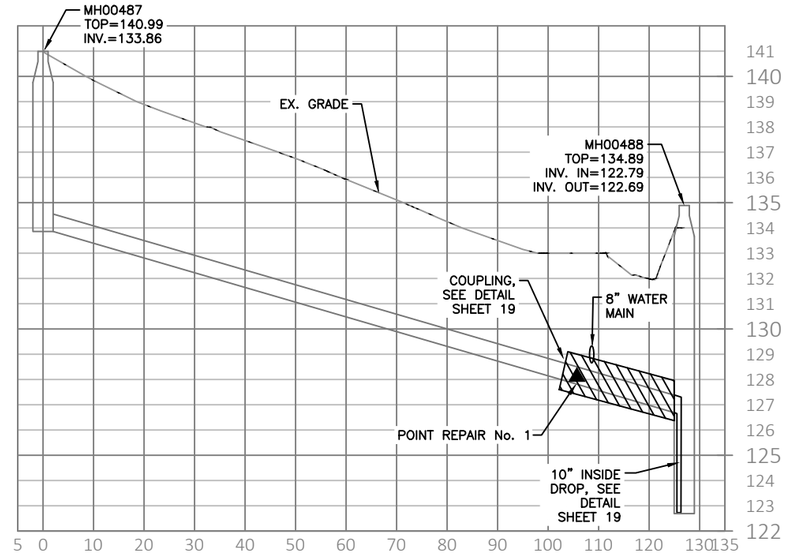
JMT

1 in = 100 ft

CONTRACT	23-15
AREA	6 - FREMONT TRAIL
SHEET NO.	15 OF 22



PLAN
SCALE: 1"=30'



FREMONT TRAIL POINT REPAIR

PROFILE
SCALE HORIZONTAL: 1"=30'
SCALE VERTICAL: 1"=6'

LEGEND

- POINT REPAIR LOCATION
- POINT REPAIR AREA

SHEET NOTES

1. DRAWING PLANS AND PROFILES WERE DEVELOPED USING SURVEY DATA, INSPECTION DATA, EXISTING SEWER CONTRACT DRAWINGS AND GIS MAPPING SUPPLIED BY THE CITY OF NEWARK, DELAWARE. PLANS AND PROFILES ARE APPROXIMATE AND MAY DIFFER FROM ACTUAL FIELD CONDITIONS.
2. LOCATION OF 8" WATER MAIN HAS NOT BEEN SURVEYED. DEPTH SHOWN IS AN APPROXIMATION.
3. FOR TYPICAL EROSION AND SEDIMENT CONTROL NOTES REFER TO SHEETS 21 AND 22.
4. THE FLOW ESTIMATES PROVIDED ARE APPROXIMATE FLOWS. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ADEQUATE BYPASSING OF SEWER SEGMENTS TO COMPLETE WORK.
5. CONTRACTOR IS RESPONSIBLE FOR RESTORATION OF DISTURBED GRASS ALONG PRIVATE PROPERTY. CONTRACTOR SHALL KEEP RESTORATION AREA TO A MINIMUM.
6. CONTRACTOR TO NOTIFY SURROUNDING PROPERTY OWNERS OF DISRUPTIONS THAT MIGHT RESULT FROM CONTRACTOR'S WORK.
7. CONTRACTOR IS RESPONSIBLE FOR PEDESTRIAN DETOURS WHEN PROPOSED WORK RESTRICTS ACCESS TO EXISTING SIDEWALKS AND CROSSWALKS.
8. CONTRACTOR SHALL TAKE EVERY PRECAUTION TO ENSURE THAT NO DAMAGE OCCURS TO PEDESTRIAN PATH. ANY DAMAGE TO PATH WILL BE SOLELY THE CONTRACTOR'S RESPONSIBILITY.
9. CONTRACTOR SHALL PERFORM CCTV INSPECTION POST POINT REPAIR BEFORE BEGINNING CIPP LINING.

SANITARY SEWER PIPE REHABILITATION SCHEDULE

POINT REPAIR NO.	BID ITEM NO.	U/S MH	D/S MH	REPAIR LOCATION FROM U/S MH (±FT.)	APPROX. REPAIR LENGTH (FT.)	SEGMENT LENGTH (FT.)	APPROX. DEPTH (FT.)	PIPE SIZE (IN.)	PACP CODES / COMMENTS	EX. PIPE MATERIAL	REPAIR PIPE MATERIAL	RESTORATION
1	6-2	MH00487	MH00488	105	25	127	5	8	MISCELLANEOUS WATER LEVEL SAG 80%, SURFACE MISSING WALL	VCP	PVC SDR-26	SEED & STRAW

EXISTING BENCHMARKS

BENCHMARK	NORTHING	EASTING	ELEVATION
RP-6132 MAG	617426.1124	559104.0928	143.41
RP-6134 MAG	617284.9216	559154.5955	132.39

BY-PASS PUMPING FLOWS

MANHOLE ID	FLOW (MGD)
MH00488	0.25

GRAPHIC SCALE: 1"=6'
0 3 6 12 18

GRAPHIC SCALE: 1"=30'
0 15 30 60 90

MISS UTILITY OF DELMARVA

BEFORE YOU DIG CALL
1-800-282-8555 (in Del.)
1-800-441-8355 (Md., Va.)
PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

REV.	DESCRIPTION	DRAWN	DATE
0	ISSUED FOR BIDDING	ORS	7-26-23
1	–	–	–
2	–	–	–
3	–	–	–
4	–	–	–
5	–	–	–
6	–	–	–

ENGINEER SEAL
CHRISTOPHER R. BRENDZA
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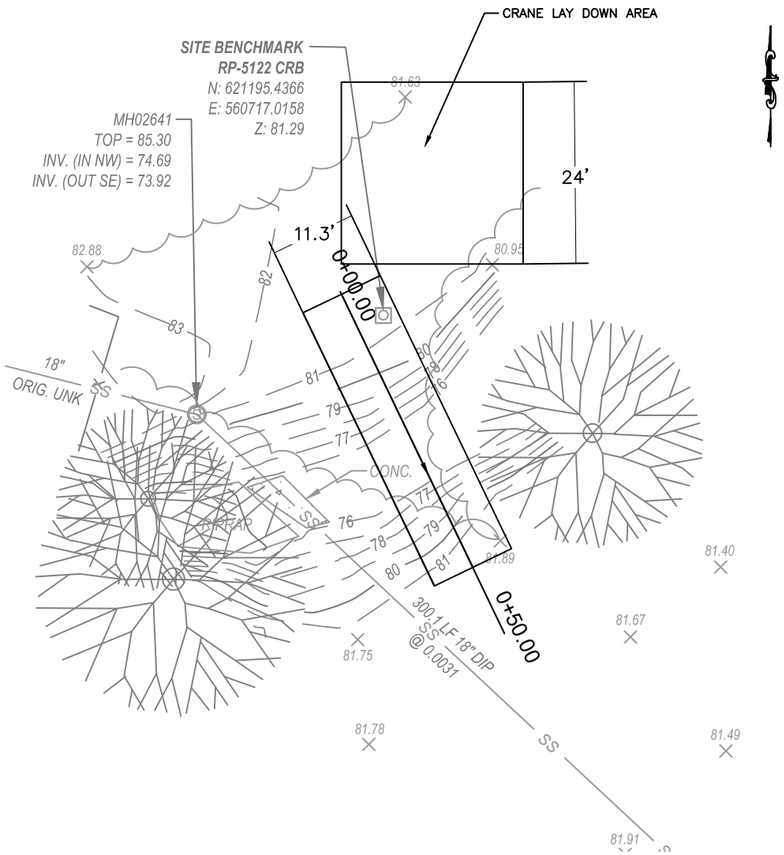
No. 18168
DELAWARE
PROFESSIONAL ENGINEER

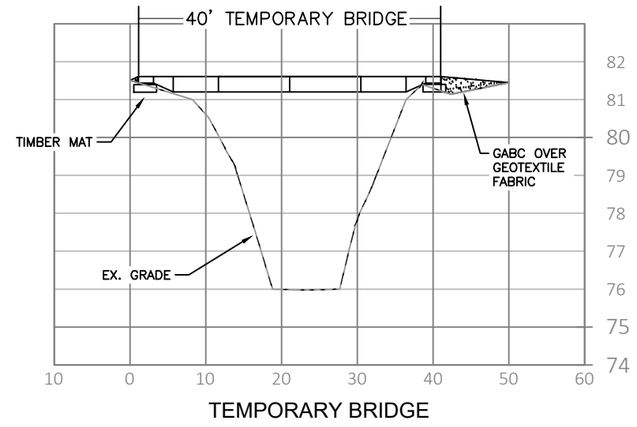
NEWARK DELAWARE

JMT

CONTRACT	23-15
AREA	FREMONT TRAIL POINT REPAIR
SHEET NO.	16 OF 22



PLAN
SCALE: 1"=20'



TEMPORARY BRIDGE

PROFILE
SCALE HORIZONTAL: 1"=20'
SCALE VERTICAL: 1"=4'

SHEET NOTES

1. TEMPORARY BRIDGE SHOWN IS FOR ILLUSTRATIVE PURPOSED ONLY. CONTRACTOR IS RESPONSIBLE TO SIZE BRIDGE, SUPPORTS, AND APPROACHES. CONTRACTOR SHALL PROVIDE BRIDGE DESIGN SUBMITTAL. DESIGN SHALL BE SIGNED AND SEALED BY ENGINEER LICENSED IN THE STATE OF DELAWARE.
2. DRAWING PLANS AND PROFILES WERE DEVELOPED USING SURVEY DATA, INSPECTION DATA, EXISTING SEWER CONTRACT DRAWINGS AND GIS MAPPING SUPPLIED BY THE CITY OF NEWARK, DELAWARE. PLANS AND PROFILES ARE APPROXIMATE AND MAY DIFFER FROM ACTUAL FIELD CONDITIONS. CONTRACTOR TO FIELD VERIFY ALL INFO SHOWN ON CROSS SECTION.
3. FOR TYPICAL EROSION AND SEDIMENT CONTROL NOTES REFER TO SHEETS 21 AND 22.
4. THE FLOW ESTIMATES PROVIDED ARE APPROXIMATE FLOWS. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ADEQUATE BYPASSING OF SEWER SEGMENTS TO COMPLETE WORK.
5. CONTRACTOR IS RESPONSIBLE FOR RESTORATION OF DISTURBED GRASS ALONG PRIVATE PROPERTY. CONTRACTOR SHALL KEEP RESTORATION AREA TO A MINIMUM.
6. CONTRACTOR TO NOTIFY SURROUNDING PROPERTY OWNERS OF DISRUPTIONS THAT MIGHT RESULT FROM CONTRACTOR'S WORK.
7. CONTRACTOR IS RESPONSIBLE FOR PEDESTRIAN DETOURS WHEN PROPOSED WORK RESTRICTS ACCESS TO EXISTING SIDEWALKS AND CROSSWALKS.

EXISTING BENCHMARKS

BENCHMARK	NORTHING	EASTING	ELEVATION
RP-5121 NAIL	621245.1588	560517.7075	91.94
RP-5122 CRB	621195.4366	560717.0158	81.29

0 2 4 8 12
GRAPHIC SCALE: 1"=4'

0 10 20 40 60
GRAPHIC SCALE: 1"=20'

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REV.	DESCRIPTION	DRAWN	DATE
0	ISSUED FOR BIDDING	ORS	7-26-23
1	–	–	–
2	–	–	–
3	–	–	–
4	–	–	–
5	–	–	–
6	–	–	–

