Company Name - _____

REQUEST FOR RESPONSE

BID #5552
HIGHEST PRIORITY PUMPING STATION IMPROVEMENTS
HARTFORD, CONNECTICUT

City of Hartford
Procurement Services Unit
550 Main Street
Hartford, CT 06103

DEADLINE: Tuesday, July 22, 2014 2:00pm

_____

Susan Sheppard
Procurement Specialist
860-757-9616
SMSHEPPARD@HARTFORD.GOV

INVITATION TO RESPOND

Dear Sir/Madam:
The City of Hartford (the City) invites responses for:

RFR #: 5552	SOLICITATION DATE: 6-25-2014
SOLICITATION TITLE: Highest Priority Pumping Station Improvements, Hartford Levee System	
SOLICITATION DESCRIPTION: Improvements to South Meadow Pumping Station, Inspection of Pump # 3 at North Meadow Pump Station and Gear Box # 2 at Armory Pump Station.	
SITE LOCATION (if applicable): Hartford Levee System, Hartford, Connecticut.	
RESPONSE DATE : 7-22-2014	RESPONSE TIME: 2:00 p.m.
DEPT. ASSIGNED CONTRACT #: DPW #14-43	EST. COST OF CONSTRUCTION: $2,400,000.00

A PRE-BID / RESPONSE CONFERENCE HAS BEEN SCHEDULED FOR 7-08 -2014 AT 11:00 am AT South Meadows Pumping Station, Behind 1010 Wethersfield Avenue, Hartford, CT
(Date / Time) (Location)

This pre-bid conference is:
- ☐ Not Applicable
- ☐ Mandatory (All prospective bidders are REQUIRED to attend to discuss specifications)
- ☒ Non-mandatory (All prospective bidders are encouraged to attend to discuss specifications)

This solicitation contains the following sections:
Invitation to Respond
Standard Instructions
Project Site Location – *(for construction projects only)*
Table of Contents – *(for construction projects only)*
Section 1 – Response Forms
- 1.1 Response Information & Signature Form
  - Contract Compliance
    - ☒ Affirmative Action / Equal Employment Opportunity Requirements – See Section 3.6
    - ☒ Surety Bond Requirements ☒ Bid Bond ☒ Performance & Payment Bonds
    - ☒ Insurance Requirements – see exhibits below
    - ☐ Set Aside – Ord. Section 2-660 ☐ MWBE ☐ Small Contractor
    - ☒ City-Based Small Business Bid Preference – Ord. Section 2-661
    - ☒ 15% Minority Utilization (City of Hartford Certified MWBE) – Ord. Section 2-682
    - ☒ State of Connecticut DAS Prequalification (Public Construction Project > $500,000)
    - ☒ OSHA Compliance (Public Works Project > $100,000)
    - ☒ Wage Requirements – Complete & attach Wage Certification Form
- 1.2 Response Pricing
- 1.3 Statement of Qualifications
- 1.4 Subcontractor Information

Section 2 – Specifications/Scope of Services
- ☒ Special Instructions / Conditions included

Section 3 – General Information for Preparation and Delivery of a Response
Section 4 – Terms and Conditions / Labor Compliance
Exhibits
- ☐ _____ ☐ Plans & Drawings included

Sincerely,

Susan Sheppard
Pro**curement Specialist**
860-757-9616
SMSHEPPARD@HARTFORD.GOV

STANDARD INSTRUCTIONS:

- Questions & Addenda
  - Questions related to this project must be submitted via email to smsheppard@hartford.gov within seventy-two (72) hours in advance of the response submittal deadline. Responses to such questions will be posted within twenty-four (24) hours of the response submittal deadline. Respondents are responsible for obtaining all addenda related to this RFR and thus advised to check for any addenda a minimum of twenty-four (24) hours in advance of the response deadline.

- Taxpayer's Identification Number
  - Respondents must provide their Taxpayer Identification number on the response form (Tax ID#). Award recipients, whether an individual, proprietor, partnership or a non-profit corporation or organization must file the Internal Revenue Service Form W-9, Request for Taxpayer Identification Number and Certification with the City.

- Responsible Candidate
  - Respondent must not have any delinquent taxes or financial obligations due
  - Respondent must execute an affidavit to comply with all federal and state requirements
  - Respondent must be certified as an Equal Opportunity Employer

- Calendar days allowed for contract work / Substantial completion date: 360

- Liquidated damages for late completion: $1000/DAY

- Bid Bond / Performance & Payment bonds *(required if checked on invitation to respond)*
  - 10% bid bond, cashiers or certified check with your response. The City of Hartford provides contractors with the option of submitting an electronic Bid Bond through the Surety2000 website. Surety 2000 is an Internet-based surety processing, verification and security system, developed in cooperation with the surety industry. You may contact Surety 2000 at 1-800-660-3263 or www.surety2000.com, for more information.
  - Performance and payment bonds for 100% of the project upon award if the contract value exceeds $50,000.00.

- DAS prequalification program *(construction / infrastructure projects only)*
  - The DAS Contractor Prequalification Program, Connecticut General Statues Section 4a-100, requires all contractors to prequalify "before they can bid on any construction, alteration, remodeling, repair or demolition of any public building (does not apply to road construction), for work by the state or a municipality, estimated to cost more than $500,000 and which is funded in whole or in part with state funds. "

- Drawings *(construction / infrastructure projects only)*
  - Drawings are available from Merritt Graphics' PlanWell site located at http://www.merrittgraphics.com . Click on the PlanWell link, select "Public Plan Room" and select this project. You can also contact Merritt Graphics at 800-344-4477. Fees to purchase sets are non-refundable.

- In addition to your **hand delivered** response, submit # hard-copies to:
  - Hartford City Hall, Procurement Services, 550 Main Street, Room 100, Hartford, CT 06103

Updated 8/10/12

Request for Response (RFR)
AFFIDAVIT

STATE OF CONNECTICUT)
) ss. _____, 20___
COUNTY OF _____)

I, _____, being duly sworn, depose and say:
(insert name of authorized agent)

1. I am the _____ of _____ (the
(insert title) (insert name of company)
"Respondent") and am authorized on behalf of the Proposer to make this Affidavit.

2. I am over 18 years of age and understand the obligations of an oath.

3. There are no delinquent real and personal property taxes due the City of Hartford from the Respondent.

4. The Respondent is current on all monetary obligations due the City of Hartford.

5. The Respondent is currently in compliance with all applicable laws, regulations and ordinances of the United States, State of Connecticut and the City of Hartford.

_____
(insert name of company)

By: _____
Name:
Title:

Subscribed and sworn to before me, _____, the undersigned officer this

_____ day of _____, 20___.

_____
Notary Public
My Commission Expires:

Hartford Affirmative Action Plan (HAAP) / Equal Employment Opportunity Agreement & Affidavit

Project # & Title: _____

Each contractor, subcontractor and supplier subject to the provisions of Article XII, Section 2-680, et seq. of the Hartford Municipal Code, must execute this Agreement & Affidavit, prior to the execution of any binding agreements with the City of Hartford. This agreement shall form a part of and be deemed attached to all contracts or purchase orders between the City of Hartford (the City) or it's Agent and the undersigned.

During the performance of this contract, the Contractor agrees to comply with the following:

1. Each Contractor will comply with all provisions of Executive Order No. 11246, Executive Order No. 11375 and Executive Order No. 11063, Connecticut Fair Employment Act, the Vocational Rehabilitation Act of 1973, including all standards and regulations which are promulgated by the government authorities which established such acts in said requirements, and all standards, and regulations incorporated herein by reference.

2. The Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, age, sex or national origin or physical or mental handicap, religion and sexual orientation. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated, during employment, without regard to their race, creed, color, age, sex, national origin or physical or mental handicap, religion and sexual orientation. Such actions shall include, but not be limited to, the following Employment, Upgrading, Promotion, Demotion, or Transfer, Recruitment or Recruitment Advertising, Layoff, or Termination; Rates of Pay or other forms of compensation; and Selection for Training, including Apprenticeship.

3. The Contractor will designate a person to handle affirmative action matters for the company who will have the responsibility for assuring compliance.

4. The Contractor will submit their company's written Affirmative Action / EEO policy statement to the City of Hartford as part of the EEO Certification.

5. 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, creed, color, age, sex, national origin or physical or mental handicap, religion and sexual orientation.

6. Contractor certifies that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control, where segregated facilities are maintained. As used in this Agreement, the terms "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, age, national origin or physical or mental handicap, religion and sexual orientation because of habit, local custom otherwise.

7. The contractor shall comply with the City of Hartford's "Ban the Box" Ordinance sections 2-785 to 2-793, which prohibits discrimination in hiring policies against persons previously convicted and provides a mechanism to ensure that persons and businesses supplying goods and/or services to the City of Hartford have adopted and employ fair hiring policies and practices that are consistent with the City's goal of removing obstacles to the employment of persons with prior convictions. Furthermore, job applications shall not contain a "checkbox" or inquiry regarding a job applicant's prior convictions and applicant's criminal record shall not be revealed to the individuals who are making the hiring decision until a conditional offer of employment has been made. Rejection of an applicant shall only be considered lawful if the contents of the criminal record have a direct bearing on the nature of employment or the offer of employment would violate state or federal law.

8. 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 advising the labor union or workers' representative of the contractor's commitments.

9. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the compliance officer setting forth the provisions of this nondiscrimination clause.

10. The Contractor will furnish and submit all documents, information and reports required by the City of Hartford, Executive Order No. 11246, as amended, the Vocational Rehabilitation Act of 1973, and by the rules, regulations and orders of the Secretary of Labor, pursuant thereto, and will permit access to their books, records and accounts by the Contracting Agency, the City and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations and orders. Contractor further agrees to submit periodic reports of employment and subcontracting practices in such a form, in such a manner and at such time as required by the City of Hartford. All records must be retained for a period of 3 years following the completion of work and shall be available at reasonable times and places for inspection by authorized representative of the City. The contractor will also permit its employees to participate in on-site interviews conducted by City staff for the purpose of assuring wage compliance.

11. The Contractor will include the provisions of paragraphs (1) through (10) in every subcontract or purchase order and it is the responsibility of the contractor to assure subcontractor compliance with all of the above terms. These 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 Owner may direct as a means of enforcing such provisions.

12. The Contractor shall set aside 15% of the total project costs for certified Minority & Women Business Enterprises.

13. Prior to awards of subcontractors or purchase orders for this work, the Contractor will conduct informal meetings with interested MBE/WBE suppliers and contractors for the scope of the work to be awarded. Contractor will inform associations and consortia of minority and female contractors of bid specifications well in advance of the closing date for bid submission. Contractors and subcontractors must document and maintain records of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations. Copies of MBE/WBE contracts must be provided to the City prior to the execution of contract with the City.

14. The Contractor assures that no less than 15% of the total project work hours, by trade, will be worked by minority trades-workers.

15. The Contractor assures that no less than 30% of the total project work hours will be worked by Hartford Residents.

16. The Contractor will contact the business agent for the labor unions with whom he has an agreement and request minority persons and Hartford residents be referred for work on this project.

17. The Contractor and its subcontractors shall notify the City of Hartford of all job openings located within the Hartford Labor Market Area and shall require their subcontractors or vendors to advise the Contract Compliance Officer as to the opportunities for employment within the vendor's or subcontractor's organization, for the duration of this project. Notification of job openings shall include criteria and minimum qualifications, rates of pay, hours of work, duration of employment, work to be performed, job skills and type of training required for each position.

18. The Contractor shall make all good faith efforts to comply with the Affirmative Action goals of the City by consulting with the City of Hartford's Contract Compliance Manager, regarding specific affirmative steps to undertake and by maintaining documentation of all communication, advertising, recruiting and training efforts. The contractor shall notify the City of Hartford immediately shall any problems arise in meeting any of these requirements.

19. In the event of the Contractor's noncompliance with the nondiscrimination and equal employment clauses of this contract, this contract may be canceled, terminated or suspended, in whole or in part, without penalty to the City or its Agent.

My organization hereby agrees to comply with all the terms noted above in the Hartford Affirmative Action Plan / Equal Employment Opportunity Agreement.

_____ _____

(Signature of authorized agent) (Date)

Project # & Title: _____

AFFIDAVIT FOR BECOMING SIGNATORY TO THE "HARTFORD AFFIRMATIVE ACTION PLAN"

I, _____, being duly sworn do depose and say:
(Insert name and title of authorized agent

1. I am an official of the following organization and I am authorized to submit this affidavit for and on behalf of my organization, thereby binding it to the terms and statements contained herein.

2. My organization hereby acknowledges its agreement with the intent; purpose and scope of the Hartford Affirmative Action Plan adopted pursuant to Section 2-680 et seq. of the Municipal Code of the City of Hartford, and will make all good faith efforts to comply with its provisions.

3. My organization hereby agrees and certifies as a condition of participating on construction projects of the City of Hartford that it will not practice discrimination in regard to minority group individuals and women and will eliminate any continuing effects, if any, of past discrimination.

4. My organization does not discriminate against persons previously convicted and has adopted policies that employ fair hiring policies and practices that are consistent with the City of Hartford's goal of removing obstacles to the employment of persons with prior convictions.

5. My organization hereby agrees to comply with the contractual responsibilities regarding Minority Business Utilization, Minority & Female trades-worker participation and Hartford Residency requirements of City of Hartford.

_____ _____
(Insert name of company) (Signature of authorized agent)

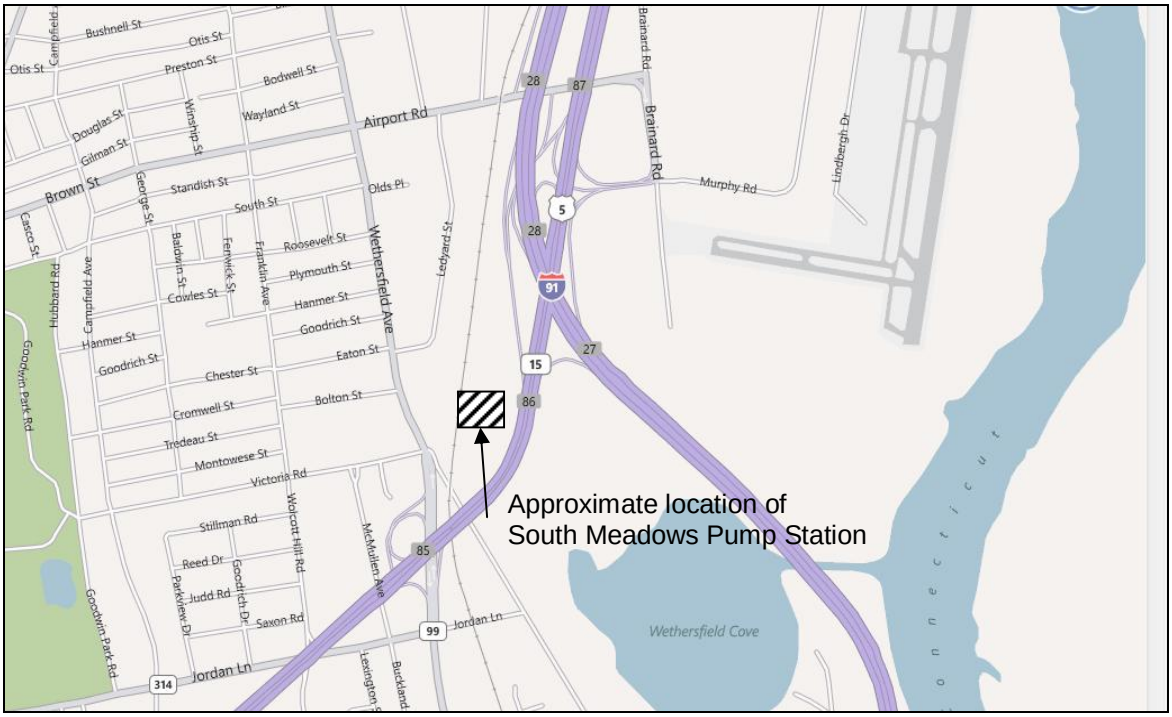
Subscribed to and sworn to before me this _____ day of _____, 20_____

_____

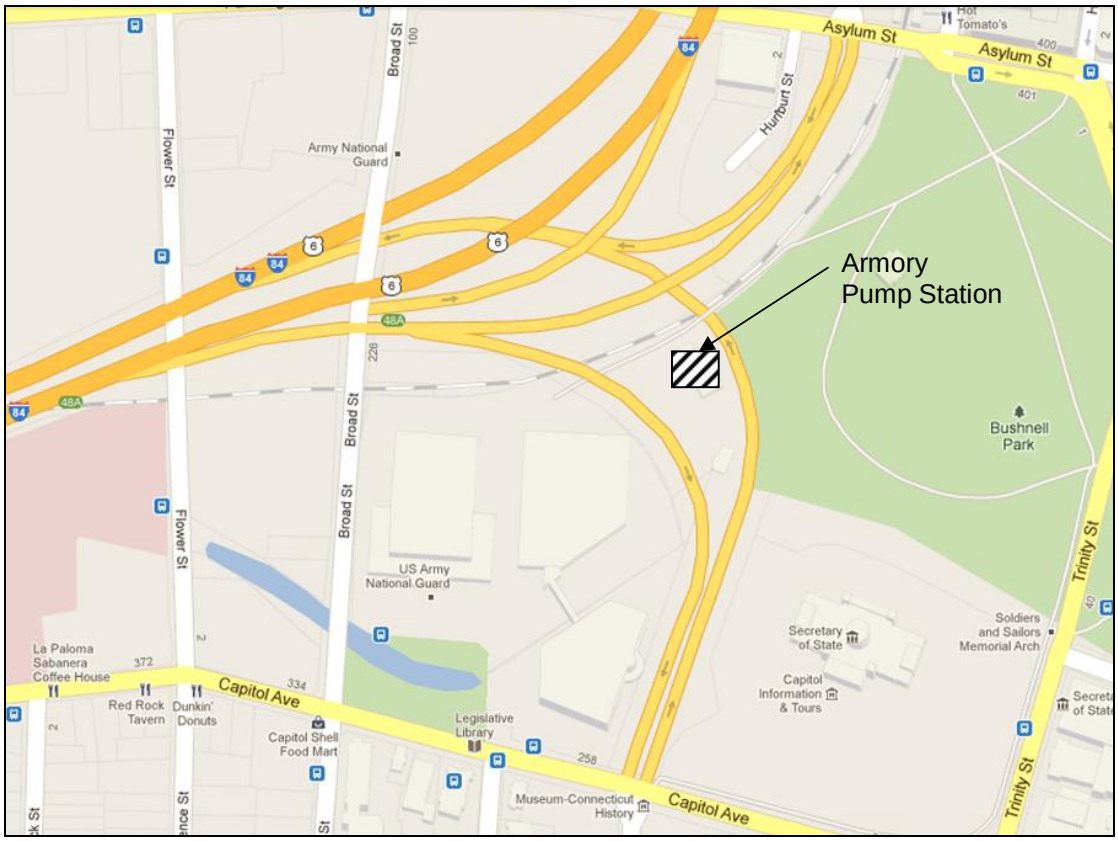
(Check appropriate box) ( ) Commissioner of Superior Court

( ) Notary Public, my commission expires:

North Meadows Pumping Station
Leibert Road
(south of Connecticut Transit Building)



South Meadows Pumping Station
(behind 1010 Wethersfield Avenue)



Armory Pumping Station
(behind Legislative Office Bldg Parking Garage

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CONTRACT NUMBER	DPW 14-43
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Revision 060412

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Section 1
RESPONSE FORMS

1.1 RESPONSE INFORMATION & SIGNATURE FORM

Vendor Name -				
Trade Name -				
Address -				
Phone # -	Fax # -	Email Address -		
Contact Person -		Tax ID# -		
Delivery / Service Start Date:		# Calendar days after receipt of executed contract:		
Bid Surety - 10%	For electronic bonds enter bond number, otherwise check the appropriate box	Electronic Bond #	☐ Bond (hard copy)	☐ Cashiers / Certified Check
Cost of Performance Bond included in base bid (if applicable)			$	Per thousand
EEO Certification Status (check one) See General Information for Preparing a Response paragraph 3.6.3			☐ Current & on file	☐ EEO form attached
DAS Prequalified Contractor? (non highway construction projects >$500,000) http://das.ct.gov/cr1.aspx?page=10			☐ Certificate attached	☐ Update Statement attached
Insurance Agent Name			Phone #	
Insurance Agent Address				

Vendor acknowledges receipt of all addenda issued during the bidding period (if applicable) and understands that they are a part of the bidding documents.

The undersigned hereby declares that he/she or they are thoroughly familiar with the specifications, the various sites, the City's requirements, and the objectives for each element of the project item or service and understands that in signing this proposal all right to plead any misunderstanding regarding the same is waived. The undersigned further understands and agrees that he will furnish and provide all the necessary material, machinery, implements, tools, labor, services, and other items of whatever nature, and to do and perform all the work necessary under the aforesaid conditions, to carry out the contract and to accept in full compensation therefore the amount of the contract as agreed to by the Contractor and the City.

The undersigned hereby declares that no reason or persons other than those named herein are interested in this proposal, which is made without any connection with any other person or persons making any proposal for the same work and is in all respects fair and without collusion or fraud; that no person acting for or employed by the City of Hartford is directly or indirectly interested therein, or in the supplies or works to which it relates, or will receive any part of the profit or any commission there from in any manner which is unethical or contrary to the best interest of said City of Hartford.

The undersigned additionally declares that they are not debarred or suspended, or otherwise excluded from, or ineligible for, participation in City of Hartford, State of Connecticut or federally funded projects (Executive Order 12549).

The undersigned certifies under penalty of false statement that the information provided in this response is true.

Submitted by *(Signature)*		
Printed name and title		Date

(Authorized Agent of Company)

1.2 RESPONSE PRICING

Base or Lump Sum Bid and, if called for in the documents, Alternates and Unit Pricing

The City of Hartford is exempt from all sales and use tax; therefore bid prices shall not incorporate such taxes. Upon request by the successful respondent, a sales tax exemption certificate will be issued.

A. BASE BID / LUMP SUM and ALTERNATES

BASE BID / LUMP SUM as shown on the contract drawings & specifications (Including the Owner's Contingency Allowance of $220,000.00)	$
Bid in words (Including the Owner's Contingency Allowance of $220,000.00)	
Alternate #1 as shown on the contract drawings and in the specifications	$
Alternate #2 as shown on the contract drawings and in the specifications	$
Alternate #3 as shown on the contract drawings and in the specifications	$
Alternate #4 as shown on the contract drawings and in the specifications	$
Alternate #5 as shown on the contract drawings and in the specifications	$

B. UNIT PRICES

BASE BID					
ITEM NO.	**QTY. ***			**UNIT PRICE**	**AMOUNT**
Show amount in both words and figures. In case of discrepancy, the amount shown in words will govern.					
General Items					
001	1	LS	**Contingency** at the Lump Sum Price of _____ Dollars and _____ Cents ($)	$_____	$_____

BASE BID					
ITEM NO.	**QTY. ***			**UNIT PRICE**	**AMOUNT**
Show amount in both words and figures. In case of discrepancy, the amount shown in words will govern.					
South Meadows Pumping Station					
101	2	EA	**R&R South Meadows PS Pumps & Shaft Seals – Morris – 36 Inch – 1956 Vertical Mixed Flow** at the per Each Price of _____ Dollars and _____ Cents ($)	$_____	$_____
102	2	EA	**South Meadows PS Pump Bearings Steady – Morris – 36 Inch – 1956 Vertical Mixed Flow** at the per Each Price of _____ Dollars and _____ Cents ($)	$_____	$_____
103	2	EA	**South Meadows PS Pump Bearings Upper – Morris – 36 Inch – 1956 Vertical Mixed Flow** at the per Each Price of _____ Dollars and _____ Cents ($)	$_____	$_____

BASE BID					
ITEM NO.	**QTY. ***			**UNIT PRICE**	**AMOUNT**
Show amount in both words and figures. In case of discrepancy, the amount shown in words will govern.					
South Meadows Pumping Station					
104	2	EA	**South Meadows PS Pump Bearings Lower – Morris – 36 Inch – 1956 Vertical Mixed Flow** at the per Each Price of _____ Dollars and _____ Cents ($)	$_____	$_____
105	12	EA	**South Meadows PS Valve Replacement – 36 inch** at the per Each Price of _____ Dollars and _____ Cents ($)	$_____	$_____
106	10	EA	**South Meadows PS Valve Actuator Refurbish/Reinstall** at the per Each Price of _____ Dollars and _____ Cents ($)	$_____	$_____
107	2	EA	**South Meadows PS Valve Actuator Replacement** at the per Each Price of _____ Dollars and _____ Cents ($)	$_____	$_____
108	1	LS	**South Meadows PS Spool Pieces** at the Lump Sum Price of _____ Dollars and _____ Cents ($)	$_____	$_____
109	1	LS	**South Meadows PS Saddle Taps for Flow Measurement** at the Lump Sum Price of _____ Dollars and _____ Cents ($)	$_____	$_____

BASE BID					
ITEM NO.	**QTY. ***			**UNIT PRICE**	**AMOUNT**
Show amount in both words and figures. In case of discrepancy, the amount shown in words will govern.					
South Meadows Pumping Station					
110	1	LS	**South Meadows PS Misc. Pipe Fitting/Accessories** at the Lump Sum Price of _____ Dollars and _____ Cents ($)	$_____	$_____
111	1	LS	**South Meadows PS Pipe/Valve Support** at the Lump Sum Price of _____ Dollars and _____ Cents ($)	$_____	$_____
112	4	Each	**South Meadows PS Hydraulic Cylinder Removal** at the Lump Sum Price of _____ Dollars and _____ Cents ($)	$_____	$_____
113	1	LS	**South Meadows PS Mezzanine Catwalk/Platform Modification** at the Lump Sum Price of _____ Dollars and _____ Cents ($)	$_____	$_____
114	1	LS	**South Meadows PS Sump Pump System & Safety Grate** at the Lump Sum Price of _____ Dollars and _____ Cents ($)	$_____	$_____
151	1	LS	**South Meadows PS Mobilization/Demobilization /Equipment Isolation and Incidental Construction** at the Lump Sum Price of _____ Dollars and _____ Cents ($)	$_____	$_____

BASE BID					
ITEM NO.	**QTY. ***			**UNIT PRICE**	**AMOUNT**
Show amount in both words and figures. In case of discrepancy, the amount shown in words will govern.					
South Meadows Pumping Station					
152	1	LS	**South Meadows PS Dewatering** at the Lump Sum Price of _____ Dollars and _____ Cents ($)	$_____	$_____
153	1	LS	**South Meadows PS Hazardous Material Handling** at the Lump Sum Price of _____ Dollars and _____ Cents ($)	$_____	$_____

BASE BID					
ITEM NO.	**QTY. ***			**UNIT PRICE**	**AMOUNT**
Show amount in both words and figures. In case of discrepancy, the amount shown in words will govern.					
North Meadows Pumping Station					
201	1	LS	**North Meadows PS Pump 3 Inspection – DeLaval – 36 Inch – 1939 Centrifugal** at the Lump Sum Price of _____ Dollars and _____ Cents ($)	$_____	$_____

BASE BID					
ITEM NO.	**QTY. ***			**UNIT PRICE**	**AMOUNT**
Show amount in both words and figures. In case of discrepancy, the amount shown in words will govern.					
Armory Pumping Station					
301	1	LS	**Armory PS Pump 2 Gearbox Inspection – Worthington – 24 Inch – 1980 Centrifugal** at the Lump Sum Price of _____ Dollars and _____ Cents ($)	$_____	$_____
			Base Bid Total **Items 001 through 301** **(also see page 2)**	$_____	

1.3 STATEMENT OF QUALIFICATIONS

Please complete the following information. Failure to respond to all items may result in the rejection of your response.