ENGINEER SEAL
CHRISTOPHER R. BRENDZA
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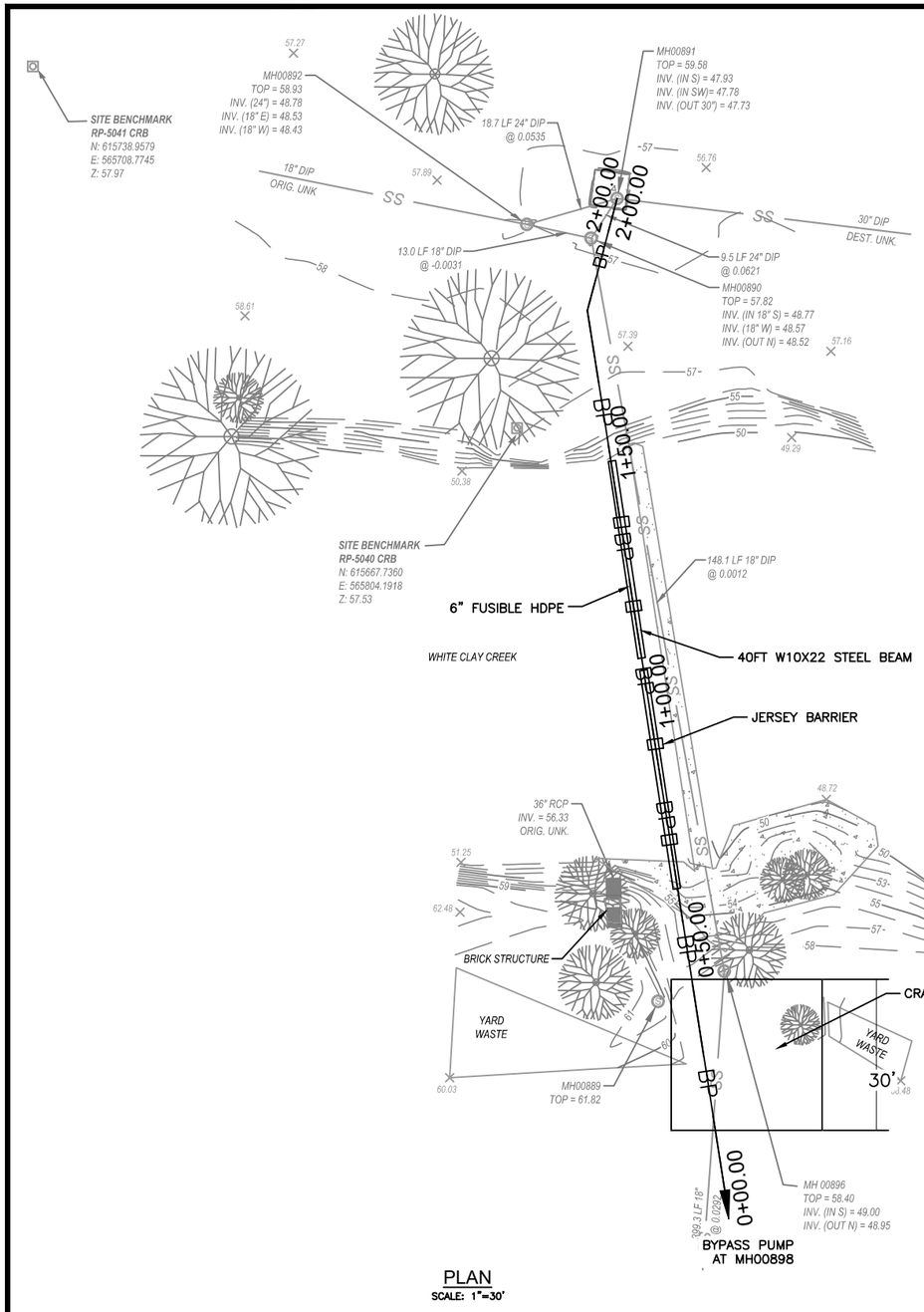
PROFESSIONAL ENGINEER

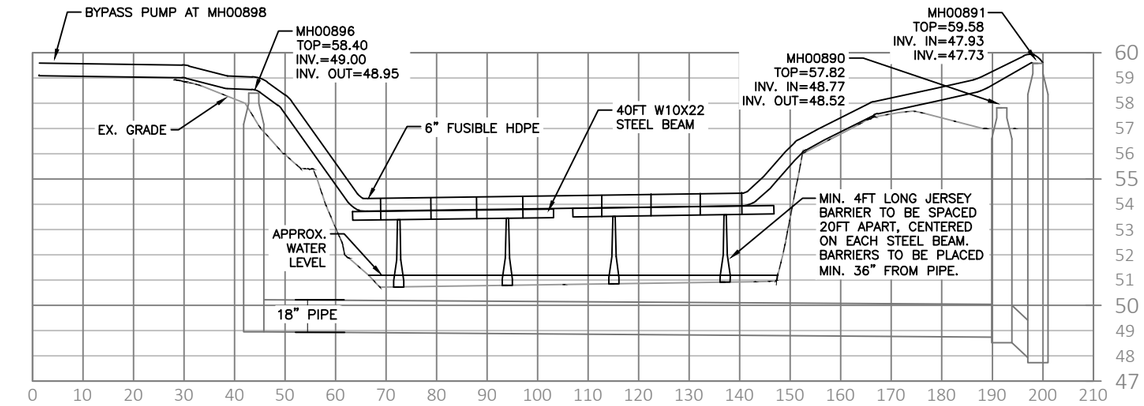
NEWARK DELAWARE

JMT

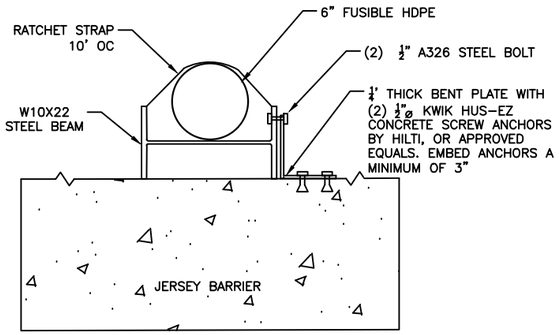
CONTRACT	23-15
AREA	TEMPORARY ACCESS BRIDGE
SHEET NO.	17 OF 22



PLAN
SCALE: 1"=30'



WHITE CLAY CREEK BYPASS
PROFILE
SCALE HORIZONTAL: 1"=30'
SCALE VERTICAL: 1"=6'



CROSS SECTION
SCALE: 1"=1'

BY-PASS PUMPING FLOWS

MANHOLE ID	FLOW (MGD)
MH00898	1.00

EXISTING BENCHMARKS

BENCHMARK	NORTHING	EASTING	ELEVATION
RP-5040 CRB	615667.7360	565804.1918	57.53
RP-5041 CRB	615738.9579	565708.7745	57.97

0 0.5 1 2 3
GRAPHIC SCALE: 1"=1'

0 15 30 60 90
GRAPHIC SCALE: 1"=30'

SHEET NOTES

1. DRAWING PLANS AND PROFILES WERE DEVELOPED USING SURVEY DATA, INSPECTION DATA, EXISTING SEWER CONTRACT DRAWINGS AND GIS MAPPING SUPPLIED BY THE CITY OF NEWARK, DELAWARE. PLANS AND PROFILES ARE APPROXIMATE AND MAY DIFFER FROM ACTUAL FIELD CONDITIONS. CONTRACTOR TO FIELD VERIFY ALL INFO SHOWN ON CROSS SECTION.
2. FOR TYPICAL EROSION AND SEDIMENT CONTROL NOTES REFER TO SHEETS 19 AND 20.
3. THE FLOW ESTIMATES PROVIDED ARE APPROXIMATE FLOWS. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ADEQUATE BYPASSING OF SEWER SEGMENTS TO COMPLETE WORK.
4. CONTRACTOR IS RESPONSIBLE FOR CLEARING AND ACCESS IMPROVEMENTS AS NECESSARY.
5. CONTRACTOR IS RESPONSIBLE FOR RESTORATION OF DISTURBED GRASS ALONG PRIVATE PROPERTY. CONTRACTOR SHALL KEEP RESTORATION AREA TO A MINIMUM.
6. CONTRACTOR TO NOTIFY SURROUNDING PROPERTY OWNERS OF DISRUPTIONS THAT MIGHT RESULT FROM CONTRACTOR'S WORK.
7. CONTRACTOR IS RESPONSIBLE FOR SCHEDULING CONSTRUCTION SUCH THAT NO MAJOR RAIN EVENTS ARE FORECASTED AT LEAST TWO DAYS PRIOR TO START OF OR DURING WORK.
8. THE CONTRACTOR SHALL REFER TO SECTION 20004 OF THE CONTRACT DOCUMENTS FOR ALL TEMPORARY BYPASS PUMPING REQUIREMENTS.
9. SEWAGE FLOW SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. AT NO TIME SHALL IT BE PERMITTED FOR SEWAGE TO BE DISCHARGED ONTO THE GROUND OR INTO ANY STREAMS.
10. BYPASS PUMP FUEL TANKS SHALL BE EQUIPPED WITH OVERFLOW PREVENTION AND CONTAINMENT MEASURES, INCLUDING RAIN PROTECTION.
11. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE A 24-HR EMERGENCY CONTACT NAME AND PHONE NUMBER.
12. CONTRACTOR SHALL SUBMIT TO THE ENGINEER OF RECORD A PROPOSED BYPASS PUMPING PLAN AND SCHEDULE. THE LOCATION OF BYPASS PUMPING EQUIPMENT MUST BE APPROVED IN ADVANCE BY CITY OF NEWARK AND ENGINEER OF RECORD.
13. THE CONTRACTOR SHALL FURNISH AND INSTALL TEMPORARY PUMPS, SUCTION AND DISCHARGE PIPING, PLUGS AND APPURTENANCES TO DIVERT THE FLOW OF SEWAGE AROUND THE PIPE SECTION AS REQUIRED HERIEN AND IN ACCORDANCE WITH SECTION 20004 OF THE CONTRACT DOCUMENTS. THE BYPASS PUMPING SYSTEM SHALL BE OF SUFFICIENT CAPACITY TO TRANSPORT THE DESIGN FLOW NOTED IN THE CONTRACT DRAWINGS. THE CONTRACTOR WILL BE RESPONSIBLE FOR FURNISHING THE NECESSARY LABOR AND SUPERVISION TO SET UP AND OPERATE THE BYPASS PUMPING SYSTEM. STATIONARY EQUIPMENT (PUMPS, COMPRESSORS, GENERATORS, ETC.) SHALL BE SILENCED WITH EXHAUST SILENCERS AND INSULATED ENCLOSURES.
14. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING STANDARDS AND MATERIAL PROPERTIES, UNLESS OTHERWISE NOTED:
    ROLLED SHAPES: ASTM A992, GRADE 50, HOT-DIPPED GALVANIZED
    PLATES, ANGLES, CHANNELS: ASTM A36, HOT-DIPPED GALVANIZED
    BOLTS: ASTM A325 OR A490, HOT-DIPPED GALVANIZED
15. FABRICATE STEEL IN ACCORDANCE WITH THE LATEST EDITION OF THE AISC MANUAL OF STEEL CONSTRUCTION INCLUDING SUPPLEMENTS. FABRICATORS SHALL BE LICENSED BY THE GOVERNING AUTHORITY.
16. INSTALL BEAMS SO THAT ANY NATURAL CAMBER IS UPWARD.
17. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO SECURE STEEL AGAINST DISPLACEMENT DURING ERECTION AND TO MAINTAIN IT AGAINST DISPLACEMENT UNTIL ALL STEEL INSTALLATION IS COMPLETED.
18. ALL BOLTS SHALL BE SNUG TIGHT UNLESS OTHERWISE NOTED.
19. ANCHORS TO BE AS MANUFACTURED BY HILTI. ALTERNATE ANCHORS WILL BE APPROVED IF THEY MEET OR EXCEED THE ANCHORS INDICATED.
20. INSTALL ANCHORS TO MEET THE REQUIREMENTS INDICATED IN THE DRAWINGS, AND THE MANUFACTURER'S RECOMMENDATIONS AS INCLUDED IN THE ANCHOR PACKAGING.
21. ANCHOR CAPACITY IS DEPENDANT UPON SPACING BETWEEN ADJACENT ANCHORS AND THE PROXIMITY OF ANCHORS TO EDGE OF CONCRETE. INSTALL ANCHORS IN ACCORDANCE WITH SPACING AND EDGE CLEARANCE INDICATED BY MANUFACTURER.

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0	ISSUED FOR BIDDING	ORS	7-26-23
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6	–	–	–

ENGINEER SEAL
CHRISTOPHER R. BRENDZA
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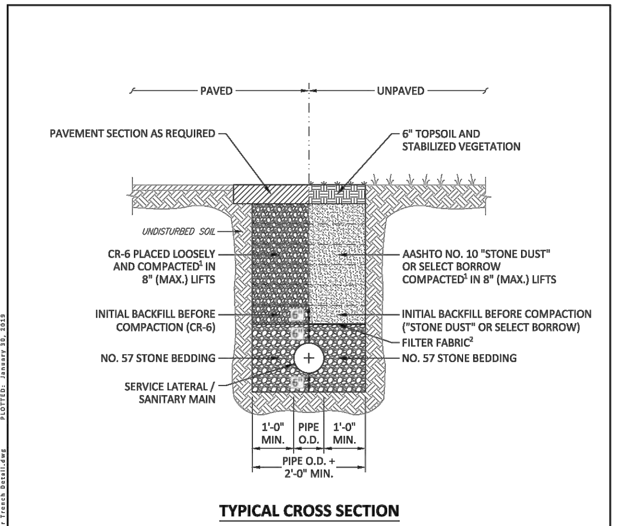
PROFESSIONAL ENGINEER

NEWARK DELAWARE
JMT

CONTRACT	23-15
AREA	WHITE CLAY CREEK BYPASS
SHEET NO.	18 OF 22



TYPICAL CROSS SECTION

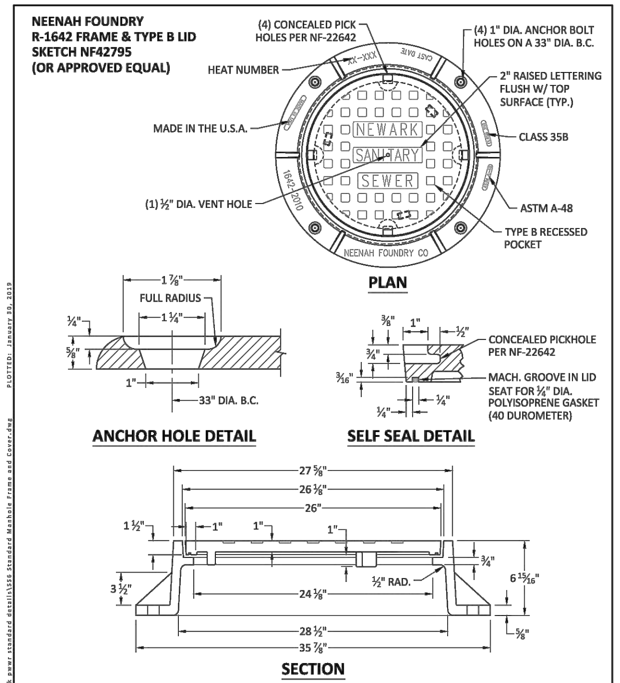
NOTES:

1. COMPACTION TO BE ACHIEVED USING MECHANICAL TAMPER OF VIBRATORY COMPACTOR.
2. FILTER FABRIC SHALL BE MIRAFI 140N OR APPROVED EQUAL.
3. FOR PAVED AREAS, THE PAVEMENT SECTION REQUIRED IS DETERMINED BY THE TYPE OF ROAD AND WHETHER THE TRENCH IS LONGITUDINAL OR PERPENDICULAR TO THE ROAD. CONTRACTOR TO VERIFY EXISTING PAVEMENT CROSS SECTION.
4. FOR UNPAVED AREAS, VEGETATION SHALL BE RESTORED TO EXISTING CONDITIONS UNLESS OTHERWISE DIRECTED.