1. Number of years in business - D-U-N-S Number:

2. Number of personnel employed Part time - , Full time - ,

3. List up to six past contracts of this type/size your firm has completed within the last three (3) years:

Project	Date	Contact Person	Phone No.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.

4. DAS CONTRACTOR PREQUALIFICATION *(required for construction / infrastructure projects only)* DAS prequalified? ☐Yes ☐No	You certify that there has been no substantial change in your financial position or corporate structure since your most recent prequalification certificate was issued or renewed, other than those changes noted in the update statement (attached).	YES ☐	NO ☐

5. ORGANIZATIONAL STRUCTURE OF BUSINESS ENTITY (select one)	☐	General partnership (GP)
	☐	Limited partnership (LP)
	☐	Limited liability corporation (LLC)
	☐	Limited liability partnership (LLP)
	☐	Corporation
	☐	Individual doing business under a trade name (sole proprietor)
	☐	other (specify)

6. CITY OF HARTFORD TAX STATUS / OTHER FINANCIAL OBLIGATIONS	Hartford Businesses – All City of Hartford taxes & financial obligations (real, motor & personal property) are current and paid in full or subject to a current and approved payment plan. Please attach RFR Affidavit.	Yes ☐	No ☐
	Non-Hartford Businesses - All City of Hartford financial obligations are current and paid in full or subject to a current and approved payment plan. Please attach RFR Affidavit.	Yes ☐	No ☐

7. STATUS OF THE BUSINESS AND ITS CURRENT STANDING WITH THE SECRETARY OF STATE'S OFFICE	Connecticut businesses - Are all required filings current with the Secretary of State and will the Secretary of State be able to issue a Certificate of Legal Existence?	Yes ☐	No ☐
	Out-of –State (foreign) businesses – Have you filed a Certificate of Authority / Application of Registration with the Connecticut Secretary of State? If so, submit a copy of your filing with your response. If not, submit a copy of your Certificate of Good Standing from your state of incorporation.	Yes ☐	No ☐

8. Is your local organization an affiliate of a Parent company? If so, Indicate the principal place of business of the parent company and the name of agent for service.					
Business Name	.				
Address	.				
City	.	State	.	Zip	.
Name of Agent	.				

9. List all Affiliated Businesses (attach additional sheets as necessary):

Business Name	Address	Ownership Interest %
.	.	.
.	.	.
.	.	.
.	.	.

10. Based on the organizational structure of your business, provide a current listing of all corporate officers, principals, general or managing partners, limited partners, managers and members. If sole proprietorship or general partnership, attach trade name certificate filed with the town clerks office.

11. Submit copies of all required business (trade & occupational) licenses with your response.

12. Your company may be asked to submit information relative to your company's financial statements and/or a Dun & Bradstreet report may be obtained prior to receiving an award. This information will be protected to the fullest extent required by law.

13. Additional information/documentation may be requested subsequent to your responding to this solicitation.

1.4 SUBCONTRACTOR UTILIZATION

Forms labeled Section 1.4 are provided below to accommodate the Base Bid (or Lump Sum) and alternates (if called for) in this Request for Response (RFR).

The information provided below applies to: (Check one box as appropriate)

Base Bid	Alternate 1	Alternate 2	Alternate 3	Alternate 4	Alternate 5
☐	☐	☐	☐	☐	☐

1.4 SUBCONTRACTOR UTILIZATION

If subcontractors are to be used, indicate the firm name, address, portion or section of work the subcontractor will be performing, the subcontract value, percentage of base bid and if the subcontractor is a City certified (MWBE).

Respondent agrees to subcontract the portion of the work stipulated below to (MWBE) businesses. A copy of the contract between the respondent and the subcontractor will be required prior to execution of contract.

Note: Connecticut General Statues Section 4a-100, Prequalification now applies to subcontractors also.

Trade or Nature of Work	BUSINESS NAME AND ADDRESS	CITY OF HARTFORD CERTIFIED MWBE	% of Base Bid	Subcontract $ Value
		☐		
		☐		
		☐		
		☐		
		☐		
			TOTAL SUBCONTRACT VALUE	
			TOTAL (MWBE) SUBCONTRACT VALUE	

Subcontract % to total project %

MWBE Subcontract % to total project

Additional information may be requested subsequent to your responding to this bid request.

The information provided below applies to: (Check one box as appropriate)

Base Bid	Alternate 1	Alternate 2	Alternate 3	Alternate 4	Alternate 5
☐	☐	☐	☐	☐	☐

1.4 SUBCONTRACTOR UTILIZATION

If subcontractors are to be used, indicate the firm name, address, portion or section of work the subcontractor will be performing, the subcontract value, percentage of base bid and if the subcontractor is a City certified (MWBE).

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Note: Connecticut General Statues Section 4a-100, Prequalification now applies to subcontractors also.

Trade or Nature of Work	Business Name and Address	CITY OF HARTFORD CERTIFIED MWBE	% of Base Bid	Subcontract $ Value
		☐		
		☐		
		☐		
		☐		
		☐		
			TOTAL SUBCONTRACT VALUE	
			TOTAL (MWBE) SUBCONTRACT VALUE	

Subcontract % to total project %

MWBE Subcontract % to total project %

Additional information may be requested subsequent to your responding to this bid request.

The information provided below applies to: (Check one box as appropriate)

Base Bid	Alternate 1	Alternate 2	Alternate 3	Alternate 4	Alternate 5
☐	☐	☐	☐	☐	☐

1.4 SUBCONTRACTOR UTILIZATION

If subcontractors are to be used, indicate the firm name, address, portion or section of work the subcontractor will be performing, the subcontract value, percentage of base bid and if the subcontractor is a City certified (MWBE).

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Note: Connecticut General Statues Section 4a-100, Prequalification now applies to subcontractors also.

Trade or Nature of Work	Business Name and Address	CITY OF HARTFORD CERTIFIED MWBE	% of Base Bid	Subcontract $ Value
		☐		
		☐		
		☐		
		☐		
		☐		
			TOTAL SUBCONTRACT VALUE	
			TOTAL (MWBE) SUBCONTRACT VALUE	

Subcontract % to total project %

MWBE Subcontract % to total project %

Additional information may be requested subsequent to your responding to this bid request.

The information provided below applies to: (Check one box as appropriate)

Base Bid	Alternate 1	Alternate 2	Alternate 3	Alternate 4	Alternate 5
☐	☐	☐	☐	☐	☐

1.4 SUBCONTRACTOR UTILIZATION

If subcontractors are to be used, indicate the firm name, address, portion or section of work the subcontractor will be performing, the subcontract value, percentage of base bid and if the subcontractor is a City certified (MWBE).

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Note: Connecticut General Statues Section 4a-100, Prequalification now applies to subcontractors also.

Trade or Nature of Work	Business Name and Address	CITY OF HARTFORD CERTIFIED MWBE	% of Base Bid	Subcontract $ Value
		☐		
		☐		
		☐		
		☐		
		☐		
			TOTAL SUBCONTRACT VALUE	
			TOTAL (MWBE) SUBCONTRACT VALUE	

Subcontract % to total project %

MWBE *Subcontract % to total project* %

Additional information may be requested subsequent to your responding to this bid request.

The information provided below applies to: (Check one box as appropriate)

Base Bid	Alternate 1	Alternate 2	Alternate 3	Alternate 4	Alternate 5
☐	☐	☐	☐	☐	☐

1.4 SUBCONTRACTOR UTILIZATION

If subcontractors are to be used, indicate the firm name, address, portion or section of work the subcontractor will be performing, the subcontract value, percentage of base bid and if the subcontractor is a City certified (MWBE).

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Trade or Nature of Work	Business Name and Address	CITY OF HARTFORD CERTIFIED MWBE	% of Base Bid	Subcontract $ Value
		☐		
		☐		
		☐		
		☐		
		☐		
TOTAL SUBCONTRACT VALUE				
TOTAL (MWBE) SUBCONTRACT VALUE				

Subcontract % to total project %

MWBE Subcontract % to total project

Additional information may be requested subsequent to your responding to this bid request.

The information provided below applies to: (Check one box as appropriate)

Base Bid	Alternate 1	Alternate 2	Alternate 3	Alternate 4	Alternate 5
☐	☐	☐	☐	☐	☐

1.4 SUBCONTRACTOR UTILIZATION

If subcontractors are to be used, indicate the firm name, address, portion or section of work the subcontractor will be performing, the subcontract value, percentage of base bid and if the subcontractor is a City certified (MWBE).

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Note: Connecticut General Statues Section 4a-100, Prequalification now applies to subcontractors also.

Trade or Nature of Work	Business Name and Address	CITY OF HARTFORD CERTIFIED MWBE	% of Base Bid	Subcontract $ Value
		☐		
		☐		
		☐		
		☐		
		☐		
			TOTAL SUBCONTRACT VALUE	
			TOTAL (MWBE) SUBCONTRACT VALUE	

Subcontract % to total project %

MWBE Subcontract % to total project %

Additional information may be requested subsequent to your responding to this bid request.

SECTION 01 10 00 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Identification: Project includes demolition of existing structures, removal and disposal of debris, isolation and rehabilitation of equipment, and leaving the site in a broom clean and neat appearance.

1. Project Locations:

   a. South Meadows Pumping Station
      (Behind 1010 Wethersfield Avenue)

   b. North Meadows Pumping Station
      Intersection of Jennings Road and Leibert Road
      (next to Connecticut Transit Building)

   c. Armory Pumping Station
      Capitol Avenue and Broad Street
      (Behind the Legislative Office Building Parking Garage)

2. Owner: City of Hartford.

B. Engineer Identification: The Contract Documents, dated July 2014, were prepared for the Project by Fuss & O'Neill, Inc. 146 Hartford Road, Manchester, CT 06040.

C. Project Directory

1. The Owner's Representative is:
   Bob Umashankar
   Civil Engineer
   Department of Public Works
   50 Jennings Road, 2nd Floor
   Hartford, Connecticut 06120
   (860) 757-9985

2. The Engineer is:

   John Sobanik, P.E.
   Fuss & O'Neill, Inc.
   146 Hartford Road
   Manchester, CT 06040
   (860) 646-2469, ext. 5219
   jsobanik@fando.com

D. Work includes the following.

1. Summary: The overall goal is to replace/retrofit valves and repack pump shaft seals in South Meadows Pumping Station, and Inspect Pump 3 in North Meadows Pumping Station (N-P3) and Pump 2 gearbox in Armory Pumping Station (A-P2). These pumping stations are maintained and operated by the City of Hartford Flood Control. There are a total of 6 pumps in South Meadows Pumping Station. Each pump is equipped with a suction and discharge valve. There are a total of 12 valves within the Base Bid.

2. Sequence of Work: In order to provide sufficient standby pumping capacity in the event of a storm event, each pumping station shall have a maximum of one (1) pump inoperable for equipment renewal at any given time. Schedule for isolating pumps/valves shall be coordinated with the Owner. It is anticipated that there will be extended periods of time with little or no construction able to be conducted. See Sections 43 01 21 Pump Repair and 43 01 22 Valve Replacement/Retrofit for additional details regarding sequence of construction. Valve replacement turn-around time is estimated to be 4-6 weeks. In order to expedite full implementation of the equipment renewal process, it is envisioned that one pump & valve set from each pumping station will simultaneously be in the process of repair or replacement. Work will be restricted pursuant to Paragraph 1.10.A below.

3. Dewatering/Pump and Valve System Isolation: Contractor is expected to isolate, disassemble, clean, examine, reassemble/replace/repair, and lubricate the various components of each pump and valve. Isolation of the each pump and valve system before beginning work may involve dewatering and removal/resetting of the inlet bar racks at various pumping stations. It is the Contractor's responsibility to isolate

the valves and pumps to the satisfaction of the City. The contractor is required to submit a dewatering/valve and pump system isolation plan with the base bid. . Valves replacement may also require support modifications and realignment. The Contract Drawing depicts the required replacement/retrofit and dimensional data for each valve. Pumps shall not be relocated.

4. Pump Inspection: Contractor shall properly isolate the pump prior to inspection. Contractor shall inspect the required pumps to determine the condition of the pumps, and rehabilitation or replacement needs. Contractor shall submit pump evaluation report to the Owner's representative.

5. Pump Rehabilitation: will be limited to repacking the pump shaft sleeves (replacing packing glands and/or lantern rings as necessary) pursuant to Section 43 01 21 and replacement of pump and shaft bearings and shafts. Contractor shall provide access to and prepare pump bearings for ultrasonic (vibration) testing by an independent third party and a successful ultrasonic or other test shall be a condition of acceptance of work. Burden of coordinating and scheduling with the inspector is Contractor responsibility. Bearing replacement shall be directed by the Owner's Representative in kind pursuant to the bid items provided in the Bid Form. Multiple bearings may require replacement on each pump. Deficiencies beyond repacking pump shafts and replacement of bearings and shafts identified through pump inspections will be addressed in a subsequent construction project. Pumps shall not be relocated. Upon completion of inspection, the shaft seal will be repacked, reassembled, and tested to ensure appropriate leakage rates.

6. Valve Replacement or Retrofit

   a. Removal of Valves From Service

      Work will consist of isolation, disassembly and removal and replacement of existing valves. Contractor will provide rigging services to remove valves. Contractor will be responsible for protection of existing pumping structures, dewatering and isolation of valves, shoring of existing structures as needed for rigging operations, removing valves and pumps in an orderly procedure. Blind flanges will be temporarily installed in place of the Suction and Discharge Valves.

   b. Actuator Refurbish

      As required on drawings, existing Rotork actuators shall be removed and returned to the Rotork factory for refurbishment and certification with a one year warranty. Refer to Section 43 01 22 Valve Replacement/Retrofit and drawings for more requirements

   c. Retrofit of Valves

      Retrofit of the valves will be performed as required on drawings. Retrofit to be performed include remove previous hydraulic cylinder, retrofit stem

and install actuators on new valve bonnets with new support yokes, cleaning and re-painting of surfaces, reassembly and testing.

d. Replacement of Valves

Contractor shall provide rigging services to install Replacement Valves at no additional cost to the Owner. New valves will have different dimensions from the existing valves, therefore it may require the installation of spacers or shims or replacement of adjacent spool sections. Valves will be installed with new gaskets and fasteners, leak tested and actuated to ensure proper operation at no additional cost to the Owner. Provide new saddle taps for flow measure on suction lines, new spool sections, new couplings, new flange adopters, and pipe supports, etc., as required on drawings and specifications.

e. Painting

All valves and all new/modified piping shall have new paint suit able for the flood control pump station application.

7. Cleanup and Documentation

Contractor is responsible to remove debris from pipes and valves, and work sites. Accumulation of debris and construction waste will be kept to a minimum during execution of work. Upon completion of Repair & Rehabilitation for each Pumping Station, work sites will be cleared of all debris and construction waste. Upon completion of Repair & Rehabilitation for each Pumping Station Redlined Record Drawings will be provided to the Owner's Representative.

8. Contractor shall maintain pumping capabilities to pumping stations throughout the duration of the construction contract with one pump out of service. Based upon the levels in the Connecticut River and the weather forecast, the City may request that temporary pumping (by-pass pumping) as a Change Order on an emergency as needed basis.

9. Pumps shall be rehabilitated pursuant to Section 43 01 21.

10. Valves shall be retrofitted/replaced pursuant to Section 43 01 22 and as required on drawings.

11. Electrical work shall be performed in conformance with the applicable sections of the NEC.

12. Rehabilitate or replace valves and/or valve components only as directed by the Owner's Representative.

13. Re-install pumps and valves pursuant to Sections 43 01 21 and 43 01 22 respectively.

14. Refer to specific Sections 43 01 21 and 43 01 22 respectively for pump and valve details including sequence of construction, products, requirements etc.

15. Priority work: the following work shall be included early in the contractor's schedule:

a. South Meadows Pumping Station:

1) South Meadows Pumping Station – Open or replace the suction valve on Pump No. 1, as valve is stuck in partially closed position that limits the capacity of the pump.

2) South Meadows Pumping Station – Install new Sump Pumping system, to prevent flooding of the pump pits. This work can be scheduled concurrently with the above pump and valve related repairs.

1.3 CONTRACT

A. Project will be constructed under a general construction contract.

1.4 ACCESS TO SITE

A. Remove and restore to original condition walls, fences, structures, utility lines, poles, guy wires, anchors, and other improvements required to be relocated for completion of the Work. Costs for such activity shall be borne by the Contractor unless otherwise indicated.

B. Keep a log of visitors not affiliated with the Contractor that enter the site. The log shall include the following: date, time and purpose of the visit, name of individual, organization represented and contact phone number.

C. It is not required to keep a presence at each pump station during the complete duration of the contract.

1.5 SITE CONDITIONS

A. Interior views of Pumping Stations are from City Documents – O&M Manual Dated June 2009. The locations as depicted on the Drawings are considered approximate as to size and location. There may be additional utilities and structures that are not shown on the Drawings. Locate all existing utilities and structures and protect same from damage or harm. Restore utilities and equipment interfered with or damaged, at the expense of the Contractor, and to the satisfaction of its Owner.

B. Ensure that construction activities do not impact the activities or properties of the Owner and its agents without prior coordination and consent of these entities.

1.6 SITE RESTRICTIONS

A. Adhere to the provisions of the City of Hartford Noise Ordinance.

B. Limit repairs to one pump and set of valves at each pumping station at a time. Contractor to provide a proposed schedule of construction for each pump and valve system.

1.7 WORK HOURS

A. Schedule work activities between 7:00 AM and 3:00 PM, Monday through Friday. Requests to work extended hours will be considered by the City on a case-by-case basis, and the City of Hartford will pay the OT for the City staff.

B. Make arrangements through Owner and Engineer for access at other times.

1.8 LAWS, ORDINANCES, PERMITS AND FEES

A. Prior to the start of construction, complete application to the applicable Building Code enforcement authority for a building demolition permit. Such permit shall be displayed in a conspicuous location at the project site.

B. Give all necessary notices, obtain all permits, file all necessary plans, prepare all documents and obtain all required Certificates of Inspection for the work and deliver same to Owner's Representative before request for acceptance and final payment for work.

1. Fees for all permits, which are issued by the City of Hartford Public Works and/or Licenses and Inspections, are waived except for the fee to be paid to Licenses and Inspections for the State Educations Fee of $0.16 per $1,000.00.

C. General Contractor shall bear all costs associated with the acquisition of and compliance with all fees and permits required for the work, unless otherwise provided for herein.

D. Include in the cost of the Work, without extra cost to Owner, any labor, materials, services, apparatus, drawings, (in addition to contract drawings and documents) in order to comply with all applicable laws, ordinances, rules and regulations whether or not shown on Drawings and/or specified.

E. Materials furnished and work installed shall comply with all requirements of local utility companies, and with requirements of all governmental departments having jurisdiction.

1.9 SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Format: The Specifications are organized into Divisions and Sections using the 49-division format and CSI/CSC's "MasterFormat" numbering system.

1. Section Identification: The Specifications use section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of sections in the Contract Documents.

B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.

2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.

   a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

C. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

1.10 WORK RESTRICTIONS

A. Work shall not be performed from March 15th through May 15th unless authorized in writing by the Owner's Representative.

B. Owner's Representative reserves the right to shut down work due to weather conditions which may necessitate maximum equipment readiness.

C. Overall Contract Duration is 360 calendar days from Notice to Proceed, inclusive of the above restrictions

1. Progress: 50 percent completion of the Work, i.e., when 50% of the pump and valve count in the Contract is completed, as determined by the Owner, MUST BE attained within 180 days from Notice to Proceed.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION

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SECTION 01 21 00 - ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements governing allowances.

B. Types of allowances include the following:

1. Contingency allowances.

1.3 SUBMITTALS

A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.

C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.4 CONTINGENCY ALLOWANCES

A. Use the contingency allowance only as directed by Engineer for Owner's purposes and only by Change Orders that indicate amounts to be charged to the allowance.

B. Change Orders authorizing use of funds from the contingency allowance will include Contractor's related costs and reasonable overhead and profit margins.

C. At Project closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

A. Contingency Allowance: Include a contingency allowance of $220,000.00 for use according to Owner's instructions for each year's base bid.

END OF SECTION

SECTION 01 22 05 – PAYMENT ITEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes measurement and payment paragraphs for

1. Base Bid payment items.

B. Related Sections include the following:

1. Sections in Division 01 through 49 for detailed procedural, material, and installation requirements associated with the Work of each payment item.

1.3 DEFINITIONS

A. Base Bid: The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed

B. Payment Item: The Owner's distribution of the Contract Sum through listed work items.

1. Each item is specified to include a defined scope of services. However, not all materials, labor, equipment, or services of a payment item are guaranteed to be listed or specified.
2. Include costs associated with items of work required to complete the defined scope of services within the appropriately specified payment item.
3. Payment items include all necessary material, plus cost for delivery, installation, applicable taxes, overhead, and profit.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 LIST OF PAYMENT ITEMS

A. Item No. 001 - Contingency

1. Include a contingency allowance of $220,000.00 for use according to Owner's written instructions.
    a. See Division 01 Section "Allowances" for further information

B. South Meadows Pumping Station (PS) Pump Repair.

1. The Work of this item shall be measured by the Contract Price per each.
2. Work associated with repairing and refurbishing the pump and shaft seal will be paid for at the Contract Price per Each and includes the following.
    a. Coordination with Owner, as required for: temporary shutdown during repairs; inspection during Owner's Representative's presence; isolation and for testing and instruction before returning pumps to a satisfactory operational condition and on-line status.
        1) Closing and opening of suction and discharge pump station sluice gates, as needed. The City's Flood Control staff will operate all sluice gates.
        2) Existing sluice gates, particularly South Meadows pond site influent isolation gates are subject to leaking. Contractor shall provide appropriate measures as required to execute their work at no additional expense to the Owner.
    b. Temporary staging, rigging, supports, and piping closures.
    c. Documentation (including tagging of pumps) and photographing of existing pumps at the specified stages of inspection and repair.
    d. "R&R" indicates the following: removal of packing gland and seal rings, cleaning, preparing for inspection, repacking of glands, rehabilitation or replacement of damaged pump shafts, sandblasting and painting of exterior housing, reinstallation and connection of pump to existing piping, satisfactory completion of pump testing; and removing temporary measures and returning pumps to an on-line status.
    e. All materials, labor, tools, and equipment incidental to the Work.
    f. Incidentals not covered by other payment items.
3. Work associated with replacing the Pump Bearings – Steady, Upper and Lower will be paid for at the Contract Price per Each and includes the following.
    a. Removing and proper off-site disposal of existing pump bearing.
    b. Preparing existing pump as needed for installation of pump bearing –steady, upper and lower.
    c. Timely furnishing and installation of pump bearing –steady, upper and lower.
    d. All materials, labor, tools, and equipment incidental to the Work.
    e. Incidentals not covered by other payment items.

4. Payment items for this work include the following.

   a. Item No. 101: R&R South Meadows PS Pumps & Shaft Seals – Morris – 36 Inch – 1956 Vertical Mixed Flow

   b. Item No. 102: South Meadows PS Pumps Bearing Steady – Morris – 36 Inch – 1956 Vertical Mixed Flow

   c. Item No. 103: South Meadows PS Pumps Bearing Upper – Morris – 36 Inch – 1956 Vertical Mixed Flow

   d. Item No. 104: South Meadows PS Pumps Bearing Lower – Morris – 36 Inch – 1956 Vertical Mixed Flow

C. South Pump Station Valve Replacement/Retrofit

1. The Work of these items shall be measured by the Contract Price per each or by the Contract lump sum price.

2. Work associated with replacing valves in their entirety includes the following.

   a. Coordination with Owner, as required for temporary shutdown during replacement/retrofit, as well as for returning valves to a satisfactory operational condition and on-line status.

   b. Temporary staging, rigging, supports, and piping closures.

   c. Adapting existing actuators or replacing with new actuators as required for proper functioning with the replacement valve.

   d. Removal and storing

   e. Installation of replacement valves including the following:

      1) If replacement valves have different dimensions or weights than existing valves:

         a) Orient the valve for fit and avoid interferences with existing pipes. Include additional accessories and supports for valve as needed for installation in an offset

         b) Modify any support structures and/or provide adequate support to accommodate the shape and weight of the replacement valve and pipe. Demolish existing metal valve/pipe support beam structures in South Meadows Pumping Station and provide new galvanized support beam structure per drawings. Demolish existing concrete support structures and provide new concrete support structures as needed. Work includes jack hammering/saw cutting of existing pedestal, disposal of concrete support/metal support, drilling for new steel reinforcement, epoxy adhesives for anchoring steel, steel reinforcement, 4000 psi compressive strength concrete, formwork, and/or installing galvanized

support beam support structure, incidentals and work required for a complete support system.

c) Replace existing spool pieces/sections to provide proper fit for replacement valves.

d) Remove existing hydraulic cylinder per drawings

e) Remove/refurbish/reinstall existing Rotork actuators or provide new actuators per drawings.

f) Provide saddle taps for flow measurement after suction valves.

g) Modify mezzanine catwalk/platform as needed to install new valves.

2) Standardize replacement valves for easy installation and modification in the designated pump stations.

f. Reinstallation and connection of valve to existing piping, and satisfactory testing of valve prior to returning to an on-line status.

g. Removing and proper off-site disposal of abandoned materials.

h. All materials, labor, tools, and equipment incidental to the Work.

i. Incidentals not covered by other payment items, including electrical and controls, etc.

3. Payment items for this work include the following.

a. Item No. 105: South Meadows PS Valve Replacement – 36 Inch (price per each)

b. Item No. 106: South Meadows PS Existing Valve Actuator Refurbish/Reinstallation. (price per each)

c. Item No. 107 South Meadows PS Valve Actuator Replacement. (price per each)

d. Item No. 108: South Meadows PS Saddle Taps for Flow Measurement (price per each)

e. Item No. 109: South Meadows PS Spool Pieces (lump sum price)

f. Item No. 110: South Meadows PS Miscellaneous Pipe Fittings/Accessories (lump sum price)

g. Item No. 111: South Meadows PS Pipe/Valve Support. (lump sum price)

h. Item No. 112: South Meadows PS Hydraulic Cylinder Removal (price per each)

i. Item No. 113: South Meadows PS Mezzanine Catwalk/Platform Modification (lump sum price)

D. Item No. 114 South Meadows Sump Pump System & Safety Grate

1. The Work of this item shall be measured by the Contract Lump Sum Price.
2. Work associated with sump pumping improvements detailed on drawing SM-302 including the following.
   a. Provide sump pump system per Section 33 45 03 and drawings
   b. Remove existing sump pump and cap existing piping above grate.
   c. Provide safety grate at sump pump area per drawings.
   d. All materials, labor, tools, and equipment incidental to the Work.
   e. Incidentals not covered by other payment items, including demolition of existing pumps, electrical, controls and piping.

E. Item No. 151 – South Meadows PS Mobilization/Demobilization/Equipment Isolation and Incidental Construction

1. Payment for the Work of this item shall be at the Lump Sum Price bid and shall include all materials, equipment and labor associated with mobilization of equipment to the sites and demobilization of materials and equipment and cleaning of the site after the work is complete.

F. Item No. 152 - South Meadows PS Dewatering

1. Payment for the Work of this item shall be at the Lump Sum Price bid and shall include all materials, equipment and labor associated with dewatering and isolating the valves and pump train at each pump/pump station before beginning work

G. Item No. 153 – South Meadows Hazardous Material Handling

1. The Work of this item shall be measured by the Contract Lump Sum Price.
2. Work associated with hazardous material handling (asbestos abatement, lead paint awareness & mold remediation, etc.) including the following.
   a. All materials, labor, tools, and equipment incidental to the Work.

H. North Meadows Pumping Station (PS) Pump 3 Inspection.

1. The Work of this item shall be measured by the Contract Lump Sum Price.
2. Work associated with inspecting the pump will be paid for at the Contract Lump Sum Price and includes the following.
   a. Coordination with Owner, as required for: temporary shutdown during inspection during Owner's Representative's presence; isolation and for testing and instruction before returning pumps to a satisfactory operational condition and on-line status.
      1) Closing and opening of suction and discharge valves, and pump station sluice gates, as needed.

b. Temporary staging, rigging, supports, and piping closures.

c. Pump disassembly, inspection, reassembly/reinstallation as required, etc.

d. Documentation (including tagging of pumps) and photographing of existing pumps at the specified stages of inspection and required repair efforts.

e. Report of Recommended Repairs & Cost.

f. All materials, labor, tools, and equipment incidental to the Work.

g. Incidentals not covered by other payment items.

3. Payment items for this work include the following.

a. Item No. 201: North Meadows PS Pump 3 Inspection — DeLaval – 36 Inch – 1939

I. Armory Pumping Station (PS) Pump 2 Gearbox Inspections.

1. The Work of this item shall be measured by the Contract Lump Sum Price.

2. Work associated with inspecting the pump will be paid for at the Contract Lump Sum Price and includes the following.

a. Coordination with Owner, as required for: temporary shutdown during inspection during Owner's Representative's presence; isolation and for testing and instruction before returning pumps to a satisfactory operational condition and on-line status.

1) Closing and opening of suction and discharge valves, and pump station sluice gates, as needed.

b. Temporary staging, rigging, supports, and piping closures.

c. Pump shaft and gearbox disassembly, inspection, reassembly/reinstallation as required, etc.

d. Documentation (including tagging of pumps) and photographing of existing pump and gearbox at the specified stages of inspection and required repair efforts.

e. Report of Recommended Repairs & Cost.

f. All materials, labor, tools, and equipment incidental to the Work.

g. Incidentals not covered by other payment items.

3. Payment items for this work include the following.

Item No. 301: Armory PS Pumps 2 Gearbox Inspection — Worthington Centrifugal Non Clog– 24 Inch – 1980

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SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. General project coordination procedures.
2. Project meetings.
3. For work restrictions, see Division 01 Section "Summary".

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 1 Section "Closeout Procedures" for coordinating Contract closeout.

1.2 COORDINATION

A. Coordination: Coordinate construction operations included in various Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.

1. 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.
2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.

B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's Construction Schedule.
2. Installation and removal of temporary facilities and controls.
3. Progress meetings.
4. Project closeout activities.

1.3 SUBMITTALS

A. Staff Names: Submit a list of principal staff assignments, including superintendent and other personnel in attendance at Project site at the preconstruction conference. Identify

individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers.

B. Submit at Preconstruction Conference

1. Construction schedule.
2. Schedule of Values for Lump Sum pay items.
3. All Plans required by the Specifications (e.g. dewatering plan)

1.4 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

A. General: In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.

1.5 PROJECT MEETINGS

A. General: Engineer will schedule and conduct meetings and conferences at Project site, unless otherwise indicated.

1. Attendees: Engineer will inform participants and others involved, and individuals whose presence is required, of date and time of each meeting.
2. Agenda: Engineer will prepare the meeting agenda and distribute the agenda to invited attendees.
3. Minutes: Engineer will record significant discussions and agreements achieved, and distribute the meeting minutes to concerned parties, including Owner.

B. Preconstruction Conference: Engineer will schedule a preconstruction conference before start of construction, at a time convenient to Owner, Contractor, and Engineer. Conference will be held at Project site or another convenient location. Meeting will be conducted to review responsibilities and personnel assignments.

1. Execution of Owner-Contractor Agreement including executed bonds and insurance certificates may be completed immediately prior to pre-construction conference.
2. Agenda: Perform Contract execution (if not previously completed), and discuss items of significance that could affect progress. Agenda includes the following:
   a. Submittal of executed bonds and insurance certificates.
   b. Execution of Owner-Contractor Agreement.
   c. Tentative construction schedule.
   d. Critical work sequencing.
   e. Designation of responsible personnel.
   f. Procedures for processing field decisions and Change Orders.
   g. Procedures for processing Applications for Payment.

h. Distribution of the Contract Documents.

i. Submittal procedures.

j. Preparation of Record Documents.

k. Responsibility for temporary facilities and controls.

l. Parking availability.

m. Office, work, and storage areas.

n. Equipment deliveries and priorities.

o. Progress cleaning.

p. Working hours.

q. Access to work site.

C. Progress Meetings: Engineer will conduct progress meetings at regular intervals

1. Frequency: Meetings will be held monthly unless and until the Owner determines that less frequent meetings will satisfy project management and coordination needs.

2. Attendees: In addition to representatives of Owner and Engineer, each contractor, subcontractor, supplier, and other entity required to finalize discussions regarding current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

   a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.

   a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Contractor's construction schedule.
2. Construction progress reports (monthly).
3. Material location reports.
4. Special reports. Construction Progress Report at 180 days.

B. Related Requirements:

1. Division 01 Section "Submittal Procedures" for submitting schedules and reports.

1.3 INFORMATIONAL SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:

1. Working electronic copy of schedule file, where indicated.
2. PDF electronic file. (E-mail list will be provided to Contractor by Owner.)

PART 2 - PRODUCTS

2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Time Frame: Extend schedule from date established for the Notice of Award to date of Substantial Completion.

B. Activities: Treat each pump valve coordination as a separate (numbered) activity for each main element of the Work.

C. List other activities separately.

1. Products and Services Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Division 01 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.

D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion, and the following interim milestones:

1. 50 percent work progress milestone shall be completed within 180 days.

E. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.

1. See Division 01 Section "Payment Procedures" for cost reporting and payment procedures.

2. Payment will be based on the Unit prices and percent complete of the work on a monthly basis.

F. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update, including:

1. Unresolved issues,

2. Rejected or unreturned submittals, and

3. Factors affecting the Work and Contract Time.

G. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance and date by which recovery will be accomplished.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's construction schedule within 30 days of date established for the Notice to Proceed.

2.3 REPORTS

A. Monthly Construction Progress Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. How many days on-site.

2. List of subcontractors at Project site.

3. List of separate contractors at Project site.

4. Approximate count of personnel at Project site.
5. Equipment at Project site.
6. Material deliveries.
7. Percent work complete.
8. Percent budget/cost to date.
9. High and low temperatures and general weather conditions, including presence of rain or snow.
10. Accidents.
11. Meetings and significant decisions.
12. Unusual events (see special reports).
13. Stoppages, delays, shortages, and losses.
14. Emergency procedures.
15. Orders and requests of authorities having jurisdiction.
16. Change Orders received and implemented.
17. Construction Change Directives received and implemented.
18. Services connected and disconnected.
19. Equipment or system tests and startups.
20. Partial completions.
21. Substantial Completions authorized.
22. Next month's work.
23. Update schedule.

B. Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered, and which items have been installed.

2.4 SPECIAL REPORTS

A. General: Submit special reports directly to Owner within one day(s) of an occurrence. Distribute copies of report to parties affected by the occurrence.

B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

C. Construction Progress Report at 180 Days.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. As the Work progresses, indicate final completion percentage for each activity.

B. Distribution: Distribute copies of approved schedule to Engineer, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

END OF SECTION

SECTION 01 33 00 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other miscellaneous submittals.

1. The requirements of this Section are general in nature and apply to all Sections. Additional submissions and requirements are contained in each Section. In each individual Section, no attempt was made to cover or repeat the submissions contained in this Section and, therefore, the total number of submissions required are the combination of those described in this Section plus those specified in the various other Sections.

2. Additional submissions are required by the General and Supplementary Conditions including: Applications for Payment; requests for Change Orders; guarantees; permits; certifications; documents required by Federal, State and Local authorities; and submissions required by utility companies and other persons, firms or organizations.

B. Related Sections include the following:

1. Division 1 Section "Closeout Procedures" for submitting warranties and Project Record Documents.

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information that requires Engineer's responsive action.

B. Informational Submittals: Written information that does not require Engineer's approval. Submittals may be rejected for not complying with requirements.

C. Certified Test Report: Reports written by a qualified testing agency or laboratory, on testing agency's standard form, indicating and interpreting results of tests of materials or products for compliance with requirements.

D. Material or Product Certificate: A document certifying that the materials, components, and equipment furnished conform to the requirements.

E. Product Data: Standard prepared data for manufactured products.

F. Shop Drawings: Custom prepared data applicable to the Work.

G. Samples: Physical examples of the Work.

H. Addresses: Include mailing address, telephone number, facsimile number, and e-mail address.

1.3 SUBMITTAL PROCEDURES

A. General: Electronic copies of CAD Drawings of the Contract Drawings will not be provided by Engineer for Contractor's use in preparing submittals.

B. Method of Transmitting Submittals: Electronic transmission of submittals, including facsimile and e-mail, will not be allowed.

C. Clarity: Provide neat, clean, and legible printed materials that can be easily reproduced by normal photocopying or blueprinting. Illegible submittals will be returned unreviewed.

D. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

a. Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

E. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Engineer's receipt of submittal.

1. Initial Review: Allow 10 business days for initial review of each submittal. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. Engineer will advise Contractor when a submittal being processed must be delayed for coordination.

2. If intermediate submittal is necessary, process it in same manner as initial submittal.

3. Allow 10 business days for processing each resubmittal.

4. No extension of the Contract Time or claims for delay will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.

F. Identification: Place a permanent label or title block on each submittal for identification.

G. Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals. Provide list or narrative of deviations on Submittal Transmittal form.

H. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Engineer will return submittals, without review received from sources other than Contractor.

1. Transmittal Form: Use sample form at end of Section.

2. Include Contractor's certification stating that information submitted complies with requirements of the Contract Documents.

3. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Engineer on previous submittals, and deviations from requirements of the Contract Documents, including minor variations and limitations. Include the same label information as the related submittal.

I. Destination: Send six copies of each submission to:

Mr. Bob Umashankar
Civil Engineer
Department of Public Works
525 Main Street
Hartford, Connecticut 06103
Attn: Highest Priority Pumping Station Improvements

J. Use for Construction: Use only final submittals with mark indicating action taken by Engineer in connection with construction.

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

A. Submittal Schedule:

1. Within 10 business days after the effective date of the Agreement, submit a schedule listing dates for submission and review of shop drawings, project data, and samples needed for each item of Work. Submit in conjunction with Construction Schedule.

B. Subcontractor List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work. Include the following information in tabular form:

1. Name, address, and telephone number of entity performing subcontract or supplying products.

2. Number and title of related Specification Section(s) covered by subcontract.

3. Drawing number and detail references, as appropriate, covered by subcontract.

C. Construction Schedule:

1. Within 10 business days after the effective date of the Agreement, submit for Engineer's and Owner's information, a construction schedule showing in detail, the proposed sequence of the Work and the estimated start and end date for each stage of the Work. Prepare the schedule so that the actual progress of the Work can be recorded and compared with the expected progress. Coordinate the construction schedule with the proposed schedules of other contractors, if any, engaged in work at, or adjacent to, the Project site.
2. Prepare a bar chart construction schedule identifying major tasks and the associated time frame within which the task shall be completed. Tasks include:
   a. Project start date
   b. Pump/Valve isolation at each Pumping Station
   c. Inspection at each Pumping Station
   d. Repair & Refurbish at each Pumping Station
   e. Concrete rehabilitation
   f. Substantial and final completion dates
3. Coordinate the Work and make every effort to maintain the construction schedule. In the event actual progress begins to lag the schedule, promptly employ additional means or methods of construction to make up lost time.
4. Keep construction schedule current and revise or confirm the schedule to accurately reflect the conditions of the Work, past progress, and anticipated future progress.

D. Schedule of Values:

1. Within 10 business days after the effective date of the Agreement, submit a Schedule of Values of the various portions of the Work, including quantities aggregating the total Contract Price, and supported by such data to substantiate its correctness as Engineer may require. Use the Schedule of Values only as a basis for Contractor's Periodic Estimate. No payments will be made until such Schedule has been submitted and accepted by Engineer.
2. On "unit price" items, the schedule of values shall contain unit prices for various stages of work.
3. On "per each" or "lump sum" items, break prices down sufficiently to provide a convenient and realistic means for determining the amount of work done during various stages of progress.
4. Where prices are not broken down sufficiently to accurately determine the value of Work completed, Engineer will estimate the value of the Work completed and will deduct an amount so as to arrive at a conservative value which will allow Owner to easily complete the Work with the unpaid balance. When the required detail in the Schedule of Values is not provided, the Engineer will make the final determination.

E. Certified Test Reports:

1. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.
2. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

F. Material or Product Certificates: Prepare written statements certifying that materials or products comply with the requirements.
1. Project to which material is consigned.
2. Name of contractor receiving material.
3. Item number and description of material.
4. Quantity of material represented by the certificate.
5. Means of identifying consignment including label, marking, or lot number.
6. Date and method of shipment.
7. Signature of Supplier's authorized agent.
8. Notarization of certificate.

G. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:
   a. Manufacturer's written recommendations.
   b. Manufacturer's product specifications.
   c. Manufacturer's installation instructions.
   d. Manufacturer's catalog cuts.
   e. Compliance with recognized trade association standards.
   f. Compliance with recognized testing agency standards.
   g. Notation of coordination requirements.

H. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Include the following information, as applicable:
   a. Dimensions.
   b. Identification of products.
   c. Fabrication and installation drawings.
   d. Shopwork manufacturing instructions.
   e. Templates and patterns.
   f. Schedules.
   g. Design calculations.
   h. Compliance with specified standards.
   i. Notation of coordination requirements.
   j. Notation of dimensions established by field measurement.
2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches.

I. Samples: Prepare physical units of materials or products, including the following:
1. Submit full-size units or Samples of size indicated, prepared from the same material to be used for the Work, cured and finished in manner specified, and physically identical with the product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
   a. If variation in color, pattern, texture, or other characteristic is inherent in the product represented by a Sample, submit paired units that show approximate limits of the variations.
2. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

2.2 INFORMATIONAL SUBMITTALS

A. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of engineers and owners, and other information specified. Submit applicable certificates as follows:
1. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements and, where required, is authorized for this specific Project.

2. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements. Include evidence of manufacturing experience where required.

B. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements.

C. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:

1. Preparation of substrates.
2. Required substrate tolerances.
3. Sequence of installation or erection.
4. Required installation tolerances.
5. Required adjustments.
6. Recommendations for cleaning and protection.

D. Test Results: Whenever tests are required on materials and equipment, such tests shall be performed and two copies of the test results submitted to Engineer. Do not deliver to the Project or incorporate into the Work any materials or equipment for which Engineer has not issued a written acceptance of the required tests and test results.

E. Construction Photographs: Submit either 8"x10" prints or high resolution digital photographs saved to a compact disk (CD). All photographs should be labeled or submitted with an accompanying index showing date, location, and orientation of each photo. Make available for the Engineer's use at least bi-weekly during construction.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Review each submittal and check for compliance with the Contract Documents. Note corrections and field dimensions. Mark each copy of each submittal with approval stamp before submitting to Engineer.

B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents. See attached Submittal Transmittal for sample of statement.

3.2 ENGINEER'S ACTION

A. General: Engineer will not review submittals that do not bear Contractor's approval stamp and will return them without action.

   1. Engineer may elect not to review partial or incomplete submittals and will return such submittals with no action taken.

B. Action Submittals: Engineer will review each submittal, make marks to indicate corrections or modifications required, and return it. Engineer will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:

   1. Furnish as Submitted: Submittal appears to conform to Contract Documents and Contractor may proceed with ordering and installation.

   2. Furnish as Noted: Same as "Furnish as Submitted" except that the Contractor must comply with modifications or notes added to the submittal by the Engineer.

   3. Rejected: Submittal must be revised and resubmitted.

C. Informational Submittals: Engineer will review each submittal and will not return it, or will reject and return it if it does not comply with requirements. Engineer will forward each submittal to appropriate party.

D. Submittals not required by the Contract Documents will not be reviewed and may be discarded.

END OF SECTION

SUBMITTAL TRANSMITTAL Date: _____

To: Bob Umashankar
Civil Engineer
Department of Public Works
525 Main Street
Hartford, Connecticut 06103
ATTN: Highest Priority Pumping Station Improvements

From:

PROJECT: _____

_____

_____

SUBMITTAL NO.: _____
(List Section No., Article No., Paragraph)

_____
(Revision: 1st, 2nd, 3rd, etc.)

Transmitted herewith for review and comment are the following:

Copies	Dwg.	No.	Description

MANUFACTURER / SUPPLIER

Name: _____

Address: _____

Telephone No.: _____ Facsimile No.: _____

For Additional Information, Contact _____

E-mail Address: _____

I hereby certify that I have carefully examined the enclosed submittal and have determined and verified all field measurements, construction criteria, materials, catalog numbers and similar data, coordinated the submittal with other submissions and the work of other trades and contractors, and that to the best of my knowledge and belief, the enclosed submittal is in full compliance with the Contract Documents, except for the following deviations:

BY:
Signature: _____

Title: _____

FOR ENGINEER'S USE

(Submit on Contractor's letterhead)

- - SAMPLE - - MATERIALS CERTIFICATE - - SAMPLE - -

(Submit on Manufacturer's letterhead)

Date: _____

WE HEREBY CERTIFY THAT _____

(Description, Kind of Material, Product Name, Model No.)

FURNISHED TO _____

(Name of Contractor) (Prime or Subcontractor)

FOR USE ON _____

(Project Name)

OWNER _____

(Project Owner)

IDENTIFIED BY: _____

(Label, Marking, Seal No., Consignment, or Waybill No.)

SHIPPED VIA: _____

(Method of Shipment, Car No., Truck No.)

SHIPPED ON: _____ DELIVERED ON: _____

MEETS THE REQUIREMENTS OF THE CONTRACT DOCUMENTS FOR THE SUBJECT PROJECT IN ALL RESPECTS. PROCESSING, PRODUCT TESTING AND INSPECTION CONTROL OF RAW MATERIALS ARE IN CONFORMANCE WITH APPLICABLE SPECIFICATIONS, DRAWINGS AND STANDARDS OF ARTICLES FURNISHED. ARTICLES FURNISHED COMPLY WITH THE FOLLOWING STANDARD SPECIFICATIONS:

_____

_____

_____

_____

All records and documents pertinent to this certificate and not submitted herewith will be maintained available by the undersigned for a period of not less than 3 years from the date of this certificate.

_____

(Name of Manufacturer)

_____

(Authorized Representative's Signature)

_____

(Title)

SECTION 01 77 00 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Inspection procedures.
2. Project Record Documents.
3. Final cleaning.

1.2 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.

1. Prepare a list of work to be completed and corrected (if applicable), the value of items on the list, and reasons why the Work is not complete.
2. Prepare and submit Project Record Documents, and similar final record information.
3. Terminate and remove temporary facilities from Project site, along with construction tools, and similar elements.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Engineer, that must be completed or corrected (i.e., "Punch-list Items").

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.3 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit certified copy of Engineer's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Engineer. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.

2. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.4 PROJECT RECORD DOCUMENTS

A. General: Do not use Project Record Documents for construction purposes. Protect Project Record Documents from deterioration and loss. Provide access to Project Record Documents for Engineer's reference during normal working hours.

B. Record Drawings: Maintain and submit one set of blue- or black-line white prints of Contract Drawings.

1. Mark Record Prints to show the actual installation where installation varies from that shown originally.

a. Accurately record information in an understandable drawing technique.

b. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.

2. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.

3. Mark important additional information that was either shown schematically or omitted from original Drawings.

4. Note Construction Change Directive numbers, Change Order numbers, alternate numbers, and similar identification where applicable.

5. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location. Include identification on cover sheets.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning.

1. Complete the following cleaning operations before requesting inspection for certification of Final Completion for entire Project or for a portion of Project:

a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.

b. Remove tools, construction equipment, machinery, and surplus material from Project site.

C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

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SECTION 02 82 13 - ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General Supplementary Conditions and Division 1 Specifications Sections, apply to this Section.

1.2 CONSULTANT

A. The Owner has retained Fuss & O'Neill EnviroScience, LLC as a Consultant for the purposes of project management and monitoring during Asbestos Abatement and other hazardous materials clean-up. The Consultant will represent the Owner in all phases of the abatement project at the discretion of the Owner. The Asbestos Abatement Contractor will regard the Consultant's direction as authoritative and binding as provided herein, in matters particularly but not limited to approval of work areas, review of monitoring results, completion of the various segments of work, final completion of the abatement, submission of data, and daily field punch list items. The Licensed Asbestos Project Designer for this project is Stephen Connelly (#000039).

1.3 USE OF THE CONTRACT DOCUMENTS

A. It shall be incumbent upon the Contractor to visit the Site and determine what exists, its condition, and what will be required to accomplish the Work intended by the Contract Documents. No increase in the Contract Sum will be permitted as a result of the Contractor's failure to visit the site and understand the existing conditions.

B. All work shall comply with the Contract Documents and with applicable Codes, laws, regulations, and ordinances wherever applicable. The most stringent of all the foregoing shall govern.

C. It is not intended that the Specifications show every detail of the Work, but the Contractor shall be required to furnish within the Contract Sum all material and labor necessary for the completion of the Work in accordance with the intent of the Specifications.

D. In case of ambiguity among the Contract documents, the more stringent requirement as determined by the Consultant shall prevail.

E. The Work of this Contract includes making modifications as necessary, subject to approval by Owner in consultation with the Consultant, to correct any conflicts.

F. All items, not specifically mentioned in the Specifications but implied by trade practices to complete the work, shall be included.

1.4 EXAMINATION OF THE SITE

A. It is understood that the Contractor has examined the Site and made his own estimates of the facilities and difficulties attending the execution of the Work, and has based his price thereon.

B. Except for unforeseeable concealed conditions as determined by the Consultant, the Contractor shall make no claim for additional cost due to the existing conditions at the site.

1.5 CONTRACTOR QUALIFICATIONS

A. All bidders shall submit a record of prior experience in asbestos abatement projects, listing no less than three (3) completed jobs in the past year, with all projects of similar size and scope. The Contractor shall list the experience and training of the project foremen and all on-site personnel. The information that should be included is as follows:

1. Project Name and Address
2. Owner's Name and Address
3. Architect/Consultant
4. Contract Amount
5. Date of Completion
6. Extras and Changes

B. The Contractor selected must appear on the approved list of Asbestos Abatement contractors on file at the State of Connecticut Department of Public Health and hold a valid license for asbestos abatement within the State of Connecticut.

C. Submit a written statement regarding whether the Contractor has ever been found out-of-compliance with federal or state asbestos and/or lead regulations pertaining to worker protection, removal, transport, or disposal.

1.6 TESTING LABORATORY SERVICES

A. The Contractor shall submit to the Consultant the name, address, and qualifications of proposed laboratories intended to be utilized for sample analysis as required by this section.

1.7 ADDITIONAL GENERAL REQUIREMENTS

A. The Asbestos Abatement Contractor shall employ a competent Asbestos Abatement Supervisor with at least three (3) years of experience on projects of similar scope and magnitude who shall be responsible for all work involving asbestos abatement as described in the specifications and defined in applicable regulations, and have full time daily supervision of the same. The Supervisor shall be the competent person as defined by OSHA regulations.

B. The Contractor shall allow the work of this contract to be inspected if required by local, state, federal, and any other authorities having jurisdiction over such work. The Contractor shall

immediately notify the Owner and Consultant and shall maintain written evidence of such inspection for review by the Owner and Consultant.

C. The Contractor shall incur the cost of all fines resulting from regulatory non-compliance as issued by federal, state, and local agencies. The Contractor shall incur the cost of all work requirements mandated by federal, state, and local agencies as a result of regulatory non-compliance or negligence.

D. The Contractor shall immediately notify the Owner and Consultant of the delivery of all permits, licenses, certificates of inspection, of approval, or occupancy, etc., and any other such instruments required under codes by authorities having jurisdiction, regardless of to who issued, and shall cause them to be displayed to the Owner and Consultant for verification and recording.