CITY OF NEWARK
PUBLIC WORKS AND WATER RESOURCES DEPARTMENT
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711
(302) 366-7000
www.newarkde.gov
@CityofNewarkDE

SANITARY SEWER TRENCH DETAIL

DATE:	JANUARY 2019
SCALE:	NOT TO SCALE
DRAWN BY:	MWF
APPROVED BY:	EJR
SHEET:	SS1

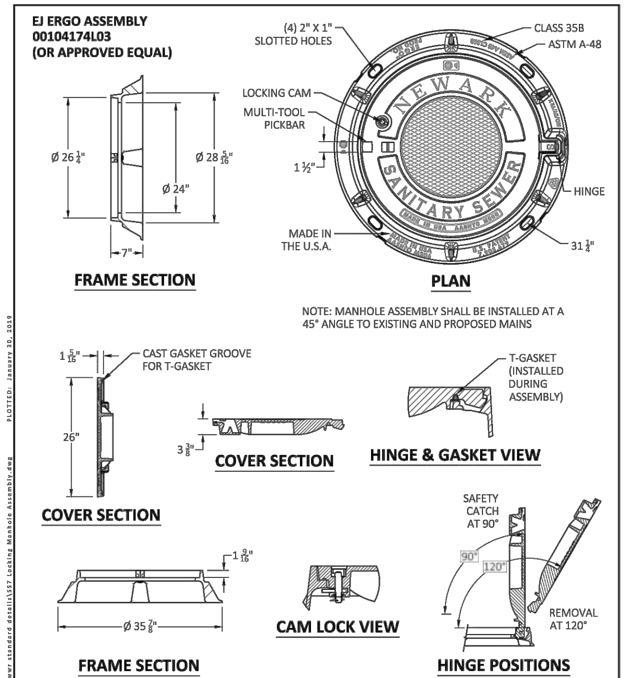


LIDS SHALL BE REPLACED AT SAME ELEVATION, CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING LIDS TO MATCH SURFACE IN PAVED AREA.

CITY OF NEWARK
PUBLIC WORKS AND WATER RESOURCES DEPARTMENT
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711
(302) 366-7000
www.newarkde.gov
@CityofNewarkDE

STANDARD MANHOLE FRAME AND COVER

DATE:	AUGUST 2018
SCALE:	NOT TO SCALE
DRAWN BY:	MWF
APPROVED BY:	EJR
SHEET:	SS6



LIDS SHALL BE REPLACED AT SAME ELEVATION, CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING LIDS TO MATCH SURFACE IN PAVED AREA.

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220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711
(302) 366-7000
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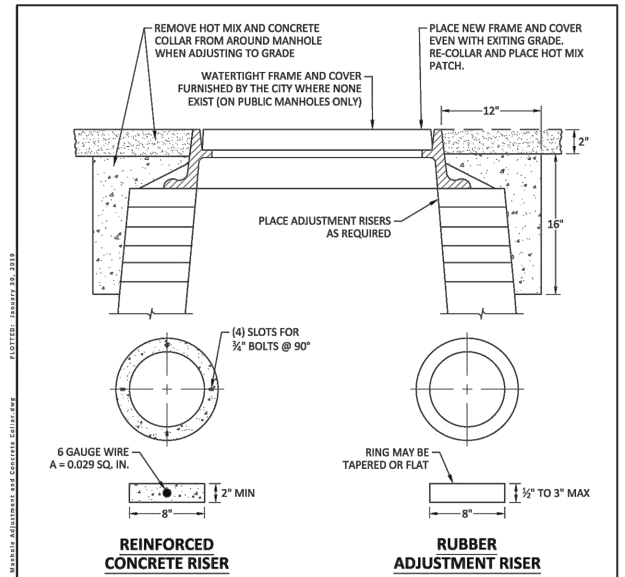
@CityofNewarkDE

LOCKING MANHOLE ASSEMBLY

DATE:	AUGUST 2018
SCALE:	NOT TO SCALE
DRAWN BY:	MWF
APPROVED BY:	EJR
SHEET:	SS7



NOTES:

1. DESIGN MEETS REQUIREMENTS OF A.S.T.M. STANDARD C-478.
2. APPROXIMATE WEIGHT OF ONE REINFORCED CONCRETE RISER:
   24"Ø - 140 LBS.
   30"Ø - 165 LBS.

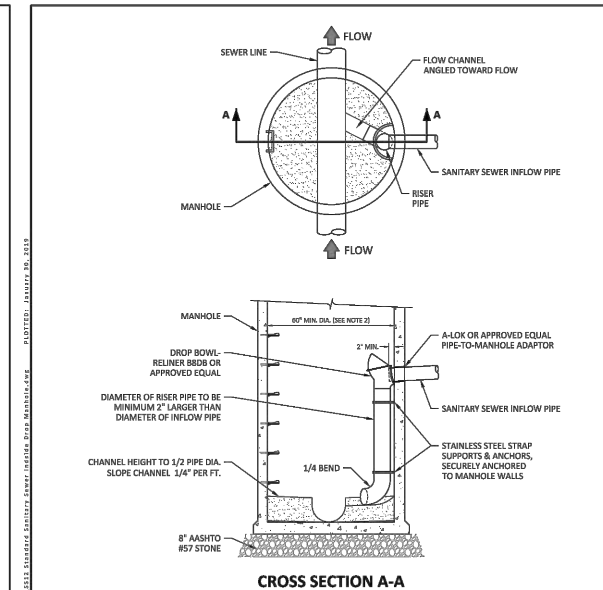
NOTES:

1. USE GNR INFRA-RISER RUBBER GRADE RINGS AS DISTRIBUTED BY EAST JORDAN IRON WORKS, INC. EAST JORDAN, MICHIGAN OR APPROVED EQUAL.
2. SEAL EACH JOINT BETWEEN FRAME, RUBBER GRADE RING AND PRECAST GRADE RINGS USING SEALANT CONFORMING TO ASTM C920 AND SUITABLE FOR USE WITH MASONRY, RUBBER AND METAL MATERIALS. APPLY IN CONTINUOUS 1/2 INCH BEADS.

CITY OF NEWARK
PUBLIC WORKS AND WATER RESOURCES DEPARTMENT
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711
(302) 366-7000
www.newarkde.gov
@CityofNewarkDE

MANHOLE ADJUSTMENT AND CONCRETE COLLAR

DATE:	DECEMBER 2018
SCALE:	NOT TO SCALE
DRAWN BY:	MWF
APPROVED BY:	EJR
SHEET:	SS8



NOTES:

1. IF VERTICAL DISTANCE BETWEEN INVERT OF PROPOSED SANITARY SEWER INFLOW PIPE AND INVERT OF EXISTING CHANNEL IS 2' OR LESS, RECONSTRUCT EXISTING CHANNEL/TABLE TO MEET INVERT OF PROPOSED INFLOW PIPE.
2. THE MINIMUM DIAMETER OF AN INSIDE DROP MANHOLE SHALL BE 60". IF THE DIAMETER OF THE PROPOSED SANITARY SEWER INFLOW PIPE IS GREATER THAN 8" OR MULTIPLE DROP CONNECTIONS ARE PROPOSED, MANHOLE SHALL BE 72" IN DIAMETER. WHEN CONNECTING TO AN EXISTING MANHOLE LESS THAN 60", THE MANHOLE SHALL BE REPLACED.

CITY OF NEWARK
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220 SOUTH MAIN STREET
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(302) 366-7000
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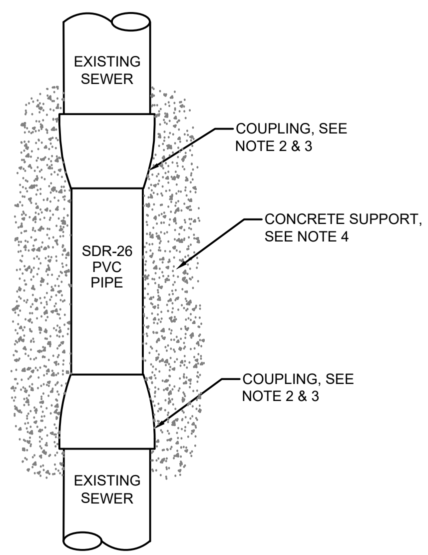
STANDARD SANITARY SEWER INDSIDE DROP MANHOLE

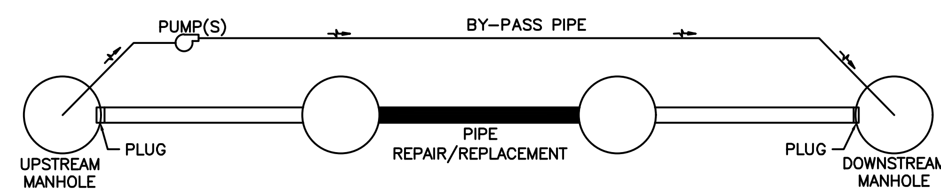
DATE:	AUGUST 2018
SCALE:	NOT TO SCALE
DRAWN BY:	MWF
APPROVED BY:	EJR
SHEET:	SS12



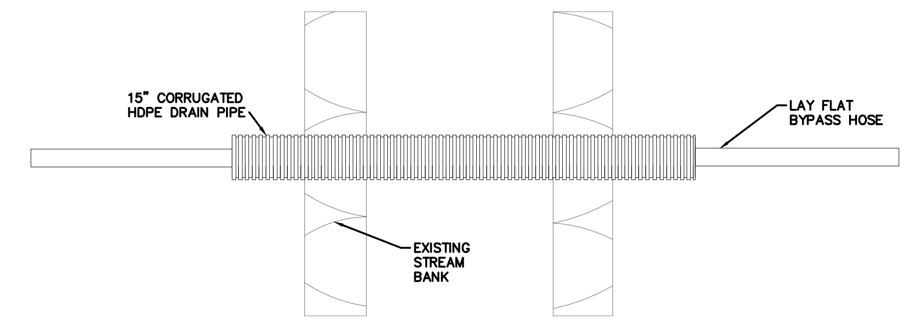
NOTES:

1. CONTRACTOR SHALL CONNECT COUPLINGS AND REPAIR PIPE TO EXISTING MAIN WHERE STRUCTURALLY SOUND.
2. CONTRACTOR SHALL USE GASKETED PVC COUPLINGS TO CONNECT EXISTING PVC MAIN TO REPAIR PIPE.
3. CONTRACTOR SHALL USE FERNCO SHIELDED PIPE COUPLING OR APPROVED EQUAL WHEN MATERIAL OF EXISTING MAIN IS DIFFERENT THAN REPAIR PIPE.
4. CONCRETE SUPPORT TO BE A MINIMUM OF 8 INCHES DEEP AND EXTEND 6 INCHES PAST THE SPRING LINES OF THE INSTALLED PIPE.

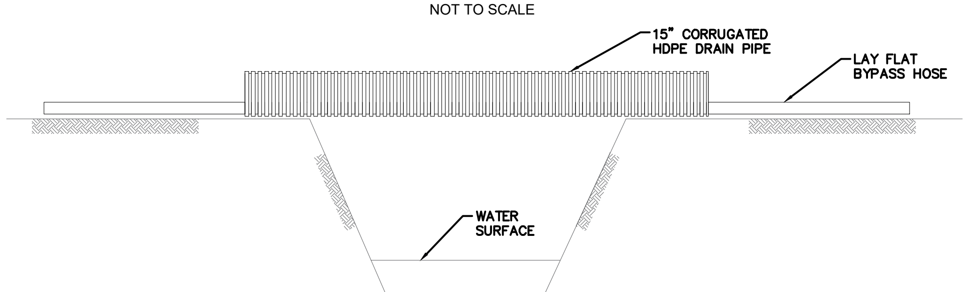
MAINLINE POINT REPAIR
NOT TO SCALE



BY-PASS PUMPING DETAIL
NOT TO SCALE



BYPASS STREAM CROSSING-PLAN
NOT TO SCALE



BYPASS STREAM CROSSING-PROFILE
NOT TO SCALE

MISS UTILITY of DELMARVA

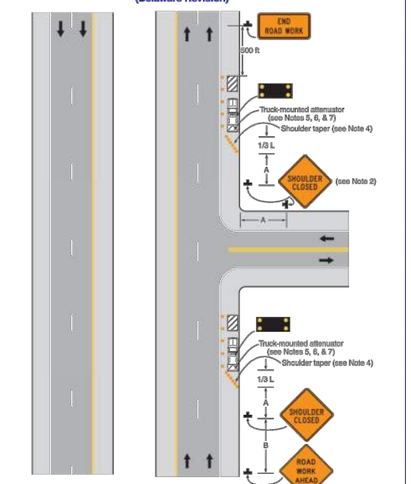
BEFORE YOU DIG CALL
1-800-282-8555 (in Del.)
1-800-441-8355 (Md., Va.)
PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

REV.	DESCRIPTION	DRAWN	DATE
0	ISSUED FOR BIDDING	ORS	7-26-23
1	–	–	–
2	–	–	–
3	–	–	–
4	–	–	–
5	–	–	–
6	–	–	–

ENGINEER SEAL
CHRISTOPHER R. BRENDA LICENSE No. 18168 DELAWARE PROFESSIONAL ENGINEER

CONTRACT	23-15
AREA	DETAILS
SHEET NO.	19 OF 22

Figure 6H-3A. Work on the Shoulder of a Multi-Lane, Divided Highway (TA-3A)
(Delaware Revision)

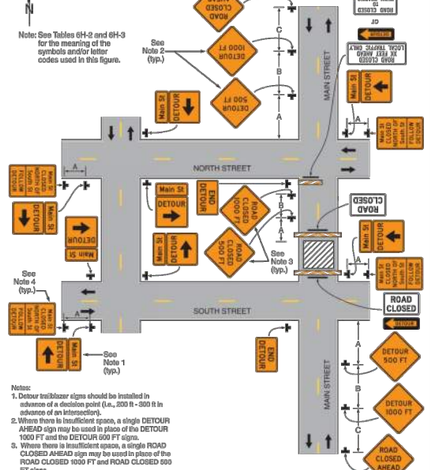


Note: See Tables 6H-2 and 6H-3 for the meaning of the symbols and/or letter codes used in this figure.