1.8 SCOPE OF WORK

A. Work outlined in this Section includes all work necessary for the removal and disposal of asbestos-containing materials (ACM) that associated with flanges and on coating from piping system impacted during renovation work/abatement activities associated with the three Hartford Stormwater Pumping Stations. This work includes, but is not limited to, the removal and disposal of gaskets from flanges in the piping system and coatings on piping as encountered.

1.9 PROJECT DESCRIPTION

A. The base bid includes the removal and disposal of all asbestos containing as encountered that associated with flanges and on coating from piping system impacted during renovation work/abatement activities associated with the three Hartford Stormwater Pumping Stations. (South Meadows, North Meadows, and Armory) as identified herein by workers meeting requirements of OSHA 1926.1101 for Class 2 work. The bid will include the cost for the removal of gaskets and coatings on piping system.

Additional materials as discovered outside of those listed will be covered by unit prices. The quantities are estimates only and should be verified by the Contractor. This bid includes the following asbestos containing materials to be removed and replaced as encountered:

BASE BID

Location	Material Type	Quantity
South Meadows Pumping Station		
Pump, valve and piping system 1,2,5 & 6 mating surfaces & Flanges (all gaskets other than those listed below)	Inaccessible Gaskets	53 SF
Pumps 1,2,3,4,5,6	Bearing Packing	4 SF
Mezzanine Storage Room	½" square silver Mechanical Packing Material	4 SF
North Meadows Pumping Station		

Location	Material Type	Quantity
Pump 3 discharge valve Flanges, Pump 4 upper bolt flange, Pump 5 suction valve flanges	Fibrous Gaskets	5 SF
Pumps 1,2,3 & 4 bolt flanges, inspection ports, bearing housings & packing (all other gaskets not listed in this table)	Inaccessible Gaskets	23 SF
Armory Park Pumping Station		
Pumps 1,2,3 & 4 bolt flanges, inspection ports,	Fibrous Gaskets	6 SF
Pumps 1,2,3 & 4 bearing housings & packing	Inaccessible Gaskets	3 SF
Pumps 1,2,3 & 4 Valve assembly components (other than pipe flanges)	Inaccessible Gaskets & Packing Material	7 SF

The abatement contractor is responsible for any damage that occurs to other equipment and surfaces during flange and coating removal and must pay to have it repaired.

The contractor is responsible for cleaning of residual duct tape and spray glue marks after tear down of the containment is complete. The contractor is also responsible for damages to wall surfaces (sheetrock, paint, etc.) and must repair and repaint to match existing.

1.10 DEFINITIONS

A. The following definitions relative to asbestos abatement apply:

1. ABATEMENT - Procedures to control fiber release from asbestos-containing materials; includes removal, encapsulation, and enclosure.
2. AIR MONITORING - The process of measuring the fiber concentration of an area or of a person.
3. AMENDED WATER - Water to which a surfactant has been added.
4. ASBESTOS - The name given to a number of naturally occurring fibrous silicates. This includes the serpentine forms and the amphiboles and includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite, or any of these forms, which have been chemically altered.
5. ASBESTOS FELT - a product made by saturating felted asbestos with asphalt or other suitable bindery, such as a synthetic elastomer.
6. ASBESTOS FIBERS - Those particles with a length greater than five (5) microns and a length to diameter ratio of 3:1 or greater.
7. ASBESTOS WORK AREA - a regulated area as defined by OSHA 29 CFR 1926.1101 where asbestos abatement operations are performed which is isolated by physical barriers to prevent the spread of asbestos dust, fibers, or debris. The regulated area

shall comply with requirements of regulated area for demarcation, access, respirators, prohibited activities, competent persons and exposure assessments and monitoring.

8. ASPHALT SHINGLES, COMPOSITION SHINGLES OR STRIP SLATES: (PITCHED ROOF SHINGLE) - a roofing material manufactured by saturating a dry felt with asphalt then coating the saturated felt with a harder asphalt mixed with a fine mineral, glass fiber, asbestos or organic stabilizer. All or part of the weather side may be covered with mineral granules, or with powdered talc or mica.

9. BASE FLASHING (ROOF) - the flashing provided by upturned edges of a water tight membrane on a roof; may contain metal and associated waterproofing material or combination of roofing felts and waterproofing at the joint between a roofing surface and a vertical surface such as a wall or parapet. Also base flashing may be present at perimeter of completely flat roof.

10. BUILT-UP ROOFING (COMPOSITION ROOFING, FELT AND GRAVEL ROOFING, GRAVEL ROOFING) - a continuous roof covering made up of laminations or plies of saturated or coated roofing felts, alternated with layers of asphalt or coal-tar pitch and surfaced with gravel, paint or finish coat.

11. CAULKING - resilient mastic compound often having a silicone bituminous or rubber base; used to seal cracks, fill joints, and prevent leakage. Typical applications: around windows, and doors. Caulking is at joints between two dissimilar materials (i.e. Masonry to wood, masonry to steel)

12. CLEAN ROOM - An uncontaminated area or room, which is a part of the worker decontamination enclosure with provisions for storage of workers' street clothes and protective equipment.

13. CLEARANCE SAMPLING - Final air sampling performed aggressively after the completion of the abatement project in a regulated area.

    Air samples collected by the air sampling professional having a fiber concentration of less than 0.01 fibers/cc of air in each of five (5) samples collected inside the containment will denote acceptable clearance sampling by Phase Contrast Microscopy.

    or

    Five air samples collected inside the containment by the air sampling professional having an average asbestos concentration of less than 70 structures per square millimeter of air will denote acceptable clearance sampling for Transmission Electron Microscopy.

14. COMPETENT PERSON - As defined by 29 CFR 1926.1101, a representative of the Abatement Contractor who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure and who has authority to take prompt corrective measures to eliminate such hazards during asbestos removal. Competent person shall be properly trained in accordance with EPA's Model Accreditation Plan.

15. CURTAINED DOORWAY - A device to allow ingress and egress from one area to another while permitting minimal air movement between the areas. Two curtained doorways spaced a minimum of six feet apart can form an airlock.

16. DAMP PROOFING - application of a water impervious material to surface such as wall to prevent penetration of moisture, typically at foundation or below grade surface.

17. DECONTAMINATION ENCLOSURE SYSTEM - A series of connected areas, with curtained doorways between any two adjacent areas, for the decontamination of workers and equipment. A decontamination enclosure system always contains at least one airlock and is adjacent and connected to the regulated area, where possible.

18. ENCAPSULANT - A liquid material which can be applied to asbestos-containing materials which controls the possible release of asbestos fibers from the materials either by creating a membrane over the surface (bridging encapsulant) or penetrating the material and binding its components together (penetrating encapsulant).

19. EQUIPMENT ROOM – Any contaminated area or a room that is part of the worker decontamination enclosure with provisions for storage of contaminated clothing and equipment.

20. FIXED OBJECT - Unit of equipment or furniture in the work areas that cannot be removed from the work area.

21. FRIABLE ASBESTOS MATERIALS - Any material that contains more than 1% asbestos by weight, that can be crumbled, pulverized or reduced to powder by hand pressure.

22. GLAZING COMPOUND - any compound used to hold window glass in place, also referred to as putty, or glazier's putty; it is not field applied, usually installed during manufacture of windows.

23. HEPA FILTER - High Efficiency Particulate Air (HEPA) filter in compliance with ANSI Z9.2-1979.

24. HEPA VACUUM EQUIPMENT - Vacuum equipment equipped with a HEPA filter system for filtering the effluent air from the unit.

25. MOVABLE OBJECT - Unit of equipment of furniture in the work area that can be removed from the work area.

26. NEGATIVE AIR PRESSURE EQUIPMENT - A portable local exhaust system equipped with HEPA filtration used to create negative pressure in a regulated area (negative with respect to adjacent unregulated areas) and capable of maintaining a constant, low velocity air flow into regulated areas from adjacent unregulated areas.

27. NESHAPS - National Emissions Standard for Hazardous Air Pollutants regulations enforced by the EPA.

28. PERMISSIBLE EXPOSURE LEVEL (PEL) - The maximum airborne concentration of asbestos fibers to which an employee is allowed to be exposed. The new level established by OSHA 29 CFR 1926.1101 is 0.1 fibers per cubic centimeter of air as an eight (8) hour time weighted average and 1.0 fibers /cc averaged over a sampling period

of 30 minutes as an Excursion Limit. The Contractor is responsible for maintaining work areas in a manner that this standard is not exceeded.

29. PROJECT MONITOR - A professional capable of conducting air monitoring and analysis of schemes. This individual should be an industrial hygienist, an environmental scientist, or an engineer with experience in asbestos air monitoring and worker protection equipment and procedures. This individual should have demonstrated proficiency in conducting air sample collection in accordance with 29 CFR 1910.1001 and 29 CFR 1926.1101.

30. REGULATED AREA - An area established by the employer to demarcate where Class I, II, and III asbestos work is conducted and any adjoining area where debris and waste from such asbestos work accumulate, and a work area within which airborne concentrations of asbestos exceed or there is a reasonable possibility that they may exceed the PEL.

31. SHOWER ROOM - A room between the clean room and the equipment room in the work decontamination enclosure with hot and cold running water and suitably arranged for employee showering during decontamination. The shower room is located in an airlock between the contaminated area and the clean area.

32. WATERPROOFING - material, usually a membrane or applied compound (tar/mastic), used to make a surface impervious to water, includes concealed conditions (applications around doors, windows, and in wall cavities); sometimes combined with felts.

1.11 SUBMITTALS

A. The Contractor shall submit the following prior to the pre-construction meeting:

1. Submit a schedule to the Owner and the Consultant which defines a timetable for executing and completing the project, including set-up, removal, cleanup, decontamination, and air clearance monitoring.

2. Submit the identity of the hauling contractor and location of the landfill to be used.

3. Submit the plans and construction details for the construction of the decontamination enclosure systems and the isolation of the work areas as may be necessary for compliance with this specification and applicable regulations.

4. Submit the training, medical, and fit test records of each employee who may be on the project site.

5. Submit the qualifications of the air sampling professional that the Asbestos Abatement Contractor proposed to use for this project to perform employee exposure monitoring.

6. Submit detailed product information on all materials and equipment proposed for asbestos abatement work on this project.

7. Submit pertinent information regarding the qualifications of the Project Supervisor (competent person) for this project as well as a list of past projects completed. Effective June 4, 2000, no individual shall provide services as an asbestos abatement site

supervisor or as an asbestos abatement work without a certificate to do so issued by CTDPH.

B. The following shall be submitted to the Consultant during the work:

1. Results of personal air sampling
2. Training and medical records for new employees to start work (24 hours in advance)

C. The following shall be submitted to the Consultant at the completion of work:

1. Copies of all air sampling results
2. Contractor logs
3. Completed copies of Waste Shipment Records (WSR)

1.12 REGULATIONS AND STANDARDS

A. The Contractor shall be solely responsible for conducting this project and supervising all work in a manner that will be in conformance with all federal, state, and local regulations and guidelines pertaining to asbestos abatement. Specifically, the Contractor shall comply with the requirements of the following:

1. U.S. Environmental Protection Agency (USEPA) National Emissions Standards for Hazardous Air Pollutants (NESHAPS) Regulations (40 CFR 61, Subpart M);
2. OSHA Asbestos Regulations (29 CFR 1910.1001 and 1926.1101);
3. Connecticut Department of Environmental Protection (DEP) Regulations (Section 22a-209-8(i) and Section 22a-220 of the Connecticut General Statutes);
4. Connecticut Department of Health Services (DOHS) Standards for Asbestos Abatement Sections 19a-332-1 to 19a-332.23;
5. Connecticut Basic Building Code (BOCA) (including Connecticut Supplements);
6. Life Safety Code (NFPA);
7. Local health and safety codes, ordinances, or regulations pertaining to asbestos remediation and all national codes and standards including ASTM, ANSI, and Underwriter's Laboratories.

1.13 EXEMPTIONS

A. Any deviations from these specifications require the written approval and authorization from the Owner and Consultant.

B. Any modifications from the standard work practices identified in the State of Connecticut Department of Public Health (CTDPH) Standards for Asbestos Abatement, Sections 19a-332a-1 to 19a-332a-16, Sections 20-440-1 to 20-440-9, Section 20-441 and Section 19a-332e-1 to 19a-332e-2, must be requested in writing, and approved in writing from the CTDPH.

1.14 FINAL AIR CLEARANCE

A. Following the completion of the encapsulation phase of the work, the Consultant shall collect final air clearance samples inside the work area per AHERA regulation 40 CFR Part 763, if necessary. The Owner of the facility shall be responsible for payment of the sampling and analysis of the initial final air clearance samples only. The Contractor shall be responsible for payment of all costs associated with the collection and analysis of additional final air clearance samples if the first set of samples fail to satisfy the clearance criteria.

1.15 NOTIFICATIONS, POSTINGS, SUBMITTALS, AND PERMITS

A. The Contractor shall make the following notifications, and provide the submittals to the following agencies prior to the commencement of removal work. This notification is required ten (10) calendar days prior to the start of the abatement project:

1. Connecticut Department of Public Health
   410 Capitol Avenue
   MS #51 AIR
   P.O. Box 340308
   Hartford, CT 06134

B. The minimum information included in the notification to these agencies includes:

1. Name and address of building Owner/Operator
2. Building location
3. Building size, age, and use
4. Amount of friable asbestos
5. Work schedule, including proposed start and completion date
6. Asbestos removal procedures to be used
7. Name and location of disposal site for generated asbestos waste, residue, and debris

1.16 WORK SITE SAFETY PLAN

A. The Contractor shall establish a set of emergency procedures and shall post them in a conspicuous place at the work site. The safety plan should include provisions for the following:

1. Evacuation of injured workers.
2. Emergency and fire exit routes from all work areas.
3. Emergency first aid treatment.
4. Local telephone numbers for emergency services including ambulance, fire, and police.
5. A method to notify occupants of the building in the event of a fire or other emergency requiring evacuation of the building.

B. The Contractor is responsible for training all workers in these procedures.

1.17 INDEPENDENT AIR SAMPLING AND ASBESTOS ABATEMENT MONITORING

A. This section describes independent air sampling work being performed on behalf of the Owner. This work is not in the Contract Sum. This section describes air monitoring carried out by the Owner's Consultant to verify that the building beyond the work area and the outside environment remains uncontaminated. (Personal air monitoring required by OSHA is work to be performed by the Contractor and is within the Contract Sum.)

B. The purpose of the Owner's Consultant's air monitoring is to detect faults in the work area isolation such as:

1. Contamination of the building outside of the work area by airborne asbestos fibers
2. Failure of filtration or rupture in the differential pressure system
3. Contamination of air outside the building envelope by airborne asbestos fibers. Should any of the above occur the Contractor shall immediately cease asbestos abatement activities until the fault is corrected. Do not recommence work until authorized by the Owner's Consultant.

C. The Owner's Consultant will monitor airborne fiber counts in the Work Area. The purpose of this air monitoring will be to detect airborne asbestos concentrations, which may challenge the ability of the Work Area isolation procedures to protect the balance of the building or outside of the building from contamination by airborne fibers.

D. To determine if the elevated airborne fiber counts encountered during abatement operations have been reduced to an acceptable level, the Consultant will sample and analyze air in accordance with clearance air sampling requirements.

E. The Owner's Consultant will perform on-site monitoring throughout the course of the project, as follows:

1. All work procedures shall be continuously monitored by the Consultant to assure that areas outside the designated work locations in the buildings will not be contaminated.
2. Prior to work on any given day, the Contractor's designated "competent person" shall discuss the day's work schedule with the Consultant to evaluate job tasks with respect to safety procedures and requirements specified to prevent contamination of the building or the employees. This includes a visual survey of the work area and the decontamination of the building or the employees. This includes a visual survey of the work area and the decontamination enclosure systems.

1.18 CONTRACTOR'S AIR SAMPLING RESPONSIBILITY

A. The Contractor shall independently retain an air sampling professional to monitor airborne asbestos concentrations in the workers' breathing zone and to establish conditions and work

procedures for maintaining compliance with OSHA Regulations 29 CFR 1910.1001 and 1926.1101.

B. The Contractor's air sampling professional shall document all air sampling results and provide a report to the Consultant within 48 hours after sample collection.

C. All air sampling shall be conducted in accordance with methods described in OSHA Standards 29 CFR 1910.1001 and 1926.1101.

1.19 PROPER WORKER PROTECTION

A. This section describes the equipment and procedures required for protecting workers against asbestos contamination and other workplace hazards except for respiratory protection.

B. All workers are to be accredited as Abatement Workers as required by the AHERA regulation 40 CFR 763 Appendix C to Subpart E, February 3, 1994.

C. The Contractor is required to be certified and accredited as required by the State of Connecticut Department of Health Services.

D. In accordance with 29 CFR 1926, all workers shall receive a training course covering the dangers inherent in handling asbestos, the dangers of breathing asbestos dust, proper work procedures, and proper worker protective measures. This course must include but is not limited to the following:

1. Methods of recognizing asbestos
2. Health effects associated with asbestos
3. Relationship between smoking and asbestos in producing lung cancer
4. Nature of operations that could result in exposure to asbestos
5. Importance of and instruction in the use of necessary protective controls, practices, and procedures to minimize exposure including:
    a. Engineering controls
    b. Work Practices
    c. Respirators
    d. Housekeeping procedures
    e. Hygiene facilities
    f. Protective clothing
    g. Decontamination procedures
    h. Emergency procedures
    i. Waste disposal procedures

6. Purpose, proper use, fitting, instructions, and limitations of respirators as required by 29 CFR 1910.134
7. Appropriate work practices for the work
8. Requirements of medical surveillance program
9. Review of 29 CFR 1926
10. Pressure Differential Systems
11. Work practices including hands on or on-job training
12. Personal Decontamination procedures
13. Air monitoring, personal and area

E. The Contractor shall provide medical examinations for all workers who may encounter an airborne fiber level of 0.1 f/cc or greater for an 8 hour Time Weighted Average. In the absence of specific airborne fiber data provide medical examinations for all workers who will enter the Work Area for any reason. Examination shall, at a minimum, meet OSHA requirements as set forth in 29 CFR 1926 In addition, provide an evaluation of the individual's ability to work in environments capable of producing heat stress in the worker.

F. Submit the following to the Owner's Representative for review. The Contractor shall not start work until these submittals are returned with Owner's Representative's action stamp indicating that they are approved.

1. Submit copies of certificates from an EPA-approved AHERA Abatement Workers course for each worker as evidence that each asbestos Abatement Worker is accredited as required by the AHERA Regulation 40 CFR 763 Appendix C to Subpart E, February 3, 1994.
2. Submit evidence that the Contractor is certified to perform asbestos abatement work by the State of Connecticut Department of Health services.
3. Submit an original signed copy of the Certificate of Worker's Acknowledgment found at the end of this section, for each worker who is to be at the job site or enter the Work Area.
4. Submit documents verifying that each worker has had a medical examination within the last 12 months as part of compliance with OSHA medical surveillance requirements. Submit, at a minimum, for each worker the following:
   a. Name and Social Security Number
   b. Physicians Written Opinion from examining physician including at a minimum the following:
      1) Whether worker has any detected medical conditions that would place the worker at an increased risk of material health impairment from exposure to asbestos.

2) Any recommended limitations on the worker or on the use of personal protective equipment such as respirators.

3) Statement that the worker has been informed by the physician of the results of the medical examination and of any medical conditions that may result from asbestos exposure.

5. Copy of information that was provided to physician in compliance with 29 CFR 1926

6. Statement that worker is able to wear and use the type of respiratory protection proposed for the project, and is able to work safely in an environment capable of producing heat stress in the worker.

7. Effective June 4, 2000, submit copies of certificates for the site supervisor and the workers issued by CTDPH.

G. Submit certification, signed by an officer of the abatement contracting firm and notarized, that exposure measurements, medical surveillance, and worker training records are being kept in conformance with 29 CFR 1926.

H. The Contractor shall maintain control of and be responsible for access to all work areas to ensure the following requirements:

1. Non-essential personnel are prohibited from entering the area.

2. All authorized personnel entering the work area shall read the "Worker Protection Procedures" which are posted at the entry points to the enclosure system, and shall be equipped with properly fitted respirators and protective clothing.

3. All personnel who are exiting from the decontamination enclosure system shall be properly decontaminated.

4. Asbestos waste that is taken out of the work area must be properly bagged and labeled in accordance with these specifications. The surface of the bags shall be decontaminated. Asbestos leaving the enclosure system must be immediately transported off site or immediately placed in locked, posted temporary storage on site, and removed within 24 hours of the project conclusion.

5. Any material, equipment, or supplies that are brought out of the decontamination enclosure system shall be cleaned and decontaminated by wet cleaning and/or HEPA vacuuming of all surfaces.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name and product technical description.

B. Damaged or deteriorating materials shall not be used and shall be removed from the premises. Material that becomes contaminated with asbestos shall be decontaminated or disposed of as asbestos waste.

C. Polyethylene sheet in a roll size to minimize the frequency of joints shall be delivered to the job site with factory label indicating 4 or 6 mil.

D. Polyethylene disposable bags shall be six (6) mil with pertinent pre-printed label. Tie wraps for bags shall be plastic, five (5) inches long (minimum), pointed and looped to secure filled plastic bags.

E. Tape or adhesive spray will be capable of sealing joints in adjacent polyethylene sheets and for attachment of polyethylene sheet to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions, including use of amended water.

F. Surfactant (wetting agent), shall consist of fifty (50) percent polyoxyethylene ether and fifty (50) percent polyoxyethylene ester, or equivalent, and shall be mixed with water to provide a concentration of one (1) ounce surfactant to five (5) gallons of water or as directed by manufacturer.

G. Removal encapsulant shall be non-flammable factory prepared penetrating chemical encapsulant found acceptable to Consultant. Usage shall be in accordance with manufacturer's printed technical data.

H. The Contractor shall have available spray equipment capable of mixing wetting agent with water and capable of generating sufficient pressure and volume and having sufficient hose length to reach all areas with asbestos.

I. Impermeable containers are to be used to received and retain any asbestos-containing or contaminated materials until disposal at an acceptable disposal site. The containers shall be labeled in accordance with OSHA Standard 29 CFR 1926.1101. Containers must be both air and watertight.

J. Labels and signs, as required by OSHA Standard 29 CFR 1926.1101, will be used.

K. Encapsulant shall be bridging or penetrating type which has been found acceptable to the Consultant. Usage shall be in accordance with manufacturer's printed technical data.

L. HEPA filtered local exhaust ventilation shall be utilized during the installation of enclosures and supports where asbestos-containing materials may be disturbed.

2.2 TOOLS AND EQUIPMENT

A. The Contractor shall provide all tools and equipment necessary for asbestos removal, encapsulation, and enclosure.

B. The Contractor's air monitoring professional shall have air-monitoring equipment of type and quantity to monitor operations and conduct personnel exposure surveillance per OSHA requirements.

C. The Contractor shall have available sufficient inventory or dated purchase orders for materials necessary for the job including protective clothing, respirators, filter cartridges, polyethylene sheeting of proper size and thickness, tape and air filters.

D. The Contractor shall provide (as needed) temporary electrical power panels, electrical power cables, and electrical power sources (such as generators). Any electrical connection work affecting the building electrical power system shall be performed by a State of Connecticut licensed electrician.

E. The Contractor shall have available shower stalls and plumbing to support same to include sufficient hose length and drain system or an acceptable alternate.

F. Exhaust air filtration system units shall contain HEPA filter(s) capable of sufficient air exhaust to create negative pressure of -0.02 inches of water within enclosure with respect to outside area. Equipment shall be checked for proper operation by smoke tubes or differential pressure gauge before the start of each shift and at least twice during the shift. Adequate exhaust air shall be provided for a minimum of four (4) air changes per hour within the enclosure. No air movement system or air filtering equipment shall discharge unfiltered air outside.

G. Vacuum units, of suitable size and capacities for the project, shall have HEPA filter(s) capable of trapping and retaining at least 99.97 percent of all monodispersed particles of 0.3 micrometers in diameter or larger.

H. The Contractor will have reserve units so that the station system will operate continuously.

PART 3 - EXECUTION

3.1 PRE-ABATEMENT MEETING

A. At least one week prior to the start of work a Pre-Construction Meeting will be scheduled and must be attended by the Contractor and any Sub-Contractors. The assigned Contractor Site Supervisor is also required to attend this meeting.

B. The contractor shall present a detailed project schedule and project submittals at the Pre-Construction Meeting. Variations, amendments, and corrections to the presented schedule will be discussed, and the Owner and Consultant will inform the Contractor of any scheduling adjustments for this project.

C. Following the Pre-Construction Meeting, the Contractor shall submit a revised schedule (if needed) no later than one week after the meeting.

3.2 WORK AREA PREPARATION

A. Where necessary, shut down electrical power, including receptacles and light fixtures that would be included in containment. Under no circumstances during the decontamination procedures will lighting fixtures be permitted to be operating when the spraying of amended water may contact the fixture within the containment. Provide GFCI devices, temporary power, and temporary lighting installed in compliance with the applicable electrical codes. All installations are to be made by a State of Connecticut licensed electrician.

B. Shut down and/or isolate heating, cooling, and ventilation air systems or zones to prevent contamination and fiber dispersal to other areas of the structure. During the work, vents within the work area shall be "criticalled" with duct tape and polyethylene sheeting.

C. The Contractor shall be responsible for removing furniture or other moveable items from the work areas. The Contractor shall pre-clean moveable objects within the proposed work areas using HEPA vacuum equipment and/or wet cleaning methods as appropriate and remove such objects from work areas to a temporary location.

D. Seal off all openings, including, but not limited to, windows, corridors, doorways, skylights, ducts, grills, diffusers, and any other penetration of the work areas, with polyethylene sheeting a minimum of six (6) mils thick, sealed with duct tape. This includes doorways and corridors that will not be used for passage during work areas and occupied areas.

E. Pre-clean fixed objects within the work areas, using HEPA vacuum equipment and/or wet cleaning methods as appropriate, and enclose with a minimum six (6) mil plastic sheeting sealed with duct tape.

F. Clean the proposed work areas using HEPA vacuum equipment or wet cleaning methods as appropriate. Do not use methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters.

G. After HEPA vacuum cleaning, cover fixed walls with two layers of four-mil polyethylene sheeting to the floor level. Where fixed walls are not used, two layers of six-mil polyethylene sheeting will be applied to a rigid framework of wood, metal, or PVC. Where floor tile/mastic is not being abated, cover the floor with two layers of six-mil polyethylene sheeting. All overlaps shall be sealed with tape or spray adhesive.