Typical Application 3A

Revision 3, May 2018

Figure 6H-20. Detour for a Closed Street (TA-20)
(Delaware Revision)

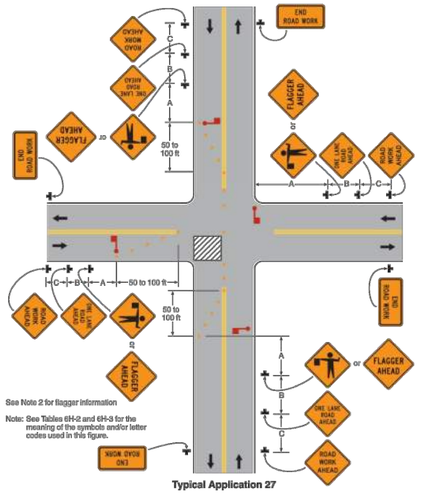


Notes:
1. Detour trailblazer signs should be installed in advance of a decision point (i.e., 200 ft - 800 ft in advance of an intersection).
2. Where there is insufficient space, a single DETOUR AHEAD sign may be used in place of the DETOUR 1000 FT and the DETOUR 500 FT signs.
3. Where there is insufficient space, a single ROAD CLOSED AHEAD sign may be used in place of the ROAD CLOSED 1000 FT and ROAD CLOSED 500 FT signs.
4. For roadways with a posted speed limit less than or equal to 40 MPH, 6-inch letters should be used. For roadways with a posted speed limit greater than 40 MPH, 8-inch letters should be used.

Typical Application 20

Revision 3, May 2018

Figure 6H-27. Closure at the Side or Center of an Intersection (TA-27)
(Delaware Revision)



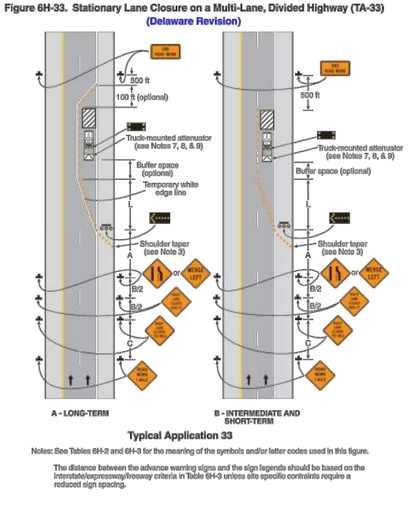
See Note 2 for flagger information

Note: See Tables 6H-2 and 6H-3 for the meaning of the symbols and/or letter codes used in this figure.

Typical Application 27

Revision 3, May 2018

Figure 6H-33. Stationary Lane Closure on a Multi-Lane, Divided Highway (TA-33)
(Delaware Revision)



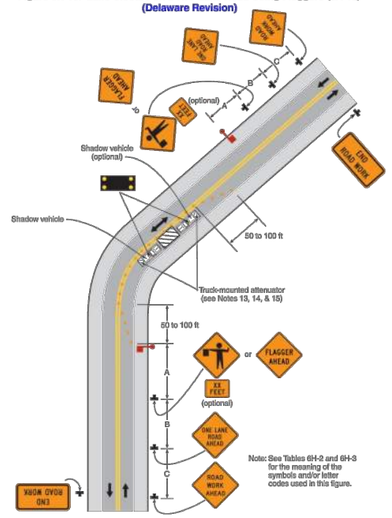
Typical Application 33

Notes: See Tables 6H-2 and 6H-3 for the meaning of the symbols and/or letter codes used in this figure.

The distance between the advance warning signs and the sign legends should be based on the Interstate/expressway/freeway criteria in Table 6H-3 unless site specific constraints require a reduced sign spacing.

Revision 3, May 2018

Figure 6H-10. Lane Closure on a Two-Lane Road Using Flaggers (TA-10)
(Delaware Revision)



Note: See Tables 6H-2 and 6H-3 for the meaning of the symbols and/or letter codes used in this figure.

Typical Application 10

Revision 3, May 2018

Notes for Figure 6H-3A—Typical Application 3A
Work on the Shoulder of a Multi-Lane, Divided Highway
(Delaware Revision)

Guidance:

1. A SHOULDER CLOSED sign should be placed on the left side of the roadway for a divided or one-way street only if the left shoulder is affected.

Option:

2. The SHOULDER CLOSED sign may be omitted from an intersecting roadway where drivers emerging from that roadway will encounter another advance warning sign prior to the activity area.

3. For short duration operations of 60 minutes or less, all signs and channelizing devices may be eliminated if a vehicle with activated high-intensity rotating, flashing, oscillating, or strobe lights is used.

Standard:

4. When paved shoulders having a width of 8 feet or more are closed, at least one advance warning sign shall be used. In addition, channelizing devices shall be used to close the shoulder in advance to delineate the beginning of the work space and direct vehicular traffic to remain within the traveled way.

5. For long-term, intermediate-term, and short-term operations, a truck-mounted attenuator shall be used on roadways with a posted speed limit or 85th-percentile speed greater than 40 mph.

Option:

6. For short duration operations along roadways with a posted speed limit or 85th-percentile speed greater than 40 mph, a truck-mounted attenuator may be omitted if a vehicle with activated high-intensity rotating, flashing, oscillating, or strobe lights is used or if the shoulder width is less than the width of a truck-mounted attenuator.

7. Truck-mounted attenuators may be used for all operations along roadways with a posted speed limit or 85th-percentile speed less than or equal to 40 mph.

Notes for Figure 6H-20—Typical Application 20
Detour for a Closed Street
(Delaware Revision)

Standard:

1. All detours affecting state-maintained roadways shall have a detour plan approved by DelDOT Traffic.

2. Before a road is closed to traffic, all necessary detour signs shall be in place along the corresponding detour route.

Guidance:

3. Under emergency conditions, personnel should be provided to ensure a safe roadway closure until proper devices are in place.

4. Proper devices should be in place within 24 hours of the start of the emergency operation.

5. Regulatory traffic control devices should be modified as needed for the duration of the detour.

6. On multi-lane streets, Detour signs with an Advance Turn Arrow should be used in advance of a turn.

7. On multi-lane, divided highways, Detour signs should be mounted on both sides of the directional roadway where adequate lateral clearance is available on the left-hand side of the roadway to accommodate the additional signs.

8. For complex or overlapping detours associated with unnumbered routes, a Street Name sign should be mounted with the Detour sign.

9. Route Sign Directional assemblies should be used for long-term detours associated with numbered routes.

10. Where drivers emerging from an intersecting roadway will not encounter an advance warning sign prior to the road closure, additional signs should be placed on the intersecting road.

Option:

11. If the road is opened for some distance beyond the intersection and/or there are significant origin/destination points beyond the intersection, the ROAD CLOSED and DETOUR signs on Type 3 Barricades may be located at the edge of the traveled way.

12. Detour signs may be located on the far side of intersections. A Detour sign with an advance arrow may be used in advance of a turn.

13. A Street Name sign may be mounted with the Detour sign. The Street Name sign may be either white on green or black on orange.

14. Cardinal direction plaques may be used with route signs.

15. Additional temporary traffic control devices may be used for detours and road closures on multi-lane, divided highways based on engineering judgment.

Standard:

16. When used, the Street Name sign shall be placed above the Detour sign.

17. Type 3 Barricades used at the point of the road closure shall extend entirely across the closed portion of the roadway, including any corresponding shoulders.

Notes for Figure 6H-27—Typical Application 27
Closure at the Side or Center of an Intersection
(Delaware Revision)

Guidance:

1. The situation depicted can be simplified by closing one or more of the intersection approaches. If this cannot be done, and/or when capacity is a problem, through vehicular traffic should be directed to other roads or streets based on a detour plan approved by DelDOT Traffic and in accordance with Figure 6H-20.

2. Depending on road user conditions, flagger(s) or uniformed law enforcement officer(s) should be used to direct road users within the intersection (see Section 6E.07 for flagger procedures).

Standard:

3. At night, flagger and uniformed law enforcement officer stations shall be illuminated, except in emergencies.

Option:

4. A BE PREPARED TO STOP sign may be added to the sign series.

Guidance:

5. When used, the BE PREPARED TO STOP sign should be located before the Flagger symbol (or FLAGGER AHEAD) sign.

Notes for Figure 6H-33—Typical Application 33
Stationary Lane Closure on a Multi-Lane, Divided Highway
(Delaware Revision)

Standard:

1. This TTC zone application also shall be used when work is being performed in the lane adjacent to the median on a multi-lane, divided highway. In this case, the LEFT LANE CLOSED signs and the corresponding Lane Ends (or MERGE RIGHT) signs shall be substituted.

2. When a side road or entrance ramp intersects the highway within the TTC zone, additional TTC devices shall be placed as needed.

Guidance:

3. When paved shoulders having a width of 8 feet or more are closed, channelizing devices should be used to close the shoulder in advance of the merging taper to direct vehicular traffic to remain within the traveled way.

4. On multi-lane, undivided roads and multi-lane, divided highways with narrow medians, the advance warning signs on the left-hand side of the directional roadway should be eliminated.

Support:

5. Where conditions permit, restricting all vehicles, equipment, workers, and their activities to one side of the roadway might be advantageous.

Standard:

6. An arrow board shall be used when a lane is closed. When more than one lane is closed, a separate arrow board shall be used for each closed lane.

7. For long-term, intermediate-term, and short-term operations, a truck-mounted attenuator shall be used on roadways with a posted speed limit or 85th-percentile speed greater than 40 mph.

Option:

8. For short duration operations along roadways with a posted speed limit or 85th-percentile speed greater than 40 mph, a truck-mounted attenuator may be omitted if a vehicle with activated high-intensity rotating, flashing, oscillating, or strobe lights is used.

9. Truck-mounted attenuators may be used for all operations along roadways with a posted speed limit or 85th-percentile speed less than or equal to 40 mph.

Guidance:

10. When a grade crossing exists within or upstream of the transition area and it is anticipated that queues resulting from the lane closure might extend through the grade crossing, the TTC zone should be extended so that the transition area precedes the grade crossing (see Figure 6H-46).

11. Early coordination with the railroad company or light rail transit agency should occur before work starts (see Figure 6H-46).

Option:

12. A flagger or a uniformed law enforcement officer may be used at the upstream side of the grade crossing to minimize the probability that vehicles are stopped within 50 feet of the grade crossing, measured from both sides of the outside rails (see Figure 6H-46).

Guidance:

13. When a grade crossing equipped with active warning devices exists within the activity area, provisions should be made for keeping flaggers informed as to the activation status of these warning devices (see Figure 6H-46).

Notes for Figure 6H-10—Typical Application 10
Lane Closure on a Two-Lane Road Using Flaggers
(Delaware Revision)

Option:

1. For low-volume situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger, positioned to be visible to road users approaching from both directions, may be used (see Chapter 6E).

2. The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short-duration operations.

3. A BE PREPARED TO STOP sign may be added to the sign series.

Guidance:

4. The buffer space should be extended so that the two-way traffic taper is placed before a horizontal (or crest vertical) curve to provide adequate sight distance for the flagger and a queue of stopped vehicles.

Standard:

5. At night, flagger stations shall be illuminated, except in emergencies.

Guidance:

6. When used, the BE PREPARED TO STOP sign should be located between the Flagger symbol (or FLAGGER AHEAD) sign and the ONE LANE ROAD sign.

7. Where drivers emerging from an intersecting roadway will not encounter an advance warning sign prior to the work zone, additional signs should be placed on the intersecting road.

8. When a grade crossing exists within or upstream of the transition area and it is anticipated that queues resulting from the lane closure might extend through the grade crossing, the TTC zone should be extended so that the transition area precedes the grade crossing (see Figure 6H-46).

9. When a grade crossing equipped with active warning devices exists within the activity area, provisions should be made for keeping flaggers informed as to the activation status of these warning devices (see Figure 6H-46).