H. Maintain emergency and fire exits from the work areas, or establish alternate exits satisfactory to fire officials.

I. Clean and remove ceiling mounted objects, such as lights and other items not sealed off that interfere with asbestos abatement. Use hand-held amended water spraying or HEPA vacuuming equipment during fixture removal to reduce settled fiber dispersal.

J. Create pressure differential between contained work areas and uncontaminated areas by the use of acceptable negative air pressure equipment sufficient to provide four air changes per hour and at least 0.02 inches of on a water gauge.

3.3 DECONTAMINATION SYSTEM

A. The Contractor shall establish contiguous to the work area, a decontamination enclosure consisting of equipment room, shower room, and clean room in series. The only access between contaminated and uncontaminated areas shall be through this decontamination enclosure. If it is not feasible to set-up a contiguous decontamination unit, the Contractor shall establish a remote decontamination unit.

B. Access between rooms in the decontamination system shall be through double flap curtain openings. The clean room, shower and equipment room within the decontamination enclosure, shall be completely sealed ensuring that the sole source of airflow through this area originates from uncontaminated areas outside the work area.

C. The Contractor shall establish contiguous with the work area an equipment decontamination enclosure consisting of two (2) totally enclosed chambers divided by double flap curtained opening. This enclosure must be constructed so as to ensure no personnel enter or exit through this unit.

D. Occupied areas and/or building space not within the work areas shall be separated from asbestos abatement work areas by means of airtight barriers.

E. Construct the decontamination system with wood or metal framing, 3/8" sheathing and cover both sides with a double layer of six (6) mil polyethylene sheeting, spray glued or taped at the joints. Caulk joints watertight at floor, walls, and ceiling.

F. The Contractor and the Consultant shall visually inspect barrier several times daily to assure effective seal and the Contractor shall repair defects immediately.

3.4 ASBESTOS REMOVAL PROCEDURE - GENERAL

A. The Contractor shall have a designated "competent person" on the job at all times to ensure establishment of a proper enclosure system and proper work practices throughout project.

B. Abatement work will not commence until authorized by the Consultant.

C. The flanges to have gaskets removed need to have containment built in order to allow for the contractor to open flange to access the asbestos-containing gaskets. For coatings, identify areas where these are to be removed and build a containment around the piping system.

D. Spray asbestos materials with amended water using airless spray equipment or apply approved removal wetting agent to reduce the release of fibers during removal operation. The Consultant shall pre-approve the use of amended water as the wetting agent.

E. In order to maintain indoor asbestos concentrations to the minimum, the wet asbestos must be removed in manageable sections. Material drop shall not exceed eight feet. For heights up to 15 feet, provide inclined chutes or scaffolding to intercept drop.

F. Remove asbestos containing materials as appropriate by standard methods. Fill disposal containers as removal proceeds; seal filled containers and clean containers before removal to equipment decontamination system. Wet clean each container thoroughly, double bag and apply caution label. Ensure that workers do not exit the work area thorough the equipment decontamination enclosure.

G. After completion of stripping work, all surfaces from which asbestos has been removed shall be wet brushed, using a nylon brush, wet wiped, and sponged or cleaned by an equivalent method to remove all visible material (wire brushes are not permitted). During this work, the surfaces being cleaned shall be kept wet.

H. Remove and containerize all visible accumulations of asbestos-containing and/or asbestos-contaminated debris. During cleanup, utilize brooms, rubber dustpan, and rubber squeegees to minimize damage to floor covering.

I. Sealed disposal containers, and all equipment used in the work area, shall be included in the cleanup and shall be removed from work areas via the equipment decontamination enclosure at an appropriate time in the cleaning sequence. All asbestos waste in 6-mil polyethylene disposal bags shall be double bagged in the equipment decontamination enclosure before removal from the site.

J. At any time during asbestos removal, should the Consultant suspect contamination of areas outside the work area(s), he shall cause all abatement work to stop until the Contractor takes steps to decontaminate these areas and eliminate the causes of such contamination. Unprotected individuals shall be prohibited from entering suspected contaminated areas until air sampling and visual inspections certify decontamination.

K. After completion of the initial final cleaning procedure including removal of the inner layers of polyethylene sheeting, but prior to encapsulation, a pre-sealant inspection shall be conducted by the Consultant. The pre-sealant inspection shall verify that ACM and residual dust has been removed from the work area.

3.5 CONSULTANT'S RESPONSIBILITIES

A. Air sampling shall be conducted by the Consultant to ascertain the integrity of controls that protect the building from asbestos contamination. Independently, the Contractor shall monitor air quality within the work area to ascertain the protection of employees and to comply with OSHA regulations.

B. The Consultant's air sampling professional shall collect and analyze air samples during two time periods:

1. Abatement Period. If required, the Consultant's project monitor shall collect samples on a daily basis during the work period. A sufficient number of area samples shall be taken outside of the work area, at the exhaust of the negative pressure system, and outside of the building to judge the degree of cleanliness or contamination of the building during removal. Additional samples may be taken inside the work area and decontamination enclosure system, at the discretion of the project monitor.

2. Post-Abatement Period. If required, the Consultant's project monitor shall conduct air sampling following the final cleanup phase of the project, once the "no visible residue" criterion, as established by the project monitor, has been met. Five (5) samples shall be collected inside the work area utilizing aggressive methods to comply with the State of Connecticut Department of Public Health Standards for Asbestos Abatement, sections 19a-332a-12, and 19a-332a-13. Analysis of the samples to determine airborne concentrations of asbestos shall be conducted by Transmission Electron Microscopy (TEM) method with an average limit of 70.0 structures per square millimeter of filter surface or by Phase Contrast Microscopy (PCM) with a limit of 0.01 fibers per cubic centimeters of air in accordance with the above Connecticut regulation sections.

C. The Consultant's project monitor shall provide continual evaluation of the air quality of the building during removal, using his/her best professional judgments in respect to the State of Connecticut Department of Health Services guideline of 0.010 fibers/cc and the background air quality established during the pre-abatement period.

D. If the project monitor determines that the building air quality has become contaminated from the project, he/she shall immediately inform the Contractor to cease all removal operations and implement a work stoppage clean up procedure. The Contractor shall conduct a thorough cleanup of the areas of the building designated by the Consultant. No further removal work can take place until the project monitor has assessed that the building air has been decontaminated.

E. Pre-abatement and abatement air samples shall be collected as required to obtain a volume of 1,200 liters. Samples shall be analyzed by Phase Contrast Microscopy (PCM) methodology using the NIOSH 7400 protocol.

3.6 CONSULTANT'S INSPECTION RESPONSIBILITIES

A. Consultant shall conduct inspection throughout the progress of the abatement project. Inspections shall be conducted in order to document the progress of the abatement work as well as the procedures and practices employed by the abatement Contractor.

B. The Consultant shall perform the following inspections during the course of abatement activities:

1. Pre-commencement Inspection. Pre-commencement inspections shall be performed at the time requested by the abatement Contractor. The Consultant shall be informed 12 hours prior to the time the inspection is needed. If, during the course of the pre-

commencement inspection, deficiencies are found, the Contractor shall perform the necessary adjustments in order to obtain compliance.

2. Work Area Inspections. Work area inspections shall be conducted on a daily basis at the discretion of the Consultant. During the course of the work inspections, the Consultant shall observe the Contractor's removal procedures, verify barrier integrity, monitor negative air filtration devices, assess project progress, and inform the abatement Contractor of specific remedial activities if deficiencies are noted.

3. Pre-sealant Inspection. The Consultant, upon the request of the abatement Contractor, shall conduct a pre-sealant inspection. The Consultant shall be informed 12 hours prior the time that the inspection is needed. The pre-sealant inspection shall be conducted after completion of the initial cleaning procedures, but prior to encapsulation. The pre-sealant inspection shall verify that all ACM and residual debris have been removed from the work area. If, during the course of the pre-sealant inspection, the Consultant identifies residual dust or debris, the Contractor shall comply with the request of the Consultant in order to render the area "dust free."

4. Final Visual Inspection. The Consultant, upon request of the abatement Contractor, shall conduct a final visual inspection. Following the removal of the inner layer of polyethylene sheeting and prior to final air clearance, the Consultant shall conduct a final visual inspection inside the work area. If residual dust or debris is identified during the course of the final inspection, the Contractor shall comply with the request of the Consultant in order to render the area "dust free."

3.7 CLEARANCE AIR TESTING

A. After the visual inspection is completed and all surfaces in the abatement area have dried, final air clearance sampling shall be performed by the Consultant. Aggressive air monitoring will be used. Selection of location and of samples shall be the responsibility of the Consultant. Air monitoring volumes shall be sufficient to provide a detection limit of 0.010 f/cm3 using NIOSH-approved method for PCM analysis. For air clearance by Transmission Electron Microscopy, air-monitoring volumes shall be sufficient to provide a detection limit of 0.005 f/cm^3 using the AHERA Level II Yamate Method.

B. Areas, which do not comply, with the Standard for Cleaning for Initial Clearance shall continue to be cleaned by and at the Contractor's expense until the specified Standard of Cleaning is achieved as evidenced by results of air testing as previously specified.

3.8 DISPOSAL OF ASBESTOS

A. All disposal of asbestos-containing and/or asbestos contaminated material must be in compliance with requirements of and authorized by the office of Solid Waste Management, Department of Environmental Protection (DEP), State of Connecticut.

B. Disposal approvals shall be obtained before commencing asbestos removal.

C. A copy of approved disposal authorization shall be provided to the Owner and Consultant and any required federal, state, or local agencies.

D. Copies of all Waste Shipment Records will be retained by the Consultant as part of the project file. The landfill operator on receipt will sign the receipts, and the quantity of asbestos debris leaving the job site and arriving at the landfill acknowledged.

E. All asbestos debris shall be transported in covered, sealed vans, boxes, or dumpsters, which are physically isolated from the driver by an airtight barrier. All vehicles must be properly licensed to meet DOT requirements.

F. Any vehicles used to store or transport ACM will either be removed from the property at night, or securely locked and posted to prevent disturbance.

G. Any incident and/or accident that may result in spilling or exposure of asbestos waste outside the containment, on and off the school property and all related issues are the sole responsibility of the abatement contractor.

END OF SECTION

CERTIFICATE OF WORKER'S ACKNOWLEDGMENT

PROJECT NAME _____ DATE _____
PROJECT ADDRESS _____
CONTRACTOR'S NAME _____

WORKING WITH ASBESTOS CAN BE DANGEROUS. INHALING ASBESTOS FIBERS HAS BEEN LINKED WITH VARIOUS TYPES OF CANCER. IF YOU SMOKE AND INHALE ASBESTOS FIBERS THE CHANCE THAT YOU WILL DEVELOP LUNG CANCER IS GREATER THAN THAT OF THE NON-SMOKING PUBLIC. Your employer's contract with the Owner for the above project requires that: You be supplied with the proper respirator and be trained in its use. You be trained in safe work practices and in the use of the equipment found on the job. You receive a medical examination. These things are to have been done at no cost to you.

RESPIRATORY PROTECTION: You must have been trained in the proper use of respirators, and informed of the type respirator to be used on the above referenced project. You must be given a copy of the written respiratory protection manual issued by your employer. You must be equipped at no cost with the respirator to be used on the above project.

TRAINING COURSE: You must have been trained in the dangers inherent in handling asbestos and breathing asbestos dust and in proper work procedures and personal and area protective measures. The topics covered in the course must have included the following:

- Physical characteristics of asbestos
- Health hazards associated with asbestos
- Respiratory protection
- Use of protective equipment
- Pressure Differential Systems
- Work practices including hands on or on-job training
- Personal decontamination procedures
- Air monitoring, personal and area

MEDICAL EXAMINATION: You must have had a medical examination within the past 12 months at no cost to you. This examination must have included: health history, pulmonary function tests and may have included an evaluation of a chest x-ray.

By signing this document you are acknowledging only that the Owner of the building you are about to work in has advised you of your rights to training and protection relative to your employer, the Contractor.

Signature _____
Social Security No. _____
Printed Name _____ Witness _____

SECTION 02 83 19 – LEAD PAINT AWARENESS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. General Provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY OF WORK

A. Work of this Section includes requirements for worker protection and waste disposal related to the renovation work involving components and surfaces containing lead paint or dust at the six Hartford Stormwater Pumping Stations.

B. The building surfaces throughout the building have varying levels of lead as shown in the lead screen testing provided in the Hazardous Materials Survey Report. The procedures referenced herein shall be utilized during required renovation work specified elsewhere in the Engineer's Specification that might impact lead.

C. The EPA Renovation, Repair and Painting (RRP) requirements, although a good way to address lead paint in buildings, does not apply to these Pumping Stations. These requirements apply to buildings that are child-occupied facilities with children under the age of six but offer work practices which would allow contractors to work safely.

D. The removal, painting, or other renovations of the building surfaces may result in dust and debris exposing workers to levels of lead above the OSHA Action Level. Worker protection, training, and engineering controls referenced herein shall be strictly adhered to, until completion of exposure assessment with results indicating exposures below the "Action Level". This section does not involve lead abatement, but identifies worker protection requirements for trades involved in the demolition and disposal procedures if lead is involved in the waste stream.

1.3 DEFINITIONS

A. The following definitions relative to lead paint as used in this Section are offered:

1. ACTION LEVEL (AL): The allowable employee exposure, without regard to use of respiratory protection, to an airborne concentration of lead over an eight (8) hour time weighted average (TWA), as defined by OSHA. The current action level is thirty micrograms per cubic meter of air (30 µg/m3).

2. AREA MONITORING: The sampling of lead concentrations, which is representative of the airborne lead concentrations that may reach the breathing zone of personnel potentially exposed to lead.

3. BIOLOGICAL MONITORING: The analysis of a person's blood and/or urine, to determine the level of lead concentration in the body.

4. CHANGE ROOM: An area provided with separate facilities for clean protective work clothing and equipment and for street clothes, which prevents cross-contamination.

5. COMPETENT PERSON: A person employed by the Contractor who is capable of identifying existing and predictable lead hazards in the surroundings or working conditions, and who has authorization to take prompt corrective measures to eliminate them as defined by OSHA.

6. EXPOSURE ASSESSMENT: An assessment conducted by an employer to determine if any employee may be exposed to lead at or above the action level.

7. "HIGH EFFICIENCY PARTICULATE AIR" (HEPA): A type of filtering system capable of filtering out particles of 0.3 microns diameter from a body of air at 99.97% efficiency or greater.

8. LEAD: Refers to metallic lead, inorganic lead compounds and organic lead soaps. Excluded from this definition are other organic lead compounds.

9. LEAD WORK AREA: An area enclosed in a manner to prevent the spread of lead dust, paint chips, or debris resulting from lead-containing paint disturbance.

10. LEAD PAINT: Refers to paints, glazes, and other surface coverings containing a toxic level of lead.

11. PERMISSIBLE EXPOSURE LIMIT (PEL): The maximum allowable limit of exposure to an airborne concentration of lead over an eight (8) hour time weighted average (TWA), as defined by OSHA. The current PEL is fifty micrograms per cubic meter of air (50 $\mu g/m^3$). Extended workdays lower the PEL by the formula: PEL equals 400 divided by the number of hours of work.

12. PERSONAL MONITORING: Sampling of lead concentrations within the breathing zone of an employee to determine the 8-hour time weighted average concentration in accordance with 29 CFR 1926.62 and 29 CFR 1910.1025. Samples shall be representative of the employee's work tasks. Breathing zone shall be considered an area within a sphere with a radius of 18 inches and centered at the nose or mouth of an employee.

13. RESOURCE CONSERVATION RECOVERY ACT (RCRA): RCRA establishes regulatory levels of hazardous chemicals. There are eight (8) heavy metals of concern for disposal: arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. Six (6) of the metals are typically found in paints, excluding selenium and silver.

14. TOXIC LEVEL OF LEAD: A level of lead, when present in dried paint or plaster, contains more than 0.50% lead by dry weight as measured by atomic absorption spectrophotometry (AAS) or 1.0 mg/cm2 as measured by on-site testing utilizing an x-ray fluorescence analyzer. (Term is specific to State of CT regulations and HUD guidelines only)

15. TOXICITY CHARACTERISTIC LEACHATE PROCEDURE (TCLP): The U.S. Environmental Protection Agency (USEPA) required sample preparation and analysis for determining the hazard characteristics of a waste material.

1.4 REGULATIONS AND STANDARDS

A. The following regulations, standards, and ordinances of federal, state, and local agencies are applicable and made a part of this specification by reference:

1. American National Standards Institute (ANSI)
   a. ANSI 288.2 - 1980 Respiratory Protection
2. Code of Federal Regulation (CFR)
   a. 29 CFR 1910.134 - Respiratory Protection
   b. 29 CFR 1910.1025 - Lead
   c. 29 CFR 1926.62 - Lead in Construction Interim Final Rule
   d. 29 CFR 1910.1200 - Hazard Communication
   e. 29 CFR 1926.59 - Hazard Communication in Construction
   f. 29 CFR 1926.55 - Gases, Vapors, Fumes, Dusts, and Mists
   g. 29 CFR 1926.57 - Ventilation
   h. 40 CFR 260 - Hazardous Waste Management Systems: General
   i. 40 CFR 261 - Identification and Listing of Hazardous Waste
   j. 40 CFR 262 - Generators of Hazardous Waste
   k. 40 CFR 263 - Transporters of Hazardous Waste
   l. 40 CFR 264 - Owner and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
   m. 40 CFR 265 - Interim Statutes for Owner and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
   n. 40 CFR 268 - Lead Disposal Restrictions
   o. 40 CFR 172 - Hazardous Materials Tables and Communication Regulations
   p. 40 CFR 178 - Shipping Container Specifications
   q. 40 CFR 270 and 124 - Hazardous Waste Permits
3. Underwriters Laboratories, Inc. (UL)
   a. UL586 - 1990 High Efficiency Particulate Air Filter Units

1.5 QUALITY ASSURANCE

A. Hazard Communication Program: The Contractor shall establish and implement a Hazard

Communication Program as required by 29 CFR 1926.59.

B. Compliance Plan (Site Specific): The contractor shall establish a written compliance plan, which is specific to the project site, to include the following:

1. A description of work activity involving lead including equipment used, material included, controls in place, crew size, employee job responsibilities, operating procedures, and maintenance practices.
2. Methods of engineering controls to be used to control lead exposure.
3. The proposed technology the Contractor will implement in meeting the PEL.
4. Air monitoring data documenting the source of lead emissions.
5. A detailed schedule for implementing the program, including documentation of appropriate supply of equipment, etc.
6. Proposed work practice which establishes proper protective work clothing, housekeeping methods, hygiene facilities, and practices.
7. Worker rotation schedule, if proposed, to reduce TWA.
8. A description of methods for informing workers of potential lead exposure.

C. Hazardous Waste Management: The Contractor shall establish a Hazardous Waste Management Plan, which shall comply with applicable regulations and address the following:

1. Identification of hazardous wastes
2. Estimated quantity of waste to be disposed of
3. Names and qualifications of each sub-contractor that will be transporting, storing, treating, and disposing of wastes
4. Disposal facility location and 24 hour point of contact
5. Establish EPA state hazardous waste and identification numbers if applicable
6. Names and qualifications (experience and training) of personnel who will be working on-site with hazardous wastes
7. List of waste handling equipment to be used in performing the work to include cleaning, volume reduction, if applicable, and transport equipment
8. Qualifications of laboratory to be utilized for TCLP sampling and analysis
9. Spill prevention, containment, and cleanup contingency measures
10. Work plan and schedule for waste containment, removal, treatment, and disposal

D. Medical Examinations

1. Before exposure to lead contaminated dust, provide workers with a comprehensive medical examination as required by 29 CFR 1910.1025 and 29 CFR 1926.62.

2. The examination shall not be required if adequate records show that employees have been examined as required by 29 CFR 1926.62 within the last year.

3. Medical examination shall include, at a minimum, approval to wear respiratory protection and biological monitoring.

E. Training

F. The Contractor shall ensure that workers are trained to perform lead paint disturbing activities and disposal operations prior to the start of work in accordance with 29 CFR 1926.62.

G. Respiratory Protection Program

1. The Contractor shall furnish each employee required to wear a negative pressure respirator with a respirator fit test at the time of initial fitting and at least once every six (6) months thereafter as required by 29 CFR 1926.62.

2. The Contractor shall establish a Respiratory Protection Program in accordance with ANSI Z88.2, 29 CFR 1910.134, and 29 CFR 1926.62.

1.6 SUBMITTALS

A. The Contractor shall submit to the Owner the following submittals prior to start of work:

1. Copies of medical records for each employee to be used on the project, including results of biological monitoring and a notarized statement by the examining physician that such an examination took place.

2. Copies of workers' training certificates.

3. Submit record of successful respirator fit testing performed by a qualified individual within the previous six (6) months, for each employee to be used on this project with the employee's name and social security number with each record.

4. The name and address of Contractor's blood lead testing lab, OSHA-CDC listing, and Certification in the State of Connecticut.

5. The name and address of Contractor's personal air monitoring and waste disposal lead testing laboratory/ies.

6. Name, address, and ID number of the hazardous waste hauler, waste transfer route, and proposed disposal site.

B. The Contractor shall submit to the Owner the following submittals during the job:

1. Results from personal air samples.

2. Medicals, certificates, and fit test 24 hours in advance of any new employee starting on the project.

C. The Contractor shall submit to the Owner the following submittals upon completion of the work:

1. Copies of manifests and receipts acknowledging disposal of all hazardous waste material from the project showing delivery date, quantity, and appropriate signature of landfill's authorized representative.

1.7 PERSONAL PROTECTION

A. Exposure Assessment

1. The Contractor shall determine if any worker will be exposed to lead at or above the action level.
2. The exposure assessment shall identify the level of exposure a worker would be subjected to without respiratory protection.
3. The exposure assessment shall be achieved by obtaining personal monitoring samples representative of a full shift at least (8-hour TWA).
4. During the period of the exposure assessment, the Contractor shall institute the following procedures for protection of workers.
   a. Protective clothing shall be utilized
   b. Respiratory protection
   c. Change areas shall be provided
   d. Hand washing facilities and shower
   e. Biological monitoring
   f. Training of workers

B. Respiratory Protection

1. The Contractor shall furnish appropriate respirators approved by NIOSH/MSHA for use in atmospheres containing lead dust.
2. Respirators shall comply with the requirements of 29 CFR 1926.62.
3. Workers shall be instructed in all aspects of respiratory protection.
4. The Contractor shall have an adequate supply of HEPA filter elements and spare parts on site for all types of respirators in use.
5. The following minimum respirator protection for use during paint removal or demolition of components and surfaces with lead paint shall be the 1/2 mask air purifying respirator with high efficiency filters for exposures (not in excess of 500 $\mu g/m^3$ or 10 x PEL).

C. Protective Clothing

1. Personal protective clothing shall be provided for all workers, supervisors, and authorized visitors entering the work area.

2. Each worker shall be provided with a minimum of two (2) complete disposable coverall suits.

3. Removal workers shall not be limited to two (2) suits, and the Contractor shall supply additional suits as necessary.

4. Under no circumstances shall anyone entering the abatement area be allowed to re-use a contaminated disposable suit.

5. Disposable suits, such as TYVEK suits, and other personal protective equipment (PPE) shall be donned prior to entering the lead control area. A change room shall be provided for workers to put on suits and other personal protective equipment with separate areas to store their street clothes.

6. Eye protection for personnel engaged in lead operations shall be furnished when the use of a full-face respirator is not required.

7. Goggles with side shields shall be worn when working with power tools or a material that may splash or fragment, or if protective eye wear is specified on the Material Safety Data Sheet (MSDS) for a particular product to be used on the project.

1.8 PERSONAL MONITORING

A. General. The Contractor is required to perform the personal air sampling activities during lead paint disturbing work. The results of such sampling shall be posted, provided to individual workers, and submitted to the Owner as described herein.

B. Sampling. Samples shall be taken for the duration of the work shift or for eight hours, whichever is less. Personal samples need not be taken every day after the first day if working conditions remain unchanged, but must be taken every time there is a change in removal operations, either in terms of the location or the type of work. Sampling will be used to determine eight-hour Time-weighted averages (TWA). The Contractor is responsible for personal sampling as outlined in OSHA Standard 29 CFR 1926.62 and 29 CFR 1910.1025.

C. Sampling Results. Air sampling results shall be reported to individual workers in written form no more than forty-eight (48) hours after the completion of a sampling cycle. The reporting document shall list each sample's result, sampling time and date, personnel monitored and their social security numbers, flow rate, sample duration, sample yield, cassette size, and analysts' name and company, and shall include an interpretation of the results. Air sample analysis results will be reported in micrograms/cubic meter (µg/m3).

D. Testing Laboratory. The Contractor's testing lab shall be participating in AIHA's Environmental Lead Laboratory Accreditation Program (ELLAP). The Contractor shall submit to the Consultant for review and acceptance, the name and address of the laboratory, certification(s) of AIHA participation, a listing of relevant experience in air lead analysis, and presentation of a documented Quality Assurance and Quality Control Program.

PART 2 – PRODUCTS

2.1 GENERAL

A. Any substitution in materials, equipment, or methods to those specified shall be approved by the Owner prior to use. Any requests for substitution shall be provided in writing to the Owner. The request shall clearly state the rationale for the substitution.

B. Submit to the Owner product data of all materials and equipment and samples of all materials to be considered as an alternate.

C. Product data shall consist of manufacturer; catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, material safety data sheets (MSDS), and other standard descriptive data. Submittal data shall be clearly marked to identify pertinent materials, products or equipment and show performance characteristics and capacities.

D. Samples shall be of sufficient size and quantity to clearly illustrate the functional characteristics of the product or material with integrally related parts and attachment devices.

2.2 MATERIALS AND PRODUCTS

A. Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name and product technical description.

B. Damaged or deteriorating materials shall not be used and shall be removed from the premises.

C. The Contractor shall have available sufficient inventory or dated purchase orders for materials necessary for the job including protective clothing, respirators, filter cartridges, polyethylene sheeting of proper size and thickness, tape, and air filters.

D. Materials

1. Polyethylene sheet in a roll size to minimize the frequency of joints shall be delivered to job site with factory label indicating 6 mil.
2. Polyethylene disposable bags shall be six (6) mil. Tie wraps for bags shall be plastic, five (5) inches long (minimum), pointed, and looped to secure filled plastic bags.
3. Tape or adhesive spray will be capable of sealing joints in adjacent polyethylene sheets and for attachment of polyethylene sheet to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions, including use of amended water.
4. Impermeable containers are to be used to receive and retain any lead containing or contaminated materials until disposal at an acceptable disposal site. (The containers shall be labeled in accordance with EPA and DOT standards.)
5. HEPA filtered exhaust systems shall be used during powered dust generating abatement operations. The use of powered equipment without HEPA exhausts is prohibited.