10. When a grade crossing exists within the activity area, drivers operating on the left-hand side of the normal center line should be provided with comparable warning devices as for drivers operating on the right-hand side of the normal center line (see Figure 6H-46).

11. Early coordination with the railroad company or light rail transit agency should occur before work starts (see Figure 6H-46).

Option:

12. A flagger or a uniformed law enforcement officer may be used at the upstream side of the grade crossing to minimize the probability that vehicles are stopped within 50 feet of the grade crossing, measured from both sides of the outside rails (see Figure 6H-46).

Standard:

13. For long-term, intermediate-term, and short-term operations, a truck-mounted attenuator shall be used on roadways with a posted speed limit or 85th-percentile speed greater than 40 mph.

Option:

14. For short duration operations along roadways with a posted speed limit or 85th-percentile speed greater than 40 mph, a truck-mounted attenuator may be omitted if a vehicle with activated high-intensity rotating, flashing, oscillating, or strobe lights is used.

15. Truck-mounted attenuators may be used for all operations along roadways with a posted speed limit or 85th-percentile speed less than or equal to 40 mph.

MAINTENANCE OF TRAFFIC NOTES

1. ALL PERSONS WORKING WITHIN THE WORKSITE MUST WEAR RETROREFLECTIVE VESTS COMPLIANT WITH CURRENT MUTCD.
2. ACCESS TO SIDE ROADS AND DRIVEWAYS MUST BE MAINTAINED AT ALL TIME, EXCEPT AS NOTED. ACCESS TO RESIDENCES AND BUSINESSES MUST BE MAINTAINED AT ALL TIMES.
3. THE CONTRACTOR SHALL COVER ALL EXISTING SIGNS WITHIN THE WORK ZONE THAT CONFLICT WITH THE PROPOSED MAINTENANCE OF TRAFFIC AND/OR CONSTRUCTION. THE CONTRACTOR SHALL REPLACE ANY DAMAGED OR LOST SIGNS AT HIS OWN EXPENSE.
4. ANY FLAGGERS WORKING ON THE ROADWAY SHALL HAVE AN AMERICAN TRAFFIC SAFETY SERVICES ASSOCIATION (ATTSA) TRAINING CERTIFICATE.
5. ALL LANES MUST BE OPEN FOR VEHICULAR TRAFFIC AT THE END OF THE WORK DAY.
6. IMMEDIATELY UPON THE COMPLETION OF THE WORK, REMOVE THE TRAFFIC CONTROL DEVICES.
7. WORK HOURS SHALL BE 9 AM TO 3 PM.

MISS UTILITY OF DELMARVA

BEFORE YOU DIG CALL
1-800-282-8555 (in Del.)
1-800-441-8355 (Md., Va.)
PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

REV.	DESCRIPTION	DRAWN	DATE
0	ISSUED FOR BIDDING	ORS	7-26-23
1	–	–	–
2	–	–	–
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5	–	–	–
6	–	–	–

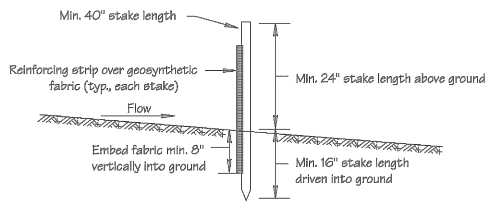
ENGINEER SEAL
CHRISTOPHER R. BRENDZA
LICENSE
No. 18168
DELAWARE
PROFESSIONAL ENGINEER

NEWARK DELAWARE

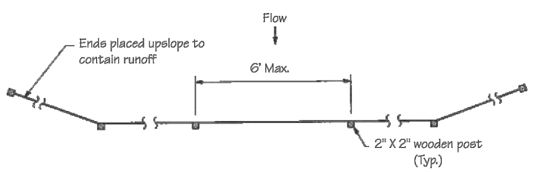
JMT

CONTRACT	23-15
AREA	MOT NOTES & DETAILS
SHEET NO.	20 OF 22

Standard Detail & Specifications
Silt Fence



Section



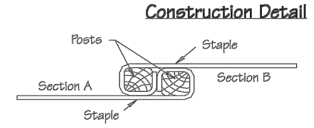
DATA
Max. controlled slope

Plan

Source:	Symbol:	Detail No.
Adapted form MD Stds. & Specs. for ESC	—— SF ——	DE-ESC-3.1.2.1 Sheet 1 of 2 Date: 6/05

Standard Detail & Specifications
Silt Fence

Construction Detail



Method for joining continuous sections

Construction Notes:

1. Geosynthetic fabric to be fastened securely to fence posts with wire ties or staples.
2. When two sections of filter cloth adjoin each other they shall be overlapped by six inches and folded.
3. Maintenance shall be performed as needed and material removed when "bulges" develop in the silt fence.

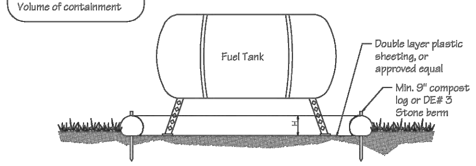
Materials:

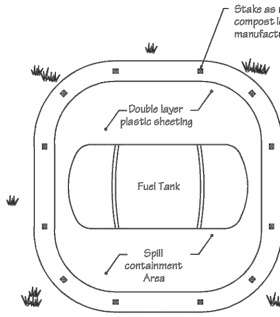
1. Stakes: Steel (either T or U) or 2" x 2" hardwood
2. Geosynthetic Fabric: Type GD-I
3. Reinforcing strip: Wooden lath, plastic strip or other approved equivalent
4. Prefabricated Unit: Geofab, Envirofence, or approved equivalent

Source:	Symbol:	Detail No.
Adapted from MD Stds. & Specs. for ESC	—— SF ——	DE-ESC-3.1.2.1 Sheet 2 of 2 Date: 6/05

Standard Detail & Specifications
Fueling & Spill Control

DATA TO BE PROVIDED
Volume of Potential Pollution
Height of containment
Area of containment
Volume of containment





NOTE: Double-walled tanks with proper labeling meet EPA requirements for secondary containment.

Source:	Symbol:	Detail No.
Delaware ESC Handbook		DE-ESC-3.6.4 Sheet 1 of 2 Effective July 2023

Standard Detail & Specifications
Fueling & Spill Control

Pollution Prevention – Fueling & Spill Control

1. Fueling should only take place in signed designated areas, away from downstream drainage facilities and watercourses.
2. Fueling must be with nozzles equipped with automatic shut-off to control drips. Do not top off.
3. Protect the areas where equipment or vehicles are being repaired, maintained, fueled or parked from storm water run-on and runoff.
4. Use barriers such as berms to prevent storm water run-on and runoff, and to contain spills.
5. Place a "Fueling Area" sign next to each fueling area.
6. Store hazardous materials such as fuel, solvents, oil and chemicals in secondary containment.
7. Inspect vehicles and equipment for leaks on each day of use. Repair fluid and oil leaks immediately.
8. Absorbent spill clean-up materials and spill kits must be available in fueling areas and on fuel trucks.
9. If fueling is to take place at night, make sure the fueling area is sufficiently illuminated.
10. Properly dispose of used oil, fluids, lubricants and spill clean-up materials.

CLEAN UP SPILLS

1. If it is safe to do so, immediately contain and clean up any chemical and/or hazardous material spills.
2. Properly dispose of used oil, fluids, lubricants and spill clean-up materials.
3. Do not bury spills or wash them down with water.

LEAKS AND DRIPS

1. Use drip pans or absorbent pads at all times. Place under and around leaky equipment.
2. Do not allow oil, grease, fuel or chemicals to drip onto the ground.
3. Have spill kits and clean up material on-site.
4. Repair leaky equipment promptly or remove problem vehicles and equipment from the site. Clean up contaminated soil immediately.
5. Store contaminated waste in sealed containers constructed of suitable material. Label these containers properly.
6. Clean up all spills and leaks. Promptly dispose of waste and spent clean up materials.

Source:	Symbol:	Detail No.
Delaware ESC Handbook		DE-ESC-3.6.4 Sheet 2 of 2 Effective July 2023

Standard Detail & Specifications
Mulching

1. Materials and Amounts

a. *Straw* - Straw shall be unrotted small grain straw applied at the rate of 1-1/2 to 2 tons per acre, or 70 to 90 pounds (two bales) per 1,000 square feet. Mulch materials shall be relatively free of weeds and shall be free of noxious weeds such as; thistles, Johnsongrass, and quackgrass. Spread mulch uniformly by hand or mechanically. For uniform distribution of hand spread mulch, divide area into approximately 1,000 square feet sections and place 70-90 pounds (two bales) of mulch in each section.

b. *Wood chips* - Apply at the rate of approximately 6 tons per acre or 275 pounds per 1,000 square feet when available and when feasible. These are particularly well suited for utility and road rights-of-way. If wood chips are used, increase the application rate of nitrogen fertilizer by 20 pounds of N per acre (200 pounds of 10-10-10 or 66 pounds of 30-0-0 per acre).

c. *Hydraulically applied mulch* -The following conditions apply to hydraulically applied mulch:

i. Definitions:

a. Wood fiber mulch shall consist of specially prepared wood that has been processed to a uniform state, is packaged for sale as a hydraulic mulch for use with hydraulic seeding equipment, and consists of a minimum of 70% virgin or recycled wood fiber combined with 30% paper fiber and additives.

b. Blended fiber mulch shall consist of any hydraulic mulch that contains greater than 30% paper fiber. The paper component must consist of specially prepared paper that has been processed to a uniform fibrous state and is packaged for sale as a hydraulic mulch for use with hydraulic seeding equipment.

c. A bonded fiber matrix (BFM) consists of long strand, specially prepared wood fibers that have been processed to a uniform state held together by a water resistant bonding agent. BFMs shall contain no paper (cellulose) mulch but may contain small percentages of synthetic fibers to enhance performance.

d. Refer to **Figure 3.4.5a** for conditions and limitations of use for each of the above categories of hydraulic mulch.

ii. All components of the hydraulically applied mulches shall be pre-packaged by the manufacturer to assure material performance. Field mixing of the mulch components is acceptable, but must be done per manufacturers recommendations to ensure the proper results.

iii. Hydraulic mulches shall be applied with a viable seed and at manufacturer's recommended rates. Increased rates may be necessary based on site conditions.

iv. Hydraulically applied mulches and additives shall be mixed according to manufacturers recommendations.

iv. Materials within this category shall only be used when hydraulically applied mulch has been specified for use on the approved Sediment and Stormwater Plan, or supplemental approval from the plan approval agency has been obtained in writing for a specific area.

Source:	Symbol:	Detail No.
Delaware ESC Handbook & Filtrexx™ International		DE-ESC-3.4.5 Sheet 1 of 3 Date: 03/13

Standard Detail & Specifications
Mulching

v. Application:

a. Apply product to geotechnically stable slopes that have been designed and constructed to divert runoff away from the face of the slope.

b. Do not apply to saturated soils, or if precipitation is anticipated within 24-48 hours.

c. During the spring (March 1 to May 31) and fall (September 1 to November 30) seasons, hydraulic mulches may be applied in a one-step process where all components are mixed together in single-tank loads. It is recommended that the product be applied from opposing directions to achieve optimum soil coverage.

d. During the summer (June 1 to August 31) and winter (December 1 to February 28) seasons, the following two-step process is required:

Step One – Mix and apply seed and soil amendments with a small amount of mulch for visual metering.

Step Two – Mix and apply mulch at manufacturers recommended rates over freshly seeded surfaces. Apply from opposing directions to achieve optimum soil coverage.

e. Minimum curing temperature is 40° F (4° C). The best results and more rapid curing are achieved at temperatures exceeding 60° F (15° C). Curing times may be accelerated in high temperature, low humidity conditions on dry soils.

vi. Recommended application rates are for informational purposes only. Conformance with this standard and specification shall be performance-based and requires **100% soil coverage**. Any areas with bare soil showing shall be top dressed until full coverage is achieved.

d. *Compost blanket (CB)* - Loosely applied with a pneumatic blower so that a 1" compost blanket uniformly covers the **soil with 100% coverage**. This application can be used with seed to promote germination by applying the approved seed mix directly into the loosely blown compost. The compost blanket performs best on slopes less than 2:1 and requires no mulch anchoring.

2. Anchoring mulch - Mulch must be anchored immediately to minimize loss by wind or water. This may be done by one of the following methods, depending upon size of area, erosion hazard, and cost.

a. *Crimping* - A crimper is a tractor drawn implement designed to punch and anchor mulch into the top two (2) inches of soil. This practice affords maximum erosion control but is limited to flatter slopes where equipment can operate safely. On sloping land, crimping should be done on the contour whenever possible.

b. *Tracking* - Tracking is the process of cutting mulch (usually straw) into the soil using a bulldozer or other equipment that runs on cleated tracks. Tracking is used primarily on slopes 3:1 or steeper and should be done up and down the slope with cleat marks running across the slope.

c. *Liquid mulch binders* - Applications of liquid mulch binders should be heavier at edges, in valleys, and at crests of banks and other areas where the mulch will be moved by wind or water. All other areas should have a uniform application of binder. The use of synthetic binders is the preferred method of mulch binding and should be applied at the rates recommended by the manufacturer.

d. *Paper fiber* - The fiber binder shall be applied at a net dry weight of 750 lbs/ac. The wood cellulose fiber shall be mixed with water, and the mixture shall contain a maximum of 50 lbs. of wood cellulose fiber per 100 gallons.

e. *Nettings* - Synthetic or organic nettings may be used to secure straw mulch. Install and secure according to the manufacturers recommendations.

Source:	Symbol:	Detail No.
Delaware ESC Handbook & Filtrexx™ International		DE-ESC-3.4.5 Sheet 2 of 3 Date: 03/13

Standard Detail & Specifications
Mulching

MULCHING MATERIAL SELECTION GUIDE

Percent Slope	Type of Mulch / App. Rate*	Dec. 1 to Feb. 28(29)	March 1 to May 31	June 1 to Aug. 31	Sept. 1 to Nov. 30
Less than 2%	Blended Fiber @ 2000 lbs/ac. minimum	xxxxxxxxxxxxxxx	OK (< 1 ac.)	xxxxxxxxxxxxxxx	OK (< 1 ac.)
	Wood Fiber @ 2000 lbs/ac. min.	xxxxxxxxxxxxxxx	OK	xxxxxxxxxxxxxxx	OK
	BFM @ 3000 lbs/ac. min.	OK	OK	OK	OK
	Straw @ 2 Tons/ac. Min.	OK	OK	OK	OK
	Stabilization Matting**	OK	OK	OK	OK
	1" Compost Blanket (CB)	OK	OK	OK	OK
2% to 5.9%	Wood Fiber @ 2000 lbs/ac. min.	xxxxxxxxxxxxxxx	OK	xxxxxxxxxxxxxxx	OK
	BFM @ 3000-3500 lbs/ac. min.	OK	OK	OK	OK
	Straw @ 2 Tons/ac. min.	OK	OK	OK	OK
	Stabilization Matting**	OK	OK	OK	OK
	1" Compost Blanket (CB)	OK	OK	OK	OK
6% to 10.9%	Wood Fiber @ 2000-2500 lbs/ac. min.	xxxxxxxxxxxxxxx	OK	xxxxxxxxxxxxxxx	OK
	BFM @ 3500-4000 lbs/ac. min.	OK	OK	OK	OK
	Straw @ 2 Tons/ac. min.	OK	OK	OK	OK
	Stabilization Matting**	OK	OK	OK	OK
	1" Compost Blanket (CB)	OK	OK	OK	OK
11% to 24.9%	Wood Fiber @ 2500-3000 lbs/ac. min.	xxxxxxxxxxxxxxx	OK	xxxxxxxxxxxxxxx	OK
	BFM @ 3500-4000 lbs/ac. min.	OK	OK	OK	OK
	Straw @ 2 Tons/ac. min.	OK	OK	OK	OK
	Stabilization Matting**	OK	OK	OK	OK
	1" Compost Blanket (CB)	OK	OK	OK	OK
25% to 33%	Wood Fiber @ 2500-3000 lbs/ac. min.	xxxxxxxxxxxxxxx	OK	xxxxxxxxxxxxxxx	OK
	BFM @ 4000 lbs/ac. min.	OK	OK	OK	OK
	Straw @ 2 Tons/ac. min.	OK	OK	OK	OK
	Stabilization Matting**	OK	OK	OK	OK
	1" Compost Blanket (CB)	OK	OK	OK	OK
33% and up	BFM @ 4000-4500 lbs/ac. min.	OK	OK	OK	OK
	Straw @ 2 Tons/ac. min.***	OK	OK	OK	OK
	Stabilization Matting**	OK	OK	OK	OK
	1" Compost Blanket (CB)	2:1 Max.	2:1 Max.	2:1 Max.	2:1 Max.

* Note: Manufacturers Recommended Rates for informational purposes only. Performance standard requires 100% soil coverage.
** Note: Stabilization Matting must be applied in accordance with Section 3.4.6 of the Delaware ESC Handbook.
***Note: Straw applied on slopes greater than 33% must be netted (this does not apply to topsoil stockpiles).
OK = Acceptable to use during this time period.
xxx = Not acceptable to use during this time period.
All application rates are minimums.

Source:	Symbol:	Detail No.
Delaware ESC Handbook & Filtrexx™ International		DE-ESC-3.4.5 Sheet 3 of 3 Date: 03/13

MISS UTILITY of DELMARVA

BEFORE YOU DIG CALL
1-800-282-8555 (in Del.)
1-800-441-8355 (Md., Va.)
PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

REV.	DESCRIPTION	DRAWN	DATE
0	ISSUED FOR BIDDING	ORS	7-26-23
1	–	–	–
2	–	–	–
3	–	–	–
4	–	–	–
5	–	–	–
6	–	–	–

ENGINEER SEAL
CHRISTOPHER R. BRENDZA
LICENSE No. 18168
DELAWARE
PROFESSIONAL ENGINEER

NEWARK DELAWARE

JMT

CONTRACT	23-15
AREA	E&S DETAILS
SHEET NO.	21 OF 22

Standard Detail & Specifications

Vegetative Stabilization

TEMPORARY SEEDING BY RATES, DEPTHS AND DATES

Mix #	Species[3]	Seeding Rate		Optimum Seeding Dates [1] O = Optimum Planting Period; A = Acceptable Planting Period							Planting Depth[2]
				Coastal Plain			Piedmont			All	
	Certified Seed	lb/Ac[4]	lb/1000 sq.ft.	2/1-4/30	[5] 8/1-8/14	8/15-10/31	3/1-4/30	[5] 8/1-7/31	8/1-10/31	10/31-2/1	
1	Barley	125	4	O	A	O	O	A	O		1-2 inches 2-3" sandy soils
2	Oats	125	4	O	A	A	O	A	A		1-2 inches 2-3" sandy soils
3	Rye	125	4	O	A	O	O	A	O	A	1-2 inches 2-3" sandy soils
4	Perennial Ryegrass	125	4	O	A	O	O	A	O		0.5 inches 1-2" sandy soils
5	Annual Ryegrass	125	4	O	A	O	O	A	O	A	0.5 inches 1-2" sandy soils
6	Winter Wheat	125	4	O	A	O	O	A	O	A	1-2 inches 2-3" sandy soils
7	Foxtail Millet	30 PLS	0.7		O			O			0.5 inches 1-2" sandy soils
8	Pearl Millet	20 PLS	0.5		O			O			0.5 inches 1-2" sandy soils

1. Winter seeding requires 3 tons per acre of straw mulch for proper stabilization.
2. May be planted throughout summer if soil moisture is adequate or seeded area can be irrigated.
3. Applicable on slopes 3:1 or less.
4. Use varieties currently recommended for Delaware. Contact a County Extension Office for information.
5. Warm season grasses such as Millet may be used between 5/1 and 9/1 if desired. Seed at 3-5 lbs. per acre. Good on low fertility and acid areas. Seed after frost through summer at a depth of 0.5".

NOTE: Alternative seed mixes may be used with prior approval from the Department or Delegated Agency.

Source:	Symbol:	Detail No.
Delaware ESC Handbook		**DE-ESC-3.4.3** Sheet 1 of 4 Effective July 2023

Standard Detail & Specifications

Vegetative Stabilization

PERMANENT SEEDING AND SEEDING DATES

Mix No.	Seeding Mixtures: Certified Seed[6] / Well Drained Soils	Seeding Rate[1] lb/Ac	lb/1000 sq.ft.	Optimum Seeding Dates [2] O = Optimum Planting Period A = Acceptable Planting Period: Coastal Plain 2/1-4/30	Coastal Plain 8/1-8/14	Coastal Plain 8/15-10/31	Piedmont 3/1-4/30	Piedmont [5] 8/1-7/31	Piedmont 8/1-10/31	All[4] 10/31-2/1	Remarks
1	Tall Fescue	140	3.2	A	O	A	A	O	A	Add 100 lbs./ac Winter Rye	Good erosion control mix Tolerant of low fertility soils Good for droughty sites
	Canada Wild Rye	10	0.23								
2	Deertongue	30	0.69	A	O	A	A	O	A	Add 100 lbs./ac Winter Rye	Good erosion control mix Tolerant of low fertility soils Legume that fixes atmospheric N into soil
	Sheep Fescue	30	0.69								
	White Clover	10	0.35								
3	Tall Fescue (Turf-type) **or**	80	1.15	O	A[5]	O	O	A[5]	O	Add 100 lbs./ac. Winter Rye	Good erosion control mix Tall Fescue for droughty conditions. Creeping Red Fescue for heavy shade. Flatpea to suppress woody vegetation.
	Strong Creeping Red Fescue **or**	80	1.15								
	Perennial Ryegrass	50	1.15								
	plus Flatpea[7]	15	0.34								
4	Strong Creeping Red Fescue	100	2.3	O	A[5]	O	O	A[5]	O	Add 100 lbs./ac. Winter Rye	Suitable waterway mix. Canada Bluegrass more drought tolerant. Use Redtop for increased drought tolerance.
	Kentucky Bluegrass	70	1.61								
	Perennial Ryegrass **or**	15	0.35								
	Redtop	5	0.11								
	plus White Clover[8]	3	0.07								
5	Switchgrass[5,7] **or**	10	0.23			O			O		Native warm-season mixture. Tolerant of low fertility soils. Drought tolerant. Poor shade tolerance. N fertilizer discouraged - weeds
	Coastal Panicgrass	10	0.23								
	Big Bluestem	5	0.11								
	Little Bluestem	5	0.11								
	Indian Grass	5	0.1								
6	Tall Fescue (turf-type) (Blend of 3 cultivars)	150	3.5	O	A[5]	O	O	A[5]	O		Managed filter strip for nutrient uptake.
7	Tall Fescue	150	3.5	O	A[5]	O	O	A[5]	O		Three cultivars of Kentucky Bluegrass. Traffic tolerant.
	Ky. Bluegrass (Blend)	20	0.46								
	Perennial Ryegrass	20	0.46								
8	Big Bluestem[7]	10	0.23	O	A[5]		O	A[5]			All species are native. Indian Grass and Bluestem have fluffy seeds. Plant with a specialized native seed drill. Creeping Red Fescue will provide erosion protection while the warm season grasses get established.
	Indian Grass[7]	10	0.23								
	Little Bluestem[7]	8	0.18								
	Creeping Red Fescue **plus one of:**	30	0.69								
	Partridge Pea	5	0.11								
	Bush Clover	3	0.07								
	Wild Indigo	3	0.07								
	Showy Tick-Trefoil	2	0.05								

NOTE: Alternative seed mixes may be used with prior approval from the Department or Delegated Agency.

Source:	Symbol:	Detail No.
Delaware ESC Handbook		**DE-ESC-3.4.3** Sheet 2 of 4 Effective July 2023

Standard Detail & Specifications

Vegetative Stabilization

PERMANENT SEEDING AND SEEDING DATES (cont.)

Mix No.	Seeding Mixtures: Certified Seed[6] / Poorly Drained Soils	Seeding Rate[1] lb/Ac	lb/1000 sq.ft.	Optimum Seeding Dates [2] O = Optimum Planting Period A = Acceptable Planting Period: Coastal Plain 2/1-4/30	Coastal Plain 8/1-8/14	Coastal Plain 8/15-10/31	Piedmont 3/1-4/30	Piedmont [5] 8/1-7/31	Piedmont 8/1-10/31	All[4] 10/31-2/1	Remarks
9	Redtop	75	1.72	O	A[5]	O	O	A[5]	O	Add 100 lbs./ac. Winter Rye	Quick stabilization of disturbed sites and waterways
	Creeping Bentgrass	35	0.8								
	Sheep Fescue	30	0.69								
	Rough Bluegrass	45	1								
10	Switchgrass[7]	10	0.23	A		O	A		O		Good erosion control, wildlife cover and wetland revegetation.
	Residential Lawns										
11	Tall Fescue	100	2.3	O	A[5]	O	O	A[5]	O		High value, high maintenance, light traffic, irrigation necessary. Well drained soils, full sun.
	Perennial Ryegrass	25	0.57								
	Kentucky Bluegrass Blend	30	0.69								
12	Tall Fescue	100	2.3	O	A[5]	O	O	A[5]	O		Moderate value, low maintenance, traffic tolerant
	Perennial Ryegrass	25	0.57								
	Sheep Fescue	25	0.57								
13	Creeping Red Fescue	90	1.15	O	A[5]	O	O	A[5]	O		Shade tolerant, moderate traffic tolerance, moderate maintenance.
	Chewings Fescue	50	1.15								
	Rough Bluegrass	20	0.4								
	Kentucky Bluegrass	20	0.4								
14	Creeping Red Fescue	50	1.15	O	A[5]	O	O	A[5]	O		Shade tolerant, moisture tolerant.
	Rough Bluegrass **or**	90	2.1								
	Chewings Fescue										
15	K-31 Tall Fescue	150	3.5	O	A[5]	O	O	A[5]	O		Monoculture, but performs well alone in lawns. Discouraged.

1. When hydroseeding is the chosen method of application, the total rate of seed should be increased by 25%.
2. Winter seeding requires 3 tons per acre of straw mulch. Planting dates listed above are average for Delaware. These dates may require adjustment to reflect local conditions.
3. All seed shall meet the minimum purity and minimum germination percentages recommended by the Delaware Department of Agriculture. The maximum % of weed seeds shall be in accordance with Chapter 15, Title 3 of the Delaware Code.
4. Turf-type species may be planted throughout summer if soil moisture is adequate or seeded area can be irrigated.
5. It is recommended that all leguminous seed be inoculated.
6. Warm season grass mix and Switchgrass cannot be mowed more than 4 times per year.
7. Warm season grasses require a soil temperature of at least 60 degrees in order to germinate and will remain dormant until then.