2.3 TOOLS AND EQUIPMENT

A. Provide suitable tools for all lead disturbing operations.

B. The Contractor shall have available power cables or sources such as generators (where required).

C. Vacuum units, of suitable size and capacities for the project, shall have HEPA filter(s) capable of trapping and retaining 99.97% of all mono-dispersed particles of 0.3 micrometers in diameter.

PART 3 - EXECUTION

3.1 WORKER PROTECTION/TRAINING

A. The Contractor shall provide appropriate training, respiratory and other personal protection, and biological monitoring for each worker and ensure proper usage during potential lead exposure and the initial exposure assessment.

3.2 CONTRACTOR'S RESPONSIBILITIES

A. The Contractor is responsible for establishing and maintaining controls referenced herein to prevent dispersal of lead contamination from the lead work area.

B. The Contractor is also responsible for conducting work with applicable federal, state, and local regulations as referenced herein.

3.3 WORKER HYGIENE PRACTICES (*Required during initial exposure assessment and if results of air sampling are above OSHA Action Level*)

A. Work Area Entry. Workers shall don personal protective equipment prior to entering work area, including respiratory protection, disposable coveralls, gloves, headgear, and footwear.

B. Work Area Departure. While leaving respirators on, workers shall remove all gross contamination, debris, and dust from disposable coveralls and proceed to change room and remove coveralls and footwear and place in hazardous waste disposal container.

C. Hand washing Facilities. All workers must wash their hands and faces upon leaving the work area.

D. Equipment. All equipment used by workers inside the work area shall be wet wiped or bagged for later decontamination before removal from the work area.

E. Prohibited Activities. Under no circumstances shall workers eat, drink, smoke, chew gum, or tobacco, or remove their respirators in the work area.

F. Shock Hazards. The Contractor is responsible for using safe procedures to avoid electrical hazards. All temporary electrical wiring will be protected by ground fault circuit interrupters (GFI).

3.4 LEAD WORK AREA (*Required during initial exposure assessment and if results of air sampling are above OSHA Action Level*)

A. The Contractor shall place warning signs at all entrances and exits from the work area. Signage shall be a minimum of 20" x 14" and shall state the following:

WARNING
LEAD WORK AREA
POISON
NO SMOKING OR EATING OR DRINKING
UNAUTHORIZED ENTRY PROHIBITED

B. The Contractor shall designate a change room as specified in this Section. The change room shall consist of two (2) layers of sheeting on the floor surface adjacent to the lead work area. The change room shall have separate storage facilities for street clothes to avoid cross contamination.

C. The Contractor shall provide potable water for hand and face washing and provide a portable shower unit.

D. The Contractor shall place six-mil polyethylene drop clothes on floor / ground surfaces prior to beginning removal work to facilitate clean-up.

3.5 WORK AREA CLEAN UP

A. The Contractor shall remove all loose chips and debris from floor surfaces and place in hazardous waste disposal bags.

B. The Contractor shall HEPA vacuum adjacent surfaces to remove dust and debris.

C. Polyethylene drop cloths shall be properly disposed of.

3.6 WASTE DISPOSAL

A. The Contractor's contractual liability shall be the proper disposal of all non-hazardous and hazardous wastes generated at the site in accordance with all applicable federal, state, and local regulations as referenced herein. The Contractor would be responsible for conducting TCLP testing of the waste stream to determine if waste constitutes hazardous waste. Metal components with lead paint can be recycled.

END OF SECTION

SECTION 02 85 00 – MOLD REMEDIATION

PART 1 – GENERAL

1.1 SCOPE

A. Perform remediation, to include cleaning and disposal of mold growth from wall and floor surfaces on interior of Pumping Station. Cleaning shall include removal of debris and dirt through sweeping, vacuuming, and washing, followed by application of biocide and fungus encapsulant. The work specified herein shall include methods to verify the cleanliness through inspection and/or testing in accordance with items specified herein.

B. Perform work to minimize damage to building components and surfaces to remain. Any damaged caused during the work shall be repaired by the Contractor (e.g., paint peeling, water damage, etc.) at no expense to the Owner. The Contractor is responsible for protecting all objects in the work area that are permanent fixtures or too large to remove.

C. The Contractor shall be responsible for the following general requirements:

1. Obtain all approvals and permits, and submit all notifications required.
2. Unless otherwise specified, all materials and debris resulting from cleaning shall become the property of the Contractor and shall be removed from the premises.
3. Remove materials to be reused with the utmost care to prevent damage of any kind. All material to be reused shall be stored as directed. The Contractor shall coordinate with the Owner as to the storage location.
4. Materials not scheduled for reuse shall be removed from the site and disposed of in accordance with all applicable federal, state, and local requirements.

D. Protect and preserve in operating condition, all utilities traversing the building and site. Damage to any utility due to work under this Contractor shall be repaired to the satisfaction of the Owner at no cost to the Owner. Protect and maintain in operating condition, any telephone, electrical, fire and security alarm, fire standpipe, and control systems within the work areas. The Owner will retain the services of a Project Monitor for protection of its interests and those using the building. The project monitor will conduct inspection after the remediation/cleaning.

1.2 DESCRIPTION OF WORK

A. The Contractor shall supply all labor, materials, equipment, services, insurance, and incidentals which are necessary or required to perform the work in accordance with applicable governmental regulations and these specifications.

B. The Contractor shall be responsible to remediate Pumping Station interiors for fungal materials in accordance with these specifications to include:

TABLE 1

LOCATION
BUSHNELL PARK
Stairwell Wall
POPE PARK
Boiler D Stairwell West Wall
ARMORY
Sump Cover
Stairwell Wall
KENEY LANE
Pump 1
Bar Screen Stairs

C. Schedule

1. The Work shall be accomplished in a period selected by the Owner.
2. If the period includes business days, the work shall be performed during business hours (business hours are Monday through Friday, 7:30 a.m. to 5:00 p.m.).

1.3 DEFINITIONS

A. ACCESSIBLE: A space which can be entered or seen without demolition.

B. AGENCY OR STATE: The authoritative force, usually at the state level, or their representative.

C. DEBRIS: Any solid materials, including particulate substances, on a surface not intended to be present.

D. DEEP: The Connecticut Department of Energy and Environmental Protection, 79 Elm Street, Hartford, Connecticut 06106.

E. DPH: The Connecticut Department of Public Health, 410 Capitol Avenue, P. O. Box 340308, Hartford, Connecticut 06134-0308.

F. EXPOSED: Open to view.

G. FIXED OBJECT: A piece of equipment or furniture in the Work Area which cannot be removed from the Work Area, as determined by the Owner.

H. INACCESSIBLE: A space not accessible, and which cannot be entered or seen without demolition.

I. MECHANICAL CLEANING: Physical removal of debris and other foreign matter from building surfaces.

J. MOVEABLE OBJECT: A piece of equipment or furniture in the Work Area which can be removed from the Work Area, as determined by the Owner.

K. OWNER OR OPERATOR OF A RENOVATION ACTIVITY: Any person who owns, leases, operates, controls, or supervises the facility being renovated or any person who owns, leases, operates, controls, or supervises the renovation.

L. NON-POROUS SURFACE: Any surface of the building in contact with the air stream which cannot be penetrated by either solutions or air. This would exclude materials such as wood, fiberboard, thermal insulation, and concrete.

M. PROJECT MONITOR: The certified and licensed individual employed by the Consultant contracted or employed by the building owner or contractor to supervise and/or conduct air monitoring and analysis schemes. This individual is responsible for recognition of technical deficiencies in procedures during both planning and on-site phases of the project.

N. REMEDIATE/CLEAN: Using biocide to treat visible signs of mold growth using mechanical methods through wiping and/or power working to remove mold growth , collecting water (and materials used to clean) for disposal or filtration of water.

O. VISIBLY CLEAN: Determined by Visual Inspection, that all portions or components of the building are both 1) free of any debris, and 2) in the Contractor's professional judgment, capable of Cleaning Verification.

P. VISUAL INSPECTION: Examination of the cleaned components of the building components to evaluate the effectiveness of the cleaning process using the human eye or an optical instrument.

Q. WORK AREA: Specific area or location where the actual work is being performed or such other area of a facility which the Consultant determines to fall under the control of the specifications.

1.4 REFERENCES

A. The current issue of each document shall govern. Where conflict among requirements or with these specifications exists, the more stringent requirements shall apply.

1. Occupational Safety and Health Administration (OSHA)
   29 CFR 1910.134 – Respiratory Protection
   29 CFR 1910.143 - Confined Space Entry
   29 CFR 1926.21 – Safety Training and Education
   29 CFR 1926.32 – Definitions
   29 CFR 1926.51 – Sanitation
   29 CFR 1926.59 – Hazard Communication
   29 CFR 1926.200 – Accident Prevention Signs and Tags
   29 CFR 1926.417 – Lockout and Tagging of Circuits

2. Environmental Protection Agency (EPA)

Building Air Quality, December 1991

3. American National Standards Institute (ANSI)
   ANSI Z9.2 – Fundamentals Governing the Design and Operation of Local Exhaust Systems
   ANSI Z88.2 – Respiratory Protection

4. American Society of Testing and Materials (ASTM)
   ASTM E 84 – Surface Burning Characteristic of Building Materials
   ASTM E 119 – Fire Tests of Building and Construction Materials

5. Underwriters Laboratories, Inc. (UL)
   UL 586 – High Efficiency, Particulate, Air Filter Units
   UL 181 – Factory-Made Air Ducts and Air Connectors
   UL 181A – Closure Systems for Use with Rigid Air Ducts and Air Connectors

1.5 DOCUMENTATION

A. Submit two copies of the following documentation to ensure compliance with the applicable regulations. An up to date copy shall be retained at the job site at all times.

B. Manufacturer's Catalog Data:
   Local Exhaust Equipment
   Vacuum Equipment
   Respirators
   Polyethylene Sheeting
   Airless Sprayers
   MSDS for all materials delivered to the Site
   Biocides
   Cleaning Chemicals

C. Drawings

   1. Shop drawings to indicate details where proposed methods differ from details and layouts as may be necessary to comply with this specification and all applicable regulations.

D. Statements (as applicable)
   Worker Medical Certification
   Worker Training Certification
   Worker Respiratory Fit Testing
   Safety Plan
   Respirator Protection Plan
   Qualifications

   1. Best qualified contractor shall employ an experienced cleaning specialist on a full time basis. The credentials for a supervisor otherwise shall be submitted for approval.

2. Establish and supervise in accordance with 29 CFR 1926.21, a program for the education and training of workers in the recognition, avoidance and prevention of unsafe conditions and the regulations applicable to the work environment to control or eliminate any hazards or other exposure to illness or injury. Include any site specific information to address health and safety procedures unique to this project.

3. Establish a written Respiratory Protection Plan in accordance with 29 CFR 1910.134. This plan shall establish procedures governing the selection and use of respirators and shall include such information as training in the proper use of respirators; medical examination of workers to determine whether or not they may be assigned an activity where respiratory protection is required; training in the proper use and limitations of respirators; respirator fit testing; regular inspection and evaluation of the continued effectiveness of the program; and other elements included in the standard.

4. Demonstrate that employee exposure will be below the PELs for exposures expected in the work.

E. Records

1. Records shall include:
Sign-in/out Logs
Personal Air Sampling Results, as applicable

2. When rental equipment is to be used in the work, submit a copy of written notification provided to the rental company informing them of the nature of use of the rented equipment.

1.6 PERSONNEL PROTECTION

A. Respiratory protection shall meet the requirements of OSHA as required in 29 CFR 1910.134. Provide appropriate respiratory protection for each worker and ensure usage as required. Select respirators from among those jointly approved as being acceptable for protection by the Mine Safety and Health Administration (MSHA) and the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 30 CFR Part 11. Provide an adequate supply of filter elements for respirators in use.

B. Provide protective clothing per regulations established by OSHA. Protective clothing may include impervious coveralls with elastic wrists and ankles, head covering, gloves and foot coverings.

C. Provide upon demand all authorized persons entering work areas with proper respirators and protective clothing.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name and product technical description. Do not use damaged or deteriorating materials.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Fire retardant polyethylene sheet in roll size to minimize the frequency of joints and shall be delivered to job site with factory label indicating six (6) mil.

B. Polyethylene disposable bags shall be six (6) mil.

C. Tape shall be capable of sealing joints in adjacent polyethylene sheets and for attachment of polyethylene sheet to finished or unfinished surfaces. Tape must be capable of adhering under both dry and wet conditions.

D. Containers must be impermeable and shall be both air and watertight. Containers shall be labeled in accordance with OSHA and EPA regulations as appropriate.

2.2 TOOLS AND EQUIPMENT

A. Tools and equipment shall be suitable for the work specified.

B. Protective clothing, respirators, filter cartridges, air filters and sample filter cassettes shall be provided in sufficient quantities for the project.

C. Electrical equipment, protective devices and power cables shall conform to all applicable codes.

D. Water supply, as required, shall include backflow preventers, sufficient hose length, and drain system or an acceptable alternate. If used, showers shall be equipped with hot and cold or warm running water.

E. Exhaust air filtration units shall be equipped with HEPA filters capable of providing sufficient air exhaust to create a minimum pressure differential of 0.02 inches of water column or to allow a sufficient flow of air through the area. An automatic warning system shall be incorporated into the equipment to indicate pressure drop or unit failure. No air movement system or air filtering equipment shall discharge unfiltered air.

F. Spray equipment shall be capable of mixing agent with water and capable of generating sufficient pressure and volume. Hose length shall be sufficient to reach all of the work.

G. Vacuum units, of suitable size and capabilities for the project, shall have HEPA filters capable of trapping and retaining at least 99.97 percent of all mono-dispersed particles of 0.3 microns in diameter or larger.

H. Ladders and/or scaffolds shall be of adequate length, strength, and sufficient quantity to support the work schedule.

I. Other materials such as lumber, nails and hardware necessary to construct and dismantle the structures for access to and for isolation of the work shall be provided as appropriate for the work.

PART 3 – EXECUTION

3.1 PREPARATION OF WORK AREA ENCLOSURE SYSTEM

A. Prior to beginning work, the Contractor and the Design Consultant and Owner shall perform a visual survey of each work area and list all pre-existing damage to building components. The Contractor shall submit to the Agency a list which shall include all damaged areas not scheduled to be repaired under this Contract and include photographs, video tapes as applicable.

B. When feasible, shut down and lock out electrical power, including all receptacles and light fixtures. Protect fire alarm system components remaining in the area with six (6) mil polyethylene and seal with tape. Coordinate all power and fire alarm isolation with the Owner.

C. Provide temporary power and lighting and ensure safe installation, including ground fault protection, of temporary power sources and equipment in compliance with applicable electrical code and OSHA requirements. The Contractor is responsible for proper connection and installation of electrical wiring.

D. Lockout facility electrical systems in MANDATORY coordination with the Owner to perform the work.

3.2 HEALTH AND SAFETY

A. Safety Standards: Comply with all applicable federal, state, and local requirements for protecting the safety of the Contractor's employees, building occupants, and the environment. In particular, all applicable standards of the Occupational Safety and Health Administration (OSHA) shall be followed when working in accordance with this specification.

B. Occupant Safety: No processes or materials shall be employed in such a manner that they will introduce hazards into building space other than the Work Area.

1. The Contractor shall give the Owner first opportunity to move furniture and equipment as necessary for the work.
2. With Owner approval, the Contractor shall move furniture and equipment as necessary for the work
3. The Contractor shall cover, with six-mil polyethylene sheeting, furniture and equipment not moved for the work and within twenty feet of the work.

C. Disposal of Debris: All debris removed as part of the work shall be disposed of in accordance with applicable federal, state, and local requirements.

3.3 MECHANICAL CLEANING METHODOLOGY

A. Source Removal Cleaning Methods: The buildings components shall be cleaned by mechanical cleaning methods designed to extract contaminants from the building components and safely remove contaminants from the facility. It is the Contractor's responsibility to select removal methods which will render the building components visibly clean and capable of passing cleaning verification methods and other specified tests, in accordance with all general requirements. No cleaning method, or combination of methods, shall be used which could potentially damage building components.

1. All methods used shall incorporate the use of vacuum collection devices that are operated continuously during cleaning. The vacuum collection device must be of sufficient power to render all areas being cleaned under negative pressure, such that containment of debris and the protection of the indoor environment are assured.

2. All methods require damp wiping to dislodge debris adhered to building component surfaces, such that debris may be safely conveyed to damp cloths or vacuum collection devices.

B. Biocide Agents and Coatings:

1. Biocide agents shall be applied, and shall receive prior approval of the Consultant. Biocide agents will be applied only after removal of damaged permeable materials (identified in this section) such as walls, piping system, and other surfaces in interior of Pumping Station. Biocide shall be applied to the surface remaining after removal of the mold damaged material.

2. Application of any biocide agents use to control the growth of fungal or bacteriological contaminants shall be performed after the removal of surface deposits and debris from surfaces.

3. Only biocide agents registered by the U. S. Environmental Protection Agency (EPA) specifically for use in buildings shall be used.

4. Biocide agents shall be applied in strict accordance with manufacturer's instruction.

5. Biocide coating products for both porous and non-porous surfaces shall be EPA-registered water soluble solutions with supporting efficacy data and MSDS records.

6. Biocide coatings shall be applied according to manufacturer's instructions. Coatings shall be sprayed directly onto surfaces, rather than "fogged" onto surfaces. A continuous film must be achieved on the surface to be treated by the coating application. Application of any biocide coatings shall be in strict accordance with manufacturer's minimum mileage surface application rate standards for effectiveness.

7. Repeat HEPA – vacuuming of surface to which biocide has been applied after the biocide dries. This repeat vacuuming will remove any residue loosened by the action of the biocide.

3.4 CLEANLINESS VERIFICATION

A. General: Verification of building component cleanliness will be determined after the cleaning and before the application of any treatment or introduction of any treatment-related substance to the building components, including biocide agents and coatings.

B. Visual Inspection: The Consultant shall inspect the various building components visually to ensure that no visible contaminants are present.

1. If no contaminants are evident through visual inspection, the building components shall be considered clean; however, the Owner reserves the right to further verify system cleanliness through gravimetric analysis wipe-testing, and/or microbial culturing as specified herein.

2. If visible contaminants are evident through visual inspection, those portions of the system where contaminants are visible shall be re-cleaned and subjected to re-inspection for cleanliness.

C. Biological Sampling: At the discretion of the Consultant, surfaces may be tested for cleanliness and/or bio-aerosol sampling and analysis will be performed for clearance assessment. The surface standard for cleanliness is less than 1, 000 counts per gram of dust (<1,000 c/Gm) by Total Spore Count. The air standard for cleanliness is less than ten (10) times that of the outside concentration of total fungi and of individual fungi of concern (i.e., each of Alternaria, Aspergillus/Penicillium, Fusarium, and Stachybotrys) in counts per cubic meter (c/M^3) by Total Spore Count.

END OF SECTION

ATTACHMENT A

LIMITED HAZARDOUS MATERIALS SURVEY REPORT (ASBESTOS, LEAD-BASED PAINT AND MOLD INSPECTION REPORT) DATED JULY 24, 2012

Asbestos, Lead-Based Paint and Mold Inspection

Hartford Stormwater Pumping Stations

Hartford Department of Public Works

Hartford Connecticut

July 24, 2012

FUSS & O'NEILL

Fuss & O'Neill EnviroScience, LLC
146 Hartford Road
Manchester, CT 06040

Project No. 01997279.F7E

FUSS & O'NEILL
EnviroScience, LLC

July 24, 2012

Mr. Robert A. Lacourse, P.E., CFM
Acting City Engineer
City of Hartford Department of Public Works
525 Main Street, 4th Floor
Hartford, CT 06103

RE: Asbestos, Lead-Based Paint, and Mold Inspection at Six Stormwater Pumping Stations for the City of Hartford
Fuss & O'Neill EnviroScience No. 01997279.F7E

Dear Mr. Lacourse:

Enclosed is the report for the asbestos, lead-based paint and mold survey performed at the City of Hartford Stormwater pumping stations in Hartford, Connecticut.

The survey was performed on July 17 & 18, 2012 by a Fuss & O'Neill EnviroScience, LLC licensed inspector and included an asbestos inspection, a screening for lead-based paint and mold swab sampling. Specifications to abate the hazardous materials discovered via this survey will subsequently be prepared and incorporated into the Project Manual for the Hartford Flood Control Highest Priority Pumping Station Improvements contract (DPW 12-25). This report is envisioned to be added to the information for prospective bidders as an appendix to the Request for Response for RFR 5216 (DPW 12-25).

If you have any questions regarding the contents of this report, please do not hesitate to contact me at (860) 646-2469, extension 5565. Thank you for this opportunity to have served your environmental needs.

Sincerely,

Stephen W. Connelly

Stephen W. Connelly
Senior Vice President

SWC/kr

Enclosure

cc: Bob Umashankar, City of Hartford

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FUSS & O'NEILL
EnviroScience, LLC

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Hartford Department of Public Works

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Appendices

End of Report

APPENDIX A - ASBESTOS SAMPLE RESULTS AND CHAIN OF CUSTODY
APPENDIX B - LEAD PAINT TESTING PROCEDURES AND EQUIPMENT
APPENDIX C - LEAD TESTING FIELD DATA SHEETS
APPENDIX D - MOLD SWAB SAMPLE RESULTS AND CHAIN OF CUSTODY

1 Introduction

Fuss & O'Neill EnviroScience, LLC (EnviroScience) was retained to perform an asbestos, lead-based paint, and mold survey for select portions of the interior of six City of Hartford stormwater pumping stations. The stations included in this survey are: South Meadows, Keney Lane, Bushnell Park, North Meadows, Pope Park, and Armory Pumping Stations. EnviroScience's Environmental Technician Eric Cooley, a State of Connecticut Licensed Asbestos Inspector, inspected these areas on July 17 & 18, 2012.

This inspection was performed in response to the planned City of Hartford Department of Public Works Pump and Valve Rehabilitation Project and consisted of a survey for pump and valve related asbestos-containing materials (ACM), a screening of painted surfaces for lead, and mold swab samples.

The inspection was completed in accordance with EnviroScience's written proposal dated July 12, 2012.

2 Asbestos Inspection

During inspections, suspect ACM is separated into three United States Environmental Protection Agency (USEPA) categories. These categories are: Thermal System Insulation (TSI), Surfacing ACM, and Miscellaneous ACM. TSI includes all materials used to prevent heat loss or gain or water condensation on mechanical systems. Examples of TSI are pipe insulation, boiler insulation, duct insulation, and mudded insulation on pipe fittings. Surfacing ACM includes all ACM that is sprayed, troweled, or otherwise applied to an existing surface. Surfacing ACM is commonly used for fireproofing, decorative, and acoustical applications. Miscellaneous materials include all ACM not listed as TSI or surfacing ACM, such as asphalt coatings, gaskets, and asbestos floor tiles. Only miscellaneous ACM was encountered in the scope of this survey. We did observe that there was suspect asbestos-containing material in boiler rooms and on heating pipes, but these materials will not be affected by renovation.

All suspect ACM were sampled. Materials that were sampled were analyzed by Polarized Light Microscopy (PLM), or Transmission Electron Microscope (TEM) Non-Friable Organically Bound (NOB) Analysis

Finally, all ACM is quantified in linear and square footage, depending on the nature of the material. The asbestos content, quantities, and locations of ACM identified by bulk sample analysis or by assuming the material to contain asbestos are listed in Table 1 of the Results Section.

2.1 Results

Utilizing the USEPA protocol and criteria, the following materials were determined to be **ACM**:

Table 1

Location	Material Type	% Asbestos	Quantity	Sample ID
South Meadows Pumping Station				
Pump, valve and piping system 1,2,5 & 6 mating surfaces & Flanges (all gaskets other than those listed below)	Inaccessible Gaskets	Assumed	53 SF	N/A
Pumps 1,2,3,4,5,6	Bearing Packing	20% chrysotile	4 SF	0717EWC-05
Mezzanine Storage Room	½" square silver Mechanical Packing Material	25% chrysotile	4 SF	0717EWC-07
Keney Lane Pumping Station				
Pump, valve and piping system 1,2,3 & 4 Flanges	Flange Gaskets	65% chrysotile	41 SF	0717EWC-11 & 12
Pumps 1,2,3 & 4 bolt flanges, inspection ports, bearing housings & packing	Inaccessible Gaskets	Assumed	20 SF	N/A
Pumps 1,2,3 & 4 Valve assembly components (other than pipe flanges)	Inaccessible Gaskets & Packing Material	Assumed	8 SF	N/A
Bushnell Park Pumping Station				
Pump, valve and piping system 1,2,3 & 4 Flanges	Flange Gaskets	65% chrysotile	44 SF	0717EWC-17, -18 & -19
Pumps 1,2,3 & 4 bolt flanges, inspection ports, bearing housings & packing	Inaccessible Gaskets	Assumed	18 SF	N/A
Pumps 1,2,3 & 4 Valve assembly components (other than pipe flanges)	Inaccessible Gaskets & Packing Material	Assumed	7 SF	N/A
North Meadows Pumping Station				
Pump 3 discharge valve Flanges, Pump 4 upper bolt flange, Pump 5 suction valve flanges	Fibrous Gaskets	60% chrysotile	5 SF	0717EWC-21, -22 & -26
Pumps 1,2,3 & 4 bolt flanges, inspection ports, bearing housings & packing (all other gaskets not listed in this table)	Inaccessible Gaskets	Assumed	23 SF	N/A
Pope Park Pumping Station				
Pumps 1,2,3 & 4 bolt flanges, inspection ports, bearing housings & packing	Inaccessible Gaskets	Assumed	18 SF	N/A
Pumps 1,2,3 & 4 Valve assembly components (other than pipe flanges)	Inaccessible Gaskets & Packing Material	Assumed	7 SF	N/A
Armory Park Pumping Station				
Pumps 1,2,3 & 4 bolt flanges, inspection ports,	Fibrous Gaskets	45% chrysotile	6 SF	0718EWC-06
		35% chrysotile		0718EWC-07
		55% chrysotile		0718EWC-08
Pumps 1,2,3 & 4 bearing housings & packing	Inaccessible Gaskets	Assumed	3 SF	N/A

Location	Material Type	% Asbestos	Quantity	Sample ID
Pumps 1,2,3 & 4 Valve assembly components (other than pipe flanges)	Inaccessible Gaskets & Packing Material	Assumed	7 SF	N/A

LF = Linear feet; SF = Square feet; Chrysotile is a form of asbestos

Utilizing USEPA protocol and criteria, the following materials were determined to be **non-ACM:**

Table 2

Location	Material Type	% Asbestos	Quantity	Sample Id
South Meadows Pumping Station				
Pump, valve and piping system 1,2,5 & 6 exterior surfaces	Asphalt Coating	None detected	1,000 SF	0717EWC-01 & -09*
Pump, valve and piping system 3 & 4 Flanges	Flange Gaskets	None detected	26 SF	0717EWC-08 0718EWC-01
Pump 2: Steady bearing housing	Gasket	None detected	1 SF	0717EWC-03*
Pump 2: Inspection port gasket	Gasket	None detected	<1 SF	0717EWC-04
Mezzanine Storage Room	"Chesterton Mechanical Packing" Material	None detected	3 SF	0717EWC-06
North Meadows Pumping Station				
Pump 1 upper bolt flange, Pump 2 suction valve flange, Pump 4 suction spool flanges & discharge valve flanges	Fiber Reinforced Black Rubber Gaskets	None detected	7.5 SF	0717EWC-23, -24 & -27

*Samples analyzed via TEM NOB method

2.2 Discussion

The USEPA defines any material that contains more than one percent (1%) asbestos, utilizing PLM, as being an ACM. Materials that are identified as "none detected" are specified as not containing asbestos. At EnviroScience, materials that are identified as containing less than four percent (<4%) asbestos are analyzed further utilizing the "point-counting" technique to verify asbestos content. This policy is supported by USEPA requirements for "point-counting" confirmation of low level PLM results.