NOTE: Alternative seed mixes may be used with prior approval from the Department or Delegated Agency.

Source:	Symbol:	Detail No.
Delaware ESC Handbook		**DE-ESC-3.4.3** Sheet 3 of 4 Effective July 2023

Standard Detail & Specifications

Vegetative Stabilization

Construction Notes:

1. Site Preparation
   a. Prior to seeding, install needed erosion and sediment control practices such as diversions, grade stabilization structures, berms, dikes, grassed waterways, and sediment basins.
   b. Final grading and shaping is not necessary for temporary seedings.
2. Seedbed Preparation

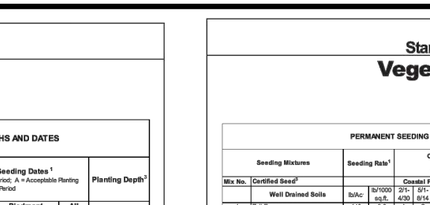
   It is important to prepare a good seedbed to ensure the success of establishing vegetation. The seedbed should be well prepared, loose, uniform, and free of large clods, rocks, and other objectionable material. The soil surface should not be compacted or crusted.
3. Soil Amendments
   a. Lime - Apply liming materials based on the recommendations of a **soil test** in accordance with the approved nutrient management plan. If a nutrient management plan is not required, apply dolomitic limestone at the rate of 1 to 2 tons per acre. Apply limestone uniformly and incorporate into the top 4 to 6 inches of soil.
   b. Fertilizer - Apply fertilizer based on the recommendations of a **soil test** in accordance with the approved nutrient management plan. If a nutrient management plan is not required, apply a formulation of 10-10-10 at the rate of 600 pounds per acre. Apply fertilizer uniformly and incorporate into the top 4 to 6 inches of soils.
4. Seeding
   a. For **temporary stabilization**, select a mixture from **Sheet 1** . For a **permanent stabilization**, select a mixture from **Sheet 2** or **Sheet 3** depending on the conditions. Alternative seed mixes may be used with prior approval from the Department or Delegated Agency.
   b. Apply seed uniformly with a broadcast seeder, drill, cultipacker seeder or hydroseeder. All seed will be applied at the recommended rate and planting depth.
   c. Seed that has been broadcast should be covered by raking or dragging and then lightly tamped into place using a roller or cultipacker. If hydroseeding is used and the seed and fertilizer is mixed, they will be mixed on site and the seeding shall be done immediately and without interruption.
5. Mulching

   All mulching shall be done in accordance with detail **DE-ESC-3.4.5.**

Source:	Symbol:	Detail No.
Delaware ESC Handbook		**DE-ESC-3.4.3** Sheet 4 of 4 Effective July 2023

Standard Detail & Specifications

Temporary Crossing - Bridge



Perspective

DATA

Stringer material
Stringer dimensions
Decking material
Decking dimensions

Source:	Symbol:	Detail No.
Adapted from MD Stds. & Specs. for ESC	TC-B	**DE-ESC-3.5.1.3** Sheet 1 of 3 Effective July 2023

Standard Detail & Specifications

Temporary Crossing - Bridge

Construction Notes:

1. **Restrictions** - No construction or removal of a temporary access bridge will be permitted from March 15 through June 15 to minimize interference with fish spawning and migration. Further restrictions may apply in accordance with other State and/or Federal permits.
2. **Installation**
   a. Bridge Placement - A temporary bridge structure shall be constructed at or above bank elevation to prevent the entrapment of floating materials and debris.
   b. Abutments - Abutments shall be placed parallel to and on stable banks.
   c. Bridge Span - Bridges shall be constructed to span the entire channel. If the channel width exceeds 8 feet (as measured from top-of-bank to top-of-bank) then a footing, pier or bridge support may be constructed within the waterway. One additional footing, pier or bridge support will be permitted for each additional 8 foot width of the channel. However, no footing, pier or bridge support will be permitted within the channel for waterways less than 8 feet wide.
   d. Deck Material - All decking members shall be placed perpendicular to the stringers, butted tightly, and securely fastened to the stringers. Decking materials must be butted tightly to prevent any soil material tracked onto the bridge from falling into the waterway below.
   e. Run Planks (optional) - Run planking shall be securely fastened to the length of the span. One run plank shall be provided for each track of the equipment wheels. Although run planks are optional, they may be necessary to properly distribute loads.
   f. Curbs or fenders - Curbs or fenders may be installed along the outer sides of the deck. Curbs or fenders are an option which will provide additional safety.
   g. Bridge Anchors - Bridges shall be securely anchored at only one end using steel cable or chain. Anchoring at only one end will prevent channel obstruction in the event that floodwaters float the bridge. Acceptable anchors are large trees, large boulders, or driven steel anchors. Anchoring shall be sufficient to prevent the bridge from floating down stream and possibly causing an obstruction to the flow.
   h. Stabilization - All areas disturbed during bridge installation shall be stabilized within 14 calendar days of the disturbance in accordance with the Standard and Specifications for Temporary Vegetative Stabilization.

Source:	Symbol:	Detail No.
Adapted from MD Stds. & Specs. for ESC	TC-B	**DE-ESC-3.5.1.3** Sheet 2 of 3 Effective July 2023

Standard Detail & Specifications

Temporary Crossing - Bridge

Construction Notes (cont.)

3. **Maintenance**
   a. Inspection - Periodic inspection shall be performed to ensure that the structure, streambed, and streambanks are not damaged, and that sediment is not entering the stream or blocking fish passage or migration.
   b. Maintenance - Maintenance shall be performed as needed, in a timely manner to ensure that structures are in compliance with this standard and specification. This shall include removal and disposal of any trapped sediment or debris. Sediment shall be disposed of and stabilized outside the waterway floodplain.
4. **Restoration**
   a. Removal - When the crossing has served its purpose, all structures including bedding and filter cloth materials shall be removed within 14 calendar days. In all cases, the structure shall be removed within one year of installation.
   b. Final Clean-up - Final clean-up shall consist of removal of the temporary structure from the waterway, removal of all construction materials, restoration of original stream channel cross section, and protection of the streambanks from erosion. Removed materials shall be stored outside of the waterway floodplain.
   c. Method - Removal of the structure and clean up of the area shall be accomplished without construction equipment working in the waterway channel.
   d. Final Stabilization - All areas disturbed during removal shall be stabilized within 14 calendar days of the disturbance in accordance with the Standard and Specifications for Permanent Vegetative Stabilization.

Source:	Symbol:	Detail No.
Adapted from MD Stds. & Specs. for ESC	TC-B	**DE-ESC-3.5.1.3** Sheet 3 of 3 Effective July 2023

MISS UTILITY OF DELMARVA

BEFORE YOU DIG CALL
1-800-282-8555 (in Del.)
1-800-441-8355 (Md., Va.)
PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

REV.	DESCRIPTION	DRAWN	DATE
0	ISSUED FOR BIDDING	ORS	7-26-23
1	–	–	–
2	–	–	–
3	–	–	–
4	–	–	–
5	–	–	–
6	–	–	–

ENGINEER SEAL
CHRISTOPHER R. BRENDZA
LICENSE
No. 18168
DELAWARE
PROFESSIONAL ENGINEER

NEWARK DELAWARE

JMT

CONTRACT	23-15
AREA	E&S DETAILS
SHEET NO.	22 OF 22

CITY OF NEWARK
DELAWARE

ATTACHMENT 2
Checklist of Documents to Be Submitted With The Sealed Bid

CHECKLIST OF DOCUMENTS TO BE SUBMITTED WITH THE SEALED BID

Project No./Contract No. 23-15 _____

Project Name: SANITARY SEWER IMPROVEMENTS 2023_____

The following forms is a listing of the minimum required submittals with a bid. If any of the forms listed below are not included with a bid submission the bid may be declared non-responsive and may not be considered.

- ○ Bid Form
- ○ Bid Bond
- ○ Non-Collusion Certification
- ○ Statement on Receipt of Addenda
- ○ Certification of Bidder Regarding Equal Employment Opportunity
- ○ Certificate of Insurance
- ○ American Iron & Steel Certification
- ○ American Iron & Steel Construction Contract Language
- ○ Affidavit of Employee Drug Testing Program
- ○ Appendix "A" DBE Rule Term and Condition
- ○ Certification of Non-Debarment and Non-Exclusion of Bidder & Subcontractor(s)
- ○ Certification of Bidder's Qualifications
- ~~○ Experience and Equipment Certification~~
- ○ DBE Good Faith Efforts documentation.
- ○ EPA Form 6100-2 (Optional – by Subcontractor when and if awarded a contract by Contractor)
- ○ EPA Form 6100-3
- ○ EPA Form 6100-4
- ○ List of all subcontractors
- ○ This Checklist with items submitted checked off and or exceptions noted

Bidding Company _____

Name _____

Signature _____ Date _____

CITY OF NEWARK
DELAWARE

ATTACHMENT 3
Employee Rights Under the Davis-Bacon Act

EMPLOYEE RIGHTS

UNDER THE DAVIS-BACON ACT

FOR LABORERS AND MECHANICS EMPLOYED ON FEDERAL OR FEDERALLY ASSISTED CONSTRUCTION PROJECTS

PREVAILING WAGES

You must be paid not less than the wage rate listed in the Davis-Bacon Wage Decision posted with this Notice for the work you perform.

OVERTIME

You must be paid not less than one and one-half times your basic rate of pay for all hours worked over 40 in a work week. There are few exceptions.

ENFORCEMENT

Contract payments can be withheld to ensure workers receive wages and overtime pay due, and liquidated damages may apply if overtime pay requirements are not met. Davis-Bacon contract clauses allow contract termination and debarment of contractors from future federal contracts for up to three years. A contractor who falsifies certified payroll records or induces wage kickbacks may be subject to civil or criminal prosecution, fines and/or imprisonment.

APPRENTICES

Apprentice rates apply only to apprentices properly registered under approved Federal or State apprenticeship programs.

PROPER PAY

If you do not receive proper pay, or require further information on the applicable wages, contact the Contracting Officer listed below:

or contact the U.S. Department of Labor's Wage and Hour Division.

WAGE AND HOUR DIVISION
UNITED STATES DEPARTMENT OF LABOR

1-866-487-9243
TTY: 1-877-889-5627
www.dol.gov/whd

WH1321 REV 10/17

CITY OF NEWARK
DELAWARE

ATTACHMENT 4
Compliance Statement and Certifications of Non-Segregated Facilities

COMPLIANCE STATEMENT

This statement relates to a proposed contract with _____

_____

(Name of borrower or grantee)

who expects to finance the contract with assistance from either the Delaware Water Pollution Control Revolving Fund or Delaware 21st Century Fund (whether by a loan, grant, loan insurance, guarantee, or other form of financial assistance). I am the undersigned bidder or prospective contractor, I represent that:

1. ☐ I have, ☐ have not, participated in a previous contract or subcontract subject to Executive Order 11246 (regarding equal employment opportunity) or a preceding similar Executive Order.

2. If I have participated in such a contract or subcontract, ☐ I have, ☐ have not, filed all compliance reports that have been required to file in connection with the contract or subcontract.

If the proposed contract is for $50,000 or more and I have 50 or more employees, I also represent that:

3. ☐ I have, ☐ have not previously had contracts subject to the written affirmative action programs requirements of the Secretary of Labor.

4. If I have participated in such a contract or subcontract, ☐ I have, ☐ have not developed and placed on file at each establishment affirmative action programs as required by the rules and regulations of the Secretary of Labor.

I understand that if I have failed to file any compliance reports that have been required of me, I am not eligible and will not be eligible to have my bid considered or to enter into the proposed contract unless and until I make an arrangement regarding such reports that is satisfactory to either the DNREC, or to the office where the reports are required to be filed.

I also certify that I do not maintain or provide for my employees any segregated facilities at any of my establishments, and that I do not permit my employees to perform their services at any location, under my control, where segregated facilities are maintained. I certify further that I will not maintain or provide for my employees any segregated facilities at any of my establishments, and that I will not permit my employees to perform their services at any location, under my control, where segregated facilities are maintained. I agree that a breach of this certification is a violation of the Equal Opportunity clause in my contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and wash rooms, restaurants and other eating areas time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise. I further agree that (except where I have obtained identical certifications for proposed subcontractors for specific time periods) I will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause; that I will retain such certifications in my files; and that I will forward the following notice to such proposed subcontractors (except where the proposed subcontractors have submitted identical certifications for specific time periods):

NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENTS FOR CERTIFICATIONS OF NON-SEGREGATED FACILITIES

A certification of Nonsegregated Facilities, as required by the May 9, 1967, order (32F.R. 7439, may 19, 1967) on Elimination of Segregated Facilities, by the Secretary of Labor, must be submitted prior to the award of a subcontract exceeding $ 10,000 which is not exempt from the provisions of the Equal Opportunity clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

_____

(Signature) (Date)

_____

(Name and Title of Signer – Please Type)

CERTIFICATION OF NONSEGREGATED FACILITIES

By the submission of this bid, the bidder, offeror, applicant, or subcontractor certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. He certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The bidder, offeror, applicant, or subcontractor agrees that a breach of this certification is a violation of the Equal Opportunity clause in this contract. As used in this certificate, the term "segregated facilities" means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation and entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise. He further agrees that (except where he has obtained identical certifications from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause; that he will retain such certifications in his files, and that he will forward the following notice to such proposed subcontractors (except where the proposed subcontractors have submitted identical certifications for specific time periods).