2.3 Conclusion

All ACM as identified in Section 2.1 (Table 1) that will be impacted by the proposed renovation of the building must be removed by a State of Connecticut Licensed Asbestos Abatement Contractor prior to such renovation. This is a requirement of the State of Connecticut Department of Public Health (CT DPH) Standards for Asbestos Abatement.

Any suspect material encountered during renovation/demolition that is not identified in this report as being non-ACM should be assumed to be ACM unless sample results prove otherwise.

Please see *Appendix A* for the samples results and chain of custody.

3 Lead-Based Paint Screening

A targeted lead paint screen was performed at each of the six pumping stations by EnviroScience's Robert Feingold, a Connecticut-certified lead inspector, on July 17 and 18, 2012. A direct reading X-ray fluorescence (XRF) analyzer was used to perform the screening. The screen was conducted in accordance with the protocol outlined in the attached document: Testing Procedures and Equipment (*Appendix B*).

For the purpose of this screen, various components were tested. While the bulk of the testing was done on components expected to be disturbed by the proposed Pump and Valve Rehabilitation, other nearby components, such as walls, floors, catwalks and stairs were also tested.

The buildings are masonry structures with ground floors and at least two basement levels. The ground floors contain engine rooms, with a number of large diesel engines. Drive shafts extend downward from the engines, through the mezzanine level, and down to the pumps in the pump room, typically 25 feet below the engine room. Components expected to be disturbed (which include pumps, valves, bearings, couplings and shafts) are steel. Other components tested are steel, concrete, and masonry.

3.1 Results

The screen indicated consistent painting trends throughout the 6 buildings. **Lead was found in many locations on pumps, valves, bearing housings, couplings and shafts. Lead was also found on stairs, catwalks, handrails, and support beams.**

Toxic levels (>1.0 mg/cm²) of lead-based paint were detected on the components listed in Table 3 below. All other components tested, not listed in Table 3, were found to contain less than the toxic level of lead.

Table 3

Item	Location	Reading (mg/cm²)
South Meadows Pumping Station		
Stair	Stringer	>9.9
Pump 2	Flange	1.4
Pump 1 Suction Valve	Flange	3.3
Support Column	Near Pump 1	3.1
Pump 1 Discharge Valve	Valve Body	1.4
Pump 1	Pump Body	1.4
Pump 2	Upper Bearing Frame	4.2
Pump 2	Shaft Coupling	1.4
Pump 3	Lower Bearing Frame	1.2
Pump 3	Middle Bearing Frame	1.2

Item	Location	Reading (mg/cm²)
Stair	Railing	6.0
Pump 6	Flange	1.0
Keney Lane Pumping Station		
Pump 2 Suction Valve	Body	1.4
Pump 2 Discharge Valve	Body	1.0
Stair	Rail	3.3
Stair	Stringer	3.8
Bushnell Park Pumping Station		
Pump 1	Shaft Coupling	1.0
Pump 1 Discharge Valve	Flange	1.1
Steady Bearing Support Beam		2.8
Stair	Stringer	2.8
Stair	Handrail	3.5
Pump 4	Pump Body	1.4
Pump 4 Discharge Valve	Valve Body	1.0
North Meadows Pumping Station		
Pump 1 Suction Valve	Valve Body	1.3
Pump 2 Suction Valve	Valve Body	1.2
Pump 2	Shaft	4.6
Catwalk	Support Steel	1.3
Catwalk	Handrail	1.7
Steady Bearing Support Beam		>9.9
Pope Park Pumping Station		
Pump 3	Pump Body	>9.9
Pump 3	Discharge Flange	8.3
Pump 3 Discharge Valve	Flange	2.6
Pump 1	Pump Body	3.9
Pump 1	Discharge Flange	8.1
Pump 1 Suction Valve	Flange	3.0
Pump 1	Bearing Housing	4.8
Pump 1	Shaft	1.0
Pump 1	Shaft Coupling	1.0
Stair	Support Column	1.0
Stair	Stringer (Top)	4.2
Stair	Stringer (Side)	1.3
Stair	Handrail	1.0
Steady Bearing Support Beam		5.3
Armory Pumping Station		
Pump 3 Discharge Valve	Flange	3.3
Pump 3	Pump Body	7.2
Pump 3	Bearing Frame	9.4
Pump 3 Suction Valve	Flange	1.7
Pump 2 Discharge Valve	Flange	1.9

Item	Location	Reading (mg/cm²)
Stair	Stringer (Side)	1.0
Stair	Stringer (Top)	1.0
Stair	Support Column	1.0
Pump 1	Upper Pump Bearing	4.7
Pump 1	Bearing Frame	>9.9
Steady Bearing Support Beam		2.6
Catwalk	Support Rail	1.0

It is important to note that this was only a screening. If a specific component does not show up in the above tables, this does NOT mean that the component is not coated with toxic levels of lead based paint.

3.2 Conclusion

Toxic levels of lead-based paint were found on most of the components expected to be disturbed by the proposed project, as well as on many near-by building components. Once the complete waste stream is known, EnviroScience recommends a TCLP test.

Disclaimer: The information contained in this report concerning the presence or absence of lead paint does not constitute a comprehensive lead inspection under Connecticut regulations Section 19a-111-1 to 11. The surfaces tested represent only a portion of those surfaces that would be tested to determine whether the premises are in compliance with Connecticut regulations.

The Contractor shall be aware that OSHA has not established a level of lead in a material below which 29 CFR 1926.62 does not apply. The Contractor shall comply with exposure assessment criteria, interim worker protection, and other requirements of the regulation as necessary to protect workers and building occupants.

The field testing sheets are provided as *Appendix C* in this report.

Those surfaces which contain lead paint are not subject to RRP work practice and training requirements. However, if disturbed in renovation these types of practices help contain lead dust. If a specific component or surface is not identified as having been tested it should be presumed to contain lead paint unless tested. Contractor's should be aware that the threshold limit of 1.0 mg/cm² for purposes of lead in construction requirements is not recognized by the Occupational Safety and Health Administration (OSHA) and workers' exposures are still subject to lead in construction regulation 29 CFR 1926.62 regardless of paint testing results.

4 Mold Swab Samples

EnviroScience collected two swab samples in each pump station (twelve total samples) of visually identified potential mold growth to determine if mold growth was present on surfaces within the pumping station areas scheduled for maintenance.

Swab samples of visually identified potential mold growth, were collected to determine if mold growth was present on surfaces within the basement. The samples were visually examined under microscope by a trained microscopist at EMSL Analytical, Inc. of Wallingford Connecticut.

Twelve samples of suspect surfaces in the pumping stations were taken. No other suspect surfaces were noted in the areas scheduled for maintenance.

Results are reported as High, Medium, Low, and Rare content, serving as a relative indicator of the presence of mold.

High content of mold was noted for the following samples:

SAMPLE ID	LOCATION
BUSHNELL PARK	
0717EWC-15	Stairwell Wall
POPE PARK	
0718EWC-05	Boiler D Stairwell West Wall
ARMORY	
0718EWC-09	Sump Cover
0718EWC-10	Stairwell Wall

Medium content of mold was noted for the following samples:

SAMPLE ID	LOCATION
KENEY LANE	
0717EWC-13	Pump 1
0717EWC-14	Bar Screen Stairs

Insignificant or absent mold presence was noted for the following samples:

SAMPLE ID	LOCATION
SOUTH MEADOWS	
0717EWC-02	Pump 3 Discharge Valve
0717EWC-10	Pump 4 Discharge Valve
BUSHNELL PARK	
0717EWC-15	Stairwell Wall
0717EWC-16	Bar Screen Stair
NORTH MEADOWS	
0717EWC-28	Pump Room East Wall
0717EWC-29	Pump Room Floor
POPE PARK	
0718EWC-04	Pump Room Floor

The molds that were identified should not hinder construction except as which may directly disturb these surfaces.

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Recommend that the noted high content areas be treated by wet cleaning (dampen the surface with a water mist, then brushing and wiping with a detergent solution; a mild disinfectant (one part "Clorox" or equivalent and 50 parts water) is recommended for the wiping.

Report prepared by EnviroScience's Environmental Technician Eric Cooley.

Reviewed by:

Stephen W. Connelly
Senior Vice President

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Appendix A

Asbestos Sample Results and Chain of Custody

0712187022

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SAMPLE LOG FOR ASBESTOS BULKS

Sheet 1 of 2

Project Name: Hartford Dept. of Public Works Project No. 01997279.F7E

Building: Pump Stations Project Manager: S. Connelly

Sample ID	Sample Location	Material	Result (%)
0717EWC-04	South meadows pump 2 inspection port	Fiber reinforced Black rubber gasket	
-05	South meadows - pump 2	Bearing Packing	
-06	South meadows Mezz. Storage Rm	"Chesterton mechanical packing"	
-07	"	1/2" square silver rope packing material	
-08	South meadows pump 4 Suction Flange	Black Gasket	
-11	Kenny Lane Pump 1 Suction Valve Flange	Tan Gasket	
-12	" " Pump 2 Discharge Valve Flange	" "	
-17	Bushnell Park Pump 1 Suction Valve Flange	Grey Fibrous Gasket	
-18	" " Pump 2 Discharge Valve Flange	" " "	
-19	" " Pump 4 Suction Valve Flange	" " "	

Analysis Method: ☒ PLM ☐ Other

Turnaround Time 24 hour

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: _____. Please call the EnviroScience Laboratory if analyses will be late at (860) 646-2469.

Fax Results to the EnviroScience Laboratory at: 888-838-1160.

Special Instruction: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted. Do not layer Samples unless indicated. EPA 400 point count all samples of asbestos content <4%, positive stop on all point counts.

Samples collected by: Eric Cooley **Date:** 07-17-12 **Time:** _____

Samples [Rec'd][Sent by] [_____] **Date:** [_____] **Time:** _____

Samples Received by: [illegible] **Date:** 7-19-2012 **Time:** 9:15 AM

Shipped To: ☒ EMSL State [illegible] ☐ Other _____

Method of Shipment: ☒ Fed Ex ☐ Other _____

* Positive stop

#20b

0412187022

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SAMPLE LOG FOR ASBESTOS BULKS

Sheet 2 of 2

Project Name: Hartford Dept. of Public Works Project No. 0997279.F7E

Building: Pump Stations Project Manager: S. Connelly

Sample ID	Sample Location		Material	Result (%)
* 0717EWC - 21	North Meadows	Pump 5 Suction Valve Flange	Fibrous gasket	
- 22	↓	Pump 4 Discharge Valve Flange	↓	
- 26		Pump 4 Upper Bolt Flange		
- 23		Pump 4 Suction Spool Flange	Fiber Reinforced Black Rubber gasket	
- 24		Pump 2 Suction Valve Flange		
* - 27	↓	Pump 1 upper Bolt Flange	↓	
0718EWC-01	South Meadows	Pump 4 upper Bolt Flange	Black Fibrous gasket	
- 06	Armory	Pump 3 upper Bolt Flange	Black Fibrous gasket	
- 07	↓	Pump 2 Lower Bolt Flange	Tan " "	
- 08	↓	Pump 3 Inspection Port gasket	White " "	

Analysis Method: ☒ PLM ☐ Other Turnaround Time 24-hour

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: _____. Please call the EnviroScience Laboratory if analyses will be late at (860) 646-2469.

Fax Results to the EnviroScience Laboratory at: 888-838-1160.

Special Instruction: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted. Do not layer samples unless indicated. EPA 400 point count all samples of asbestos content <4%, positive stop on all point counts.

Samples collected by: Eric Cooley **Date:** 07-17 & 18-12 **Time:** _____

Samples [Rec'd][Sent by] [ ] [ ] **Date:** [ ] [ ] **Time:** _____

Samples Received by: _____ **Date:** _____ **Time:** _____

Shipped To: ☒ EMSL State NJ ☐ Other _____

Method of Shipment: ☒ Fed Ex ☐ Other _____

* Positive Stop

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ProjectID:	

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Fax:	(888) 838-1160
Received:	07/19/12 9:15 AM
Analysis Date:	7/19/2012
Collected:	7/17/2012

Project: **01997279.F7E/Hartford Dept of Public Works/Pump Stations**

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
0717EWC-04 *041218922-0001*	South meadows pump 2 inspection port - Fiber reinforced black rubber gasket	Black Fibrous Heterogeneous	15% Cellulose	85% Non-fibrous (other)	**None Detected**
0717EWC-05 *041218922-0002*	South meadows-Pump 2 - Bearing packing	Black Fibrous Heterogeneous		80% Non-fibrous (other)	**20% Chrysotile**
0717EWC-06 *041218922-0003*	South meadows mezz. Storage rm - "Chesterton mechanical packing"	Gray Fibrous Heterogeneous	85% Cellulose	15% Non-fibrous (other)	**None Detected**
0717EWC-07 *041218922-0004*	South meadows mezz. Storage rm - 1/2" square, silver rope packing material	White/Silver Fibrous Heterogeneous	70% Cellulose	5% Non-fibrous (other)	**25% Chrysotile**
0717EWC-08 *041218922-0005*	South meadows pump 4 suction flange - Black gasket	Black Non-Fibrous Heterogeneous		100% Non-fibrous (other)	**None Detected**
0717EWC-11 *041218922-0006*	Keney Lane pump 1 suction valve flange - Tan gasket	Tan Fibrous Heterogeneous		35% Non-fibrous (other)	**65% Chrysotile**
0717EWC-12 *041218922-0007*	Keney Lane Pump 2 discharge valve flange - Tan gasket				**Stop Positive (Not Analyzed)**

Analyst(s)

Anne Paul (1)
Chelsey Bilhear (14)

Stephen Siegel, CIH, Laboratory Manager
or other approved signatory

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Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ NVLAP Lab Code 101048-0, AIHA-LAP, LLC-IHLAP Lab 100194, NYS ELAP 10872, NJ DEP 03036

Initial report from 07/19/2012 20:42:10

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Received:	07/19/12 9:15 AM
Analysis Date:	7/19/2012
Collected:	7/17/2012

Project: **01997279.F7E/Hartford Dept of Public Works/Pump Stations**

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
0717EWC-17 *041218922-0008*	Bushnell Park Pump 1 suction valve flange - Grey fibrous gasket	Gray Fibrous Heterogeneous		35% Non-fibrous (other)	65% Chrysotile
0717EWC-18 *041218922-0009*	Bushnell Park Pump 2 discharge valve flange - Grey fibrous gasket				Stop Positive (Not Analyzed)
0717EWC-19 *041218922-0010*	Bushnell Park Pump 4 suction valve flange - Grey fibrous gasket				Stop Positive (Not Analyzed)
0717EWC-21 *041218922-0011*	North Meadows-Pump 5 suction valve flange - Fibrous gasket	Black Fibrous Heterogeneous		40% Non-fibrous (other)	60% Chrysotile
0717EWC-22 *041218922-0012*	North Meadows-Pump 4 Discharge valve flange - Fibrous gasket				Stop Positive (Not Analyzed)
0717EWC-26 *041218922-0013*	North Meadows-Pump 4 upper bolt flange - Fibrous gasket				Stop Positive (Not Analyzed)

Analyst(s)
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Chelsey Bilhear (14)

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Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ NVLAP Lab Code 101048-0, AIHA-LAP, LLC-IHLAP Lab 100194, NYS ELAP 10872, NJ DEP 03036

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Analysis Date:	7/19/2012
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Project: **01997279.F7E/Hartford Dept of Public Works/Pump Stations**

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
0717EWC-23 *041218922-0014*	North Meadows-Pump 4 suction spool flange - Fiber reinforced black rubber gasket	Tan/Black Fibrous Heterogeneous	20% Cellulose	80% Non-fibrous (other)	**None Detected**
0717EWC-24 *041218922-0015*	North Meadows-Pump 2 suction valve flange - Fiber reinforced black rubber gasket	Tan/Black Fibrous Heterogeneous	20% Cellulose	80% Non-fibrous (other)	**None Detected**
0717EWC-27 *041218922-0016*	North Meadows-Pump 1 upper belt flange - Fiber reinforced black rubber gasket	Black Non-Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (other)	**None Detected**
0718EWC-01 *041218922-0017*	South Meadows Pump 4 upper bolt flange - Black fibrous gasket	Tan/Black Fibrous Heterogeneous	15% Cellulose	85% Non-fibrous (other)	**None Detected**
0718EWC-06 *041218922-0018*	Armory-Pump 3 upper bolt flange - Black fibrous gasket	Tan/Black Fibrous Heterogeneous		55% Non-fibrous (other)	**45% Chrysotile**
0718EWC-07 *041218922-0019*	Armory-Pump 2 lower bolt flange - Tan fibrous gasket	Gray/Tan Fibrous Heterogeneous		65% Non-fibrous (other)	**35% Chrysotile**

Analyst(s)
Anne Paul (1)
Chelsey Bilhear (14)

Stephen Siegel, CIH, Laboratory Manager
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Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ NVLAP Lab Code 101048-0, AIHA-LAP, LLC-IHLAP Lab 100194, NYS ELAP 10872, NJ DEP 03036

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Phone:	(860) 646-2469
Fax:	(888) 838-1160
Received:	07/19/12 9:15 AM
Analysis Date:	7/19/2012
Collected:	7/17/2012

Project: **01997279.F7E/Hartford Dept of Public Works/Pump Stations**

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

			Non-Asbestos		Asbestos	
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	%	Type
0718EWC-08 *041218922-0020*	Armory-Pump 3 inspection port gasket - White fibrous gasket	Brown/Tan/White Fibrous Heterogeneous		45% Non-fibrous (other)	55%	Chrysotile

Analyst(s)

Anne Paul (1)
Chelsey Bilhear (14)

Stephen Siegel, CIH, Laboratory Manager
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SAMPLE LOG FOR ASBESTOS BULKS

Sheet 1 of 1

Project Name: Hartford Dept. of Public Works Project No. 01997279.F7E

Building: Pump Stations Project Manager: S. Connelly

Sample ID	Sample Location	Material	Result (%)
* 0717EWC-01	South Meadows Asphalt ~~Pipe~~ Coating - pump 1	Asphalt Coating	
-09	South Meadows Asphalt ~~Pipe~~ Coating pump 5 - suction valve	Asphalt Coating	
-03	South Meadows - pump 2 steady bearing housing gasket	Gasket	

Analysis Method: ☐ PLM ☒ Other TEM-NOB Turnaround Time 24 hour

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: _____. Please call the EnviroScience Laboratory if analyses will be late at (860) 646-2469.

Fax Results to the EnviroScience Laboratory at: 888-838-1160.

Special Instruction: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted. Do not layer samples unless indicated. EPA 400 point count all samples of asbestos content <4%, positive stop on all point counts.

Samples collected by: Eric Cooley **Date:** 07-17-12 **Time:** _____

Samples [Rec'd] [Sent by] [ ] [ ] **Date:** [ ] [ ] **Time:** _____

Samples Received by: [illegible] **Date:** 7-19-2012 **Time:** 9:15 AM

Shipped To: ☒ EMSL State NJ ☐ Other _____

Method of Shipment: ☒ Fed Ex ☐ Other _____

* Positive stop

12 JUL 19 AM 10:09

SAMPLES ACCEPTED FOR ANALYSIS VERLANA ANALYTICAL INC

#36

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Manchester, CT 06040

Phone:	(860) 646-2469
Fax:	(888) 838-1160
Received:	07/19/12 9:15 AM
Analysis Date:	7/20/2012
Collected:	

Project: **01997279.F7E- HARTFORD DEPT OF PUBLIC WORKS PUMP STATIONS**

Test Report: Asbestos Analysis of Non-Friable Organically Bound Materials by TEM via EPA/600/R-93/116 Section 2.5.5.1

SAMPLE ID	DESCRIPTION	APPEARANCE	% MATRIX MATERIAL	% NON-ASBESTOS FIBERS	ASBESTOS TYPES
0717EWC-01 *041218920-0001*	SOUTH MEADOWS ASPHALT COATING PUMP 1 - ASPHALT COATING	Black Non-Fibrous Heterogeneous	100	None	No Asbestos Detected
0717EWC-09 *041218920-0002*	SOUTH MEADOWS ASPHALT COATING PUMP SUCTION VALVE - ASPHALT COATING	Brown /Black Non-Fibrous Heterogeneous	100	None	No Asbestos Detected
0717EWC-03 *041218920-0003*	SOUTH MEADOWS PUMP 2 STEADY BEARING HOUSING - GASKET	Black Non-Fibrous Heterogeneous	100	None	No Asbestos Detected

Analyst(s)
Ted Young (3)

Stephen Siegel, CIH, Laboratory Manager
or other approved signatory

This laboratory is not responsible for % asbestos in total sample when the residue only is submitted for analysis. The above report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL Analytical, Inc. Samples received in good condition unless otherwise noted. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample.
Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ NYS ELAP 10872

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Appendix B

Lead Paint Testing Procedures and Equipment

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Standard Operating Procedures
Lead-Based Paint Limited Screenings

Testing Procedures and Equipment

The U. S. Department of Housing and Urban Development (HUD) "Guidelines for the Evaluation and Control of Lead Hazards in Housing, September 1997," were consulted for this lead paint screening. HUD has been the agency at the federal level with responsibility for the establishment of national lead-based paint standards for testing and abatement. The HUD document will be referenced as the Guidelines in this document. The HUD Guidelines are specific to child occupied dwelling units or target housing and are not wholly applicable to limited screenings. Additionally, most New England States have regulations and standards with regard to lead paint testing and abatement in child occupied facilities. EnviroScience shall consult these regulations and standards prior to beginning testing. Some states have reporting requirements if certain threshold values for lead paint are found and certain conditions exist. EnviroScience reports any specific testing results required by State laws as licensed inspectors and consultants in these circumstances.

This lead evaluation was a Lead Based Paint Limited Screening. Both the proposed scope of work and the final report will note this type of evaluation was done. A Lead Paint Limited Screening is performed in order to determine through representative testing the lead paint history of a property. However, conclusions about untested areas cannot be reliably determined based on the limited testing that was done. Comprehensive inspections involve testing of representative components in each and every room of a building. A Lead Based Paint Limited Screening is conducted in representative locations and not necessarily every room. The intent is to collect a sufficient number of readings using field instrumentation to characterize a given component or surface. Representative components are classified as testing combinations. The age and use of the functional space, component type, and substrate type are used to characterize a testing combination for purposes of a Lead Based Paint Limited Screening. Considering age of the structure inspectors determine original dates of construction and any major renovations to the original building. Interior spaces where major renovation has occurred are also treated as separate spaces. A functional space is a room or group of rooms used for similar purposes where painting is presumed to be uniform.

Inspectors perform Lead Based Paint Limited Screening on representative components ensuring randomization in the selection of components. EnviroScience utilizes a protocol of a minimum of three (3) rooms with similar building components and surfaces are comprehensively tested similar to inspections for HUD compliance or state regulated inspections. (For example, living room, kitchen and a bedroom may be comprehensively tested in a 6-room apartment). In this protocol specific unique components are tested in any other locations in the dwelling. Inspectors shall record readings utilizing portable field instrumentation.

Conclusions in a Lead Based Paint Limited Screening are made based on consistent findings in the limited number of readings collected for a given testing combination. Inspectors conduct more readings if trends or similar findings are not found during such a limited screening process. In reporting findings and use in cost estimating, EnviroScience shall use limited screening information to extrapolate (or presume) that the untested areas have similar paint history as to those areas where

limited screenings were conducted. (For example if in the three locations tested, all window sashes contained threshold values of lead paint above HUD or other State regulatory levels, then EnviroScience would detail in the report that all such components in the dwelling should be presumed to contain lead paint or recommend them to be tested further).

Lead-based paint surfaces and components were identified by utilizing on-site x-ray fluorescence (XRF) instruments. Fuss & O'Neill EnviroScience, LLC owns and utilizes Radiation Monitoring Device LPA-1s (RMD) instruments exclusively for lead-based paint testing. Each instrument is operated in accordance with state and federal and manufacturer standards on the use of the instruments. State and federal protocols provide, with the exception of wall surfaces, one reading with the instrument on a representative component in each room, i.e., baseboard, chair rail, etc., as sufficient to establish the lead paint classification of all the representatives of that component type in a room. In the case of walls, because of the large spatial areas involved and the variability in lead content in paint over such large areas, the federal and state governments want a reading on each wall surface in a room. Therefore, representative testing is not permitted for walls.

The federal government has developed Performance Characteristic Sheets (PCS) for each of the types of instruments cited above. Each instrument must be calibrated in accordance with these PCSs on a 1.0-milligram lead standard. Each of EnviroScience's instruments has one of these standards assigned to it. Some of the standards were purchased directly from the government and the others from the manufacturers of the instruments.

For the Scitec MAP 4 instrument, on one or more substrates, substrate interference can affect the validity of the result. For this instrument, if the reading is below 4.0 mg/cm^2, a Substrate Equivalent Lead (SEL) was determined on certain substrates in the Screen and Test Modes of the instrument. For the RMD in the standard reading mode on metal, an SEL also has to be determined. To determine the SEL, the paint is removed from the surface of the component to obtain a bare substrate reading. After removing the paint, the surface is wiped with a 5% trisodium phosphate solution (a heavy duty cleaner). All paint residue is collected and properly disposed of. Once the paint and surrounding area are cleaned, the XRF is utilized to determine the SEL for each surface. The SEL values are subtracted from the XRF values to determine the Corrected Lead Concentration (CLC). The CLC is the lead content of the paint on the component tested.

For the RMD in the standard reading mode on metal, a Substrate Equivalent Lead (SEL) concentration has to be determined. To determine the SEL, the paint is removed from the surface of the component to obtain a bare substrate reading. After removing the paint, the surface is wiped with a 5% trisodium phosphate solution (a heavy duty cleaner). All paint residue is collected and properly disposed. Once the paint and surrounding area are cleaned, the XRF is utilized to determine the SEL for each surface. The SEL values are subtracted from the XRF values to determine the Corrected Lead Concentration (CLC). The CLC is the lead content of the paint on the component tested.

The RMD instrument has federal government-determined positive and negative ranges for the definition of lead-based paint. XRF results are classified using either the threshold or the inconclusive range. For the threshold, results are classified as positive if they are greater than or equal to the threshold and negative if they are less than the threshold. There is no inconclusive

classification when using the threshold values associated with an RMD instrument. The ranges for the RMD instrument and their various operating modes are as follows:

Radiation Monitoring Device LPA Analyzer 1

30-Second Standard Mode Reading Description	Substrate	Threshold (mg/cm^2)
Results corrected for substrate bias on metal substrate only.	Brick	1.0
	Concrete	1.0
	Drywall	1.0
	Metal	0.9
	Plaster	1.0
	Wood	1.0

Quick Mode Reading Description	Substrate	Threshold (mg/cm^2)	Inconclusive Range (mg/cm^2)
Readings not corrected for substrate bias on any substrate.	Brick	1.0	None
	Concrete	1.0	None
	Drywall	1.0	None
	Metal	1.0	None
	Plaster	1.0	None
	Wood	1.0	None

If a reading falls in the inconclusive range, either the lead inspector should be authorized by the client to take a paint chip sample to determine whether the final result is either positive or negative after laboratory analysis, or the result can be categorized as suspect positive and treated accordingly. If it is not confirmed with laboratory analysis, it cannot be assumed to be negative for toxic levels of lead. If it is assumed to be positive, it can either be abated as a positive if the condition of the surface and/or location of the component requires this treatment under Connecticut and/or HUD regulations, or it can be managed in place as a positive component in accordance with the requirements of Connecticut and HUD regulations.

Prior to the start of any testing, a sketch of the building is drawn, and side designations are given to help identify exactly where readings were taken. Drawings depicting the room-numbering scheme are located on the cover page(s) for the building(s) inspected. Each side of the building was labeled A, B, C, or D. The wall "A" side of the unit is generally the side of primary entrance into a dwelling, and this room is always Room 1. Areas in the units include rooms, hallways and closets. Areas are numbered in a clockwise fashion as building construction allows. This allows the inspector to indicate which substrate surface was tested. The condition of the surface is described by a check mark in the appropriate column, under the heading "condition of surface" on the testing form.

When more than one surface type was present on a side, the component tested was indicated with a number. If two windows were present on a building side, they were numbered left to right. Closet shelves and shelf supports were numbered top to bottom.

It is understood that the room layouts presented in the report are in conformance with the conditions that exist at the time the testing is performed. EnviroScience avoids labeling a room

solely by its current functional use (i.e., living room, bedroom, etc.) since this use can change over time. Similarly, room layouts can change dramatically as dwellings are renovated and additions are built, incorporating existing rooms, or existing interior walls are moved or eliminated altogether.

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EnviroScience, LLC

Appendix C

Lead Testing Field Data Sheets

FUSS & O'NEILL
EnviroScience, LLC

www.fando.com

146 Hartford Road, Manchester, CT 06040

(860) 646-2469 Fax (860) 649-6883

XRF LEAD SCREENING FIELD DATA SHEET

Inspector Name: Robert Feingold **Inspector License #:** 2199

Date: 7/17/2012 **XRF Model:** LPA-1 **Serial:** 1377

Project Name: LBP, Asbestos, & Mold @ 6 Pump Stations **Project Number:** 01997279.F7E

Address: South Meadows Pump Station **Project PM:** Stephen Connelly

XRF Calibration Check-RMD (0.7 to 1.3 mg/cm² inclusive)

	Hour	First Reading	Second Reading	Third Reading	Average
First Check	0823	1.1	1.1	1.1	1.1
Second Check	0955	1.1	1.0	1.0	1.0
Third Check					
Fourth Check					

~~Pump Side~~	Surface/Component	Substrate	XRF Reading	Positive (√)	Comments/Notes
P2	Stair Stringer	M	>9.9	✓	
	Pump 2 Flange	M	1.4	✓	
	P2S-Pump 2 Suction Valve		0.3		
P1	P1-S Pump Housing Flange		3.3	✓	
	P1 Suction Valve Body		0.6		
	Wall by P1	C	0.3		
	Support Column by P1	M	3.1	✓	
	P1 discharge valve (red paint)		0.9		
	P1 discharge valve (grey/blue paint)		1.4	✓	
	P1 Pump body		1.4	✓	
P-2	Ladder down	M	0.6		
	lower bearing frame		0.6		
	middle bearing frame		-0.1		
	upper bearing frame		4.2	✓	
	shaft		-0.1		
	coupling		1.4	✓	

* Substrate Type: Metal = M, Wood = W, Plaster = P, Sheetrock = S, Concrete = C, Brick = B
N/A: Not Accessible; N/C: Not Coated; COV: Covered; VR – Vinyl Replacement

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XRF LEAD SCREENING FIELD DATA SHEET (CONT.)

Project Name: LMP, Asbestos & Mold @ 6 Pump Station **Project Number:** 01997279.F7E

Address: South Meadows Pump Station **Project PM:** S. Connolly

Pump ~~Side~~	Surface/Component	Substrate	XRF Reading	Positive (√)	Comments/Notes
P3	ladder	M	0.0		
	lower housing		1.2	✓	
	middle housing		1.2	✓	
	upper housing		0.3		
	shaft		-0.1		
	Stair railing	M	6.0	✓	
P-6	Pump 6 Flange:				
	(a) scraped paint tarry coating		1.0	✓	
	(b) reading on the tarry coating		0.0		
P-4	Pump 4 - Supply Valve		0.6		
Side					
D	Mezzinene Walls - Grey	C	0.4		
C	" " Pink		0.2		
B	" " Pink/Grey		0.2		
A	" " Grey		0.6		

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XRF LEAD SCREENING FIELD DATA SHEET

Inspector Name: Robert Feingold **Inspector License #:** 2199

Date: 7/17/2012 **XRF Model:** LPA-1 **Serial:** 1377

Project Name: LBP, Asbestos, & Mold @ 6 Pump Stations **Project Number:** 01997279.F7E

Address: Keney Lane Pump Station **Project PM:** Stephen Connelly

XRF Calibration Check-RMD (0.7 to 1.3 mg/cm² inclusive)

	Hour	First Reading	Second Reading	Third Reading	Average
First Check	0955	1.1	1.0	1.0	1.0
Second Check	1120	0.9	1.1	1.1	1.0
Third Check					
Fourth Check					

Pump ~~Side~~	Surface/Component	Substrate	XRF Reading	Positive (√)	Comments/Notes
P-2	Pump 2 Suction Valve	M	1.4	✓	damaged paint
P-2	Suction valve flange		0.2		
P-1	Discharge valve body		0.2		
P-1	Discharge valve flange		0.0		
P-2	Discharge valve body		1.0	✓	
P-1	Pump 1 lower coupling		0.7		
	shaft		0.1		
	bearing housing		0.8		
	pump body		0.1		
	Stair hand rail		3.3	✓	
	Stair stringer		3.8	✓	
	Upper level floor	C	0.6		
	Concrete Wall	C	0.1		
	Bar Screen Stairway	C	0.0		

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XRF LEAD SCREENING FIELD DATA SHEET

Inspector Name: Robert Feingold **Inspector License #:** 2199

Date: 7/17/2012 **XRF Model:** LPA-1 **Serial:** 1377

Project Name: LBP, Asbestos, & Mold @ 6 Pump Stations **Project Number:** 01997279.F7E

Address: Bushnell Park Pump Station **Project PM:** Stephen Connelly

XRF Calibration Check-RMD (0.7 to 1.3 mg/cm² inclusive)

change batteries

	Hour	First Reading	Second Reading	Third Reading	Average
First Check	1120	0.9	1.1	1.1	1.0
Second Check	1158	1.2	1.1	1.2	1.2
Third Check	1201	1.1	1.1	1.1	1.1
Fourth Check					

Pump ~~Side~~	Surface/Component	Substrate	XRF Reading	Positive (√)	Comments/Notes
P-1	Pump 1- Body	M	0.0		
	bearing frame		0.6		
	lower bearing		0.8		
	mid coupling		1.0	√	
	shaft		-0.1		
	suction valve body		0.0		
	" " flange		0.1		
	discharge valve body		0.7		
	" " flange		1.1	√	
	steady bearing support beam		2.8	√	
	stair stringer		2.8	√	
	stair handrail		3.5	√	
P-4	suction valve		0.1		
	pump body		1.4	√	
	discharge valve		1.1	√	
	bearing frame		0.3		

* Substrate Type: Metal = M, Wood = W, Plaster = P, Sheetrock = S, Concrete = C, Brick = B
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XRF LEAD SCREENING FIELD DATA SHEET

Inspector Name: Robert Feingold **Inspector License #:** 2199

Date: 7/17/2012 **XRF Model:** LPA-1 **Serial:** 1377

Project Name: LBP, Asbestos, & Mold @ 6 Pump Stations **Project Number:** 01997279.F7E

Address: North Meadows Pump Station **Project PM:** Stephen Connelly

change batteries

XRF Calibration Check-RMD (0.7 to 1.3 mg/cm² inclusive)

	Hour	First Reading	Second Reading	Third Reading	Average
First Check	1201	1.1	1.1	1.1	1.1
Second Check	1345	1.2	1.1	1.2	1.2
Third Check	1355	1.1	1.2	0.9	1.1
Fourth Check	1422	1.2	1.1	1.2	1.2

~~Side~~ pump	Surface/Component	Substrate	XRF Reading	Positive (√)	Comments/Notes
P-1	Suction valve	M	1.3	✓	
	Discharge valve		0.8		
	Bearing frame		-0.1		
	Coupling		-0.1		
	Shaft		-0.1		
P-2	Suction valve		1.2	✓	
	Discharge valve		0.1		
	Shaft		4.6	✓	
	Coupling		0.0		
	Catwalk support steel		1.3	✓	
	Catwalk handrail		1.7	✓	
	Steady Bearing Support Beam		>9.9	✓	

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XRF LEAD SCREENING FIELD DATA SHEET

Inspector Name: Robert Feingold **Inspector License #:** 2199

Date: 7/18/2012 **XRF Model:** LBA-1 **Serial:** 1377

Project Name: LBP, Asbestos, & Mold @ 6 Pump Stations **Project Number:** 01997279.F7E

Address: Pope Park Pump Sta. **Project PM:** Stephen Connelly

XRF Calibration Check-RMD (0.7 to 1.3 mg/cm² inclusive)

	Hour	First Reading	Second Reading	Third Reading	Average
First Check	0815	1.3	1.1	1.3	1.2
Second Check	1041	1.0	1.0	1.0	1.0
Third Check					
Fourth Check					

Pump ~~Side~~	Surface/Component	Substrate	XRF Reading	Positive (√)	Comments/Notes
P-3	Pump 3 Body	M	>9.9	√	
	pump discharge flange		8.3	√	
	Suction valve body		0.0		
	Discharge valve body		0.0		
	Discharge valve flange		2.6	√	
P-1	discharge valve body		0.0		
	" " flange		-0.1		
	Pump body		3.9	√	
	pump discharge flange		8.1	√	
	suction valve body		-0.1		
	suction valve flange		3.0	√	
	Bearing housing		4.8	√	
	shaft		1.0	√	
	coupling (above bearing housing)		1.0	√	
	Stair support column (galvinized)		1.0	√	
	Stair stringer (Top)		4.2	√	
	Stair handrail		1.0	√	
	Steady Bearing Support Beam		5.3	√	

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OVER

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XRF LEAD SCREENING FIELD DATA SHEET (CONT.)

Project Name: LBP, Asbestos & Mold @ 6 Pump Stations **Project Number:** 01997279.F7E

Address: Pope Park Pump Station **Project PM:** S. Connelly

Side	Surface/Component	Substrate	XRF Reading	Positive (√)	Comments/Notes
	Stair Stringer - side	M	1.3	✓	
	Mezzinane Floor	C	0.0		
	Mezz. stair treds	C/M	0.4		
	Mezz. Wall	C	-0.1		
	Upper Level Floor	C	0.0		
	" " Walls	Block	0.0		

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XRF LEAD SCREENING FIELD DATA SHEET

Inspector Name: Robert Feingold **Inspector License #:** 2199

Date: 7/18/2012 **XRF Model:** LPA-1 **Serial:** 1377

Project Name: LBP, Asbestos, & Mold @ 6 Pump Stations **Project Number:** 01997279.F7E

Address: Armory Pumping Station **Project PM:** Stephen Connelly

XRF Calibration Check-RMD (0.7 to 1.3 mg/cm² inclusive)

	Hour	First Reading	Second Reading	Third Reading	Average
First Check	1041	1.0	1.0	1.0	1.0
Second Check	1118	1.0	1.0	1.3	1.1
Third Check					
Fourth Check					

~~Side~~ Pump	Surface/Component	Substrate	XRF Reading	Positive (√)	Comments/Notes
P-3	discharge valve body	M	-0.1		
	" " flange		3.3	√	
	Pump 3 Body		7.2	√	
	bearing frame		9.4	√	
	shaft		0.1		
	coupling		0.6		
P-3	suction valve body		-0.2		
"	" " flange		1.7	√	
P-2	discharge valve body		0.0		
"	" " flange		1.9	√	
	Stair stringer (galvanized) - Top Side		1.0	√	
	Stair stringer - top		1.0	√	
	Stair support column		1.0	√	
P-1	Pump bearing body		4.7	√	
P-1	Bearing frame		>9.9	√	
	steady bearing support beam		2.6	√	
	catwalk support rail		1.0		
	Mezzanine floor	C	0.0		

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OVER

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(860) 646-2469 Fax (860) 649-6883

XRF LEAD SCREENING FIELD DATA SHEET (CONT.)

Project Name: LBP, Asbestos & Mold @ 6 Pump Sta. **Project Number:** 01997279.F7E

Address: Armory Pumping Station **Project PM:** S. Connelly

Side	Surface/Component	Substrate	XRF Reading	Positive (√)	Comments/Notes
	Engine room stair	C	0.1		
	Engine room floor	C	-0.0		
	Engine room wall	B	0.2		

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N/A: Not Accessible; N/C: Not Coated; COV: Covered; VR – Vinyl Replacement

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Appendix D

Swab Sample Direct Examination Results

24120294 2

Microbiology Laboratory Chain of Custody

EMSL Order Number(Lab Use Only):

Wallingford, CT
4 Fairfield Blvd
Wallingford, CT 06492
PHONE (203) 284-5948
FAX (203) 284-5978

Company: Fuss & O'Neil EnviroScience, LLC	EMSL-Bill to: ☑ Same ☐ Different If Bill to Different note instructions in Comments** Third Party Billing requires written authorization from third party
Street: 146 Hartford Road	
City/State/Zip: Manchester, CT 06040	
Report To (Name): ~~James Scott~~ Stephen Connelly	Fax: 888 838 1160
Telephone: 860 646 2469 ~~x6652~~ x 5505	Email Address: jscott@fando.com
Project Name/Number: 01-17279.F75	
Please Provide Results: Fax / Purchase Order: / State Samples Taken: CT	Connecticut Samples: ☒ Commercial ☐ Residential (City)

Turnaround Time (TAT) Options* - Please Check

☐ 3 Hour ☐ 6 Hour ☒ 24 Hour ☐ 48 Hour ☐ 72 Hour ☐ 96 Hour ☐ 1 Week ☐ 2 Week

*Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide. TATs are subject to methodology requirements

Non Culturable Air Samples (Spore Traps)

• M001 Air-O-Cell	• M173 Allegro M2	• M004 Allergenco	• M032 Allergenco-D	• M172 Versa Trap
• M049 BioSIS	• M003 Burkard	• M043 Cyclex	• M002 Cyclex-d	
• M030 Micro 5	• M174 MoldSnap	• M176 Relle Smart	• M130 Via-Cell	

Other Microbiology Test Codes

• M041 Fungal Direct Examination	• M014 Endotoxin Analysis	• M029 *Enterococci*
• M005 Viable Fungi ID and Count	• M015 Heterotrophic Plate Count	• M019 Fecal Coliform
• M006 Viable Fungi ID and Count (Speciation)	• M180 Real Time Q-PCR-ERMI 36	• M133 MRSA Analysis
• M007 Culturable Fungi	• Panel	• M028 *Cryptococcus neoformans* Detection
• M008 Culturable Fungi (Speciation)	• M018 Total Coliform (Membrane Filtration)	• M120 *Histoplasma capsulatum* Detection
• M009 Gram Stain Culturable Bacteria	• M020 Fecal *Streptococcus* (Membrane Filtration)	• M033-39 Allergen Testing
• M010 Bacterial Count and ID – 3 Most Prominent	• M210-215 *Legionella* Detection	• M044 Group Allergen (Cat, Dog, Cockroach, Dustmites)
• M011 Bacterial Count and ID – 5 Most Prominent	• M026 Recreational Water Screen	• Other See Analytical Price Guide
• M013 Sewage Contamination in Buildings	• M027 Mycotoxin Analysis	

Preservation Method (Water):

Name of Sampler: Signature of Sampler:

Sample #	Sample Location	Sample Type	Test Code	Volume/Area	Date/Time Collected
0717EWC-02	South Meadow Pump 3 DV.	Swab	M041		07-17-12
-10	" " Pump 4 DV				
-13	Keeney Lounge Pump 1				
-14	" " Bar screen stain				
-15	Bushnell Park Steinwell Well				
-16	" " Bar screen stain				
-28	North Meadow Pump Rm Equip				
-29	" " Pump Rm Floor				

Client Sample # (s): 0717EWC-02, 10, 13, 14, 15, 16, 28, 29 Total # of Samples: 8

Relinquished (Client): [signature] Date: 07-18-12 Time: 6:00 pm

Received (Client): Date: Time:

Comments/Special Instructions:

RECEIVED JUL 19 2012 By [signature] 8:10 am

Drop Box 2/1/2012

24120294 2

Microbiology Laboratory Chain of Custody

EMSL Order Number(Lab Use Only):

Wallingford, CT
4 Fairfield Blvd
Wallingford, CT 06492
PHONE (203) 284-5948
FAX (203) 284-5875

Company: Fuss & O'Neil EnviroScience, LLC

Street: 146 Hartford Road

City/State/Zip: Manchester, CT 06040

EMSL-Bill to: ☑ Same ☐ Different
If Bill to is Different note instructions in Comments**
Third Party Billing requires written authorization from third party

Report To (Name): ~~James Scott~~ Stephen Connelly

Telephone: 860 646 2469 ~~x 5555~~ x 5565

Fax: 888 838 1150

Email Address: jscott@fando.com

Project Name/Number: 01997.279.F7E

Please Provide Results: Fax

Purchase Order:

State Samples Taken: CT

Connecticut Samples: ☑ Commercial ☐ Residential (City)

Turnaround Time (TAT) Options* - Please Check

☐ 3 Hour ☐ 5 Hour ☒ 24 Hour ☐ 48 Hour ☐ 72 Hour ☐ 96 Hour ☐ 1 Week ☐ 2 Week

*Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide. TATs are subject to methodology requirements

Non Culturable Air Samples (Spore Traps)

- M001 Air-O-Cell
- M049 BioSIS
- M030 Micro 5
- M173 Allegro M2
- M003 Burkard
- M174 MoldSnap
- M004 Allergenco
- M043 Cyclex
- M176 Relle Smart
- M032 Allergenco-D
- M002 Cyclex-d
- M130 Via-Cell
- M172 Versa Trap

Other Microbiology Test Codes

- M041 Fungal Direct Examination
- M005 Viable Fungi ID and Count
- M006 Viable Fungi ID and Count (Speciation)
- M007 Culturable Fungi
- M008 Culturable Fungi (Speciation)
- M009 Gram Stain Culturable Bacteria
- M010 Bacterial Count and ID – 3 Most Prominent
- M011 Bacterial Count and ID – 5 Most Prominent
- M013 Sewage Contamination in Buildings
- M014 Endotoxin Analysis
- M015 Heterotrophic Plate Count
- M180 Real Time Q-PCR-ERMI 36 Panel
- M018 Total Coliform (Membrane Filtration)
- M020 Fecal *Streptococcus* (Membrane Filtration)
- M210-215 *Legionella* Detection
- M026 Recreational Water Screen
- M027 Mycotoxin Analysis
- M029 *Enterococci*
- M019 Fecal Coliform
- M133 MRSA Analysis
- M028 *Cryptococcus neoformans* Detection
- M120 *Histoplasma capsulatum* Detection
- M033-39 Allergen Testing
- M044 Group Allergen (Cat, Dog, Cockroach, Dustmites)
- Other See Analytical Price Guide

Preservation Method (Water):

Name of Sampler:

Signature of Sampler:

Sample #	Sample Location	Sample Type	Test Code	Volume/Area	Date/Time Collected
071812-04	Police Desk Lamp Arm Floor	Swab	M041		07-18-12
-05	" " Police Desk Shelf West wall	↓	↓		↓
-09	Armory - Sump Cover				
-10	Armory - Stairwell Wall	↓	↓		↓

Client Sample # (s): 071812-04,05,09,10

Total # of Samples: 4

Relinquished (Client): [signature]

Date: 07-18-12

Time:

Received (Client):

Date:

Time:

Comments/Special Instructions:

RECEIVED
JUL 19 2012
By [signature] 8:00 am
Drop Box

EMSL Analytical, Inc.
4 Fairfield Boulevard Wallingford, CT 06492
Phone/Fax: 203-284-5948 / (203) 284-5978
http://www.emsl.com / wallingfordlab@emsl.com

EMSL Order ID: 241202942
Customer ID: ENVI54
Customer PO:
Project ID:

Attn: Steve Connelly
Fuss & O'Neill EnviroScience, LLC
146 Hartford Road
Manchester, CT 06040

Phone: (860) 646-2469
Fax: (888) 838-1160
Collected: 07/17/2012
Received: 07/19/2012
Analyzed: 07/19/2012

Proj: 01997279.F7E

Test Report: Microscopic Examination of Fungal Spores, Fungal Structures, Hyphae, and Other Particulates from Swab Samples (EMSL Method: M041)

Lab Sample Number:	241202942-0001	241202942-0002	241202942-0003	241202942-0004	241202942-0005
Client Sample ID:	0717EWC-02	0717EWC-10	0717EWC-13	0717EWC-14	0717EWC-15
Sample Location:	South Meadows Pump 3 D. V.	South Meadows Pump 4 D. V.	Keeney Lane Pump 1	Keeney Lane Bar Screen Stairs	Bushnell Park Stairwell Wall
Spore Types	Category	Category	Category	Category	Category
Agrocybe/Coprinus	-	-	-	-	-
Alternaria	-	-	-	-	-
Ascospores	-	-	-	-	-
Aspergillus/Penicillium	-	-	-	-	*Low*
Basidiospores	-	-	-	-	-
Bipolaris++	-	-	-	-	-
Chaetomium	-	-	-	-	-
Cladosporium	-	-	*Medium*	*Medium*	*High*
Curvularia	-	-	-	-	-
Epicoccum	-	-	-	-	-
Fusarium	-	-	-	-	-
Ganoderma	-	-	-	-	-
Myxomycetes++	-	-	-	Rare	-
Paecilomyces	-	-	-	-	-
Rust	-	-	-	-	-
Scopulariopsis	-	-	-	-	-
Stachybotrys	-	-	-	-	-
Torula	-	-	-	-	-
Ulocladium	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-
Zygomycetes	-	-	-	-	-
Fibrous Particulate	-	-	-	-	-
Hyphal Fragment	-	-	Rare	Rare	High
Insect Fragment	-	-	-	-	-
Pollen	-	-	-	-	-

Sample Comment: 241202942-0001 None Detected
Sample Comment: 241202942-0002 None Detected

Category: Count/per area analyzed
Rare: 1 to 10 Low: 11 to 100 Medium: 101 to 1000 High: >1000

Bipolaris++ = Bipolaris/Drechslera/Exserohilum Myxomycetes++ = Myxomycetes/Periconia/Smut
* = Sample contains fruiting structures and/or hyphae associated with the spores.

No discernable field blank was submitted with this group of samples.

Gloria V. Oriol, Laboratory Manager
or Other Approved Signatory

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Samples analyzed by EMSL Analytical, Inc. Wallingford, CT AIHA-LAP, LLC–EMLAP Lab 165118

Initial report from: 07/19/2012 17:45:07

For information on the fungi listed in this report please visit the Resources section at www.emsl.com

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Collected: 07/17/2012
Received: 07/19/2012
Analyzed: 07/19/2012

Proj: 01997279.F7E

Test Report: Microscopic Examination of Fungal Spores, Fungal Structures, Hyphae, and Other Particulates from Swab Samples (EMSL Method: M041)

Lab Sample Number:	241202942-0006	241202942-0007	241202942-0008	241202942-0009	241202942-0010
Client Sample ID:	0717EWC-16	0717EWC-28	0717EWC-29	0718EWC-04	0718EWC-05
Sample Location:	Bushnell Park Bar Screen Stair	North Meadows Pump Rm E Wall	North Meadows Pump Rm Floor	Pope Park Pump Rm Floor	Pope Park Boiler D Stairwell West wall
Spore Types	Category	Category	Category	Category	Category
Agrocybe/Coprinus	-	-	-	-	-
Alternaria	-	-	-	-	-
Ascospores	-	-	-	-	-
Aspergillus/Penicillium	-	-	-	Rare	-
Basidiospores	-	-	-	-	-
Bipolaris++	-	-	-	-	-
Chaetomium	-	-	-	-	-
Cladosporium	-	-	-	-	*High*
Curvularia