_____

(Signature) (Date)

_____

(Name and Title of Signer – Please Type)

CITY OF NEWARK
DELAWARE

ATTACHMENT 5
Affidavit of Employee Drug Testing Program

AFFIDAVIT
OF
EMPLOYEE DRUG TESTING PROGRAM

4104 Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects requires that Contractors and Subcontractors implement a program of mandatory drug testing for Employees who work on Large Public Works Contracts funded all or in part with public funds.

We hereby certify that we have in place or will implement during the entire term of the contract a Mandatory Drug Testing Program for our employees on the jobsite that complies with this regulation:

Contractor/Subcontractor Name: _____

Contractor/Subcontractor Address: _____

_____

_____

Authorized Representative (typed or printed): _____

Authorized Representative (signature): _____

Title: _____

Sworn to and Subscribed before me this _____day of _____ 20____.

My Commission expires _____. NOTARY PUBLIC _____.

THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.

CITY OF NEWARK
DELAWARE

ATTACHMENT 6
Frequently Asked Questions:
Drug Testing Program for Large Public Works Projects

FREQUENTLY ASKED QUESTIONS
DRUG TESTING PROGRAM FOR LARGE PUBLIC WORKS PROJECTS

Question:	Which State projects require that contractors have a Drug Testing program in place?
Answer:	Large Public Works (PW) projects as defined by Title 29, Chapter 69 of Del Code. Large Public Works projects are those projects which are required to be bid at a threshold level set by the Procurement Council; currently that level is those projects $100,000 and over. Letter bids (not formally advertised) are not subject to testing.
Question:	Which Contractors are subject to testing?
Answer:	The Prime or General Contractor and all *listed* subcontractors.
Question:	What do I submit with my bid to certify compliance with the Regulation?
Answer:	An Affidavit Form is submitted with your bid for your firm and a separate form(s) for all *listed* subcontractors certifying compliance or will have program in place prior to award.
Question:	Do we have to use the Drug Affidavit and Reporting Forms that come with the bid forms?
Answer:	Use the Affidavit Form as contained in the Bid Documents. It is acceptable for the contractor to use their own Reporting Form as long as the Owner agrees, and it contains the minimum data elements as specified in the regulation.
Question:	Is there an expiration for the Drug Affidavit Forms? Can they be used on multiple projects? Do the forms have to be originals?
Answer:	The Drug Affidavit Forms do not expire unless they are no longer valid. They can be used on multiple projects and are not "project specific" but must be submitted with every bid. Original signatures and raised seal are NOT required; copies of the form are acceptable.
Question:	What do I submit prior to contract award?
Answer:	A copy of the Drug Testing program for your firm and from *listed* subcontractors that meets the requirements in the Regulation is submitted 2 days prior to award.
Question:	Which employees are tested?
Answer:	All employees that will be working on the jobsite are subject to testing. Home office employees and other workers not located on the jobsite and not under control of the contractor are not subject to testing.
Question:	When are employees tested?
Answer:	Initially (prior to work on the job, unless they've passed a random or scheduled drug test within the past 60 days), and randomly (either quarterly or monthly as defined in the contract). There are also "Reasonable Suspicion" and "Accident Triggered" testing requirements.

Question:	How is the 30 days in Section 7.1.1.3 calculated?
Answer:	The 30 days refers to a consecutive number of calendar days, including weekend days.
Question:	Does the 60 day prior test in Section 5.1 necessarily include alcohol testing?
Answer:	No.
Question:	How many employees are tested randomly?
Answer:	At least 10% of the Contractor's workforce, not less than one, are randomly tested during the contract period.
Question:	What is considered a "scientific valid method of randomly generating an Employee identifier" for the random testing requirement as noted in 5.2.2?
Answer:	Any method, mechanical (pulling names from a hat) or electronic (random number generator) that provides an unbiased and equal chance of selection to all employees in the pool to be tested.
Question:	If a contractor/subcontractor tests <u>all</u> their employees randomly (10%) are they covered if the person tested that period isn't in the "pool"?
Answer:	Yes.
Question:	Because manpower ramps up and down on a construction site and sometimes very quickly, at what point in the month do you make the determination of how many employees are on site for the pool to determine what constitutes 10%?
Answer:	The measurement of the number of employees is addressed in 5.2 as follows: "No less than 10% of a Contractor's or Subcontractor's anticipated workforce based on construction schedules validated by certified payrolls shall be randomly selected each month for testing". The key word is "anticipated"; the random number pull for a particular month would be based on how many employees you anticipate to be on the job during that month.
Question:	What if there is only one person working for a sub on a project? Since at least 10%, not less than one, need to be tested, are they tested every month/quarter?
Answer:	Yes, unless the subcontractor has a program in place to randomly test at least 10% of <u>all</u> of their employees monthly. Please refer to Section 5.2.3.
Question:	If a subcontractor hires another firm to do portions of their work but they aren't employees (i.e. a "sub of a sub"), do they need to drug test those employees or require the firm to have a program in place?
Answer:	There is nothing in the regulation that requires "subs of subs" to have a testing program in place.
Question:	Are temp agencies or temp employees required to be tested?
Answer:	If they are a listed subcontractor, yes. If they are a "sub of a sub", no.

Question:	We are an Architectural/Engineering sub-consultant firm currently providing services to (State agency). Does this new regulation concerning drug testing apply to A/E contracts, or is it just for general contractors and for bid public works contracts?
Answer:	Reference the definition of "subcontractor" as reflected in the regulation 2.1: **"Subcontractor"** means an entity such as, but not limited to, an individual, firm, partnership or corporation that has a contractual obligation to perform work for, or supply services to a Contractor as defined in section 2.1." As you are providing services to (state agency) directly and not to the Contractor you would not be included in this definition.
Question:	For the 10% random requirement, what happens at 11 employees? Do we test two or one?
Answer:	Because Section 5.2.3 currently states that "no less than 10%..." per month must be tested, if a contractor or a subcontractor has 11 employees on the jobsite, they must randomly test two per month unless the contractor or subcontractor has a program in place to randomly drug test at least 10% of <u>all</u> of their employees monthly.
Question:	If there are 10 employees working 4 job sites and each are required to have programs under this regulation, do 4 of the 10 (10% per jobsite) have to be tested each month?
Answer:	No, 10% of the total need to be tested.
Question:	If a company or firm has several State Large Public Works jobs going at the same time, may they put all employees from each job into one random testing pool?
Answer:	Yes, as long as the program meets all other requirements of the Regulation.
Question:	If office or administrative staff goes to a jobsite for just a site visit or meeting, will they be required to be tested since they are not doing any work onsite?
Answer:	No, the Regulation only covers workers performing work at the jobsite. Note that covered employees DOES also include supervisors/foremen working on the jobsite and delivery personnel delivering materials and equipment to and from the jobsite.
Question:	What are the reporting requirements during the contract?
Answer:	Random testing is reported either quarterly or monthly to verify that 10% of the Contractor's employees are being tested (no names are included, just # tested). Any Positive Test Results are reported to the Owner within 24 hours (name is included in a sealed envelope).
Question:	Is Alcohol screening a requirement for the Initial Drug Test (within 60 days in advance of employee at the jobsite)?
Answer:	No.
Question:	Does alcohol testing have to be urine alcohol?
Answer:	The Regulation does not specify the specific methodology for urine testing.

Question:	What are the consequences of a Positive Result?
Answer:	Employee is immediately suspended from the jobsite. Not eligible on any State PW jobsite until 30 days after a subsequent negative test result. Also subject to one year of unscheduled random testing. More than one positive within a 3 year period results in a permanent ban for the employee from State of Delaware PW jobsites.
Question:	What is the definition of “significant damage” in Section 5.5?
Answer:	As of the current version, it is not defined in the regulation. Generally it is an amount of damage that has a large monetary effect or delays the project schedule.
Question:	What constitutes an injury requiring drug testing as required in 5.5?
Answer:	Any injury requiring medical care beyond first aid.

CITY OF NEWARK
DELAWARE

ATTACHMENT 7

Disadvantaged Business Enterprise (DBE) Program Forms:

- DBE Subcontractor Participation Form
- DBE Subcontractor Performance Form
- DBE Subcontractor Utilization Form

United States Environmental Protection Agency

OMB Control No: 2090-0030
Approved: 8/13/2013
Approval Expires: 8/31/2015

Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Participation Form

An EPA Financial Assistance Agreement Recipient must require its prime contractors to provide this form to its DBE subcontractors. This form gives a DBE[1] subcontractor[2] the opportunity to describe work received and/or report any concerns regarding the EPA-funded project (e.g., in areas such as termination by prime contractor, late payments, etc.). The DBE subcontractor can, as an option, complete and submit this form to the EPA DBE Coordinator at any time during the project period of performance.

Subcontractor Name	Project Name	
Bid/ Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.	Email Address	
Prime Contractor Name	Issuing/Funding Entity:	

Contract Item Number	Description of Work Received from the Prime Contractor Involving Construction, Services , Equipment or Supplies	Amount Received by Prime Contractor

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

United States Environmental Protection Agency

OMB Control No: 2090-0030
Approved: 8/13/2013
Approval Expires: 8/31/2015

Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Performance Form

This form is intended to capture the DBE[1] subcontractor's[2] description of work to be performed and the price of the work submitted to the prime contractor. An EPA Financial Assistance Agreement Recipient must require its prime contractor to have its DBE subcontractors complete this form and include all completed forms in the prime contractors bid or proposal package.

Subcontractor Name	Project Name	
Bid/ Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.	Email Address	
Prime Contractor Name	Issuing/Funding Entity:	

Contract Item Number	Description of Work Submitted to the Prime Contractor Involving Construction, Services , Equipment or Supplies	Price of Work Submitted to the Prime Contractor

DBE Certified By: ___ DOT ___ SBA ___ Other: _____	Meets/ exceeds EPA certification standards? ___ YES ___ NO ___ Unknown

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

United States Environmental Protection Agency

OMB Control No: 2090-0030
Approved: 8/13/2013
Approval Expires: 8/31/2015

Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Performance Form

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware of that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

Prime Contractor Signature	Print Name
Title	**Date**

Subcontractor Signature	Print Name
Title	**Date**

United States Environmental Protection Agency

OMB Control No: 2090-0030
Approved: 8/13/2013
Approval Expires: 8/31/2015

Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Utilization Form

This form is intended to capture the prime contractor's actual and/or anticipated use of identified certified DBE[1] subcontractors[2] and the estimated dollar amount of each subcontract. An EPA Financial Assistance Agreement Recipient must require its prime contractors to complete this form and include it in the bid or proposal package. Prime contractors should also maintain a copy of this form on file.

Prime Contractor Name		Project Name
Bid/ Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.		Email Address
Issuing/Funding Entity:		

I have identified potential DBE certified subcontractors	○ YES	◉ NO
If yes, please complete the table below. If no, please explain:		

Subcontractor Name/ Company Name	**Company Address/ Phone/ Email**	**Est. Dollar Amt**	**Currently DBE Certified?**

Continue on back if needed

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

United States Environmental Protection Agency

OMB Control No: 2090-0030
Approved: 8/13/2013
Approval Expires: 8/31/2015

Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Utilization Form

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware of that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

Prime Contractor Signature	Print Name
Title	**Date**

United States Environmental Protection Agency

OMB Control No: 2090-0030
Approved: 8/13/2013
Approval Expires: 8/31/2015

Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Participation Form

Please use the space below to report any concerns regarding the above EPA-funded project:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Subcontractor Signature	Print Name
Title	**Date**

CITY OF NEWARK
DELAWARE

ATTACHMENT 8
Contractor's American Iron and Steel Certification, AIS Construction Contract Language, DBE Rule Term and Conditions Forms

CONTRACTOR'S

AMERICAN IRON AND STEEL CERTIFICATION

As the contractor for the _____ project, I certify that I have read, understand and will comply with the "American Iron and Steel (AIS)" requirements of section 436 of P.L. 113-76, Consolidated Appropriations Act, 2014 (Act) that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use iron and steel products that are produced in the United States for projects for the construction, alteration, maintenance, or repair of a public water system or treatment works.

_____ _____

Name (Printed) Company

_____ _____

Name (Signature) Date

AIS Construction Contract Language

_____

Project/Contract Title

The Contractor acknowledges to and for the benefit of

_____("**Owner**")
that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund that have statutory requirements commonly known as "American Iron and Steel;" that requires all of the iron and steel products used in the project to be produced in the United States ("American Iron and Steel Requirement") including iron and steel products provided by the Contactor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Owner that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Owner or the State. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Owner to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Owner resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Owner). While the Contractor has no direct contractual privity with the State, as a lender to the Owner for the funding of its project, the Owner and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

_____	_____
Name (Printed)	Contractor/Company
_____	_____
Name (Signature)	Date

APPENDIX A

DBE Rule Term and Condition

The following term and condition must be included in each procurement contract signed by an EPA loan recipient and their contractors:

The contractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 40 CFR part 33 in the award and administration of contracts awarded under EPA financial assistance agreements. Failure by the contractor to carry out these requirements is a material breach of this contract which may result in termination of this contract or other legally available remedies.

Contractor: _____

Authorized Representative: _____

Date: _____

CITY OF NEWARK
DELAWARE

ATTACHMENT 9
Closed Circuit Television (CCTV) Inspection Videos

(ZIP file available from City's web page www.newarkde.gov/bids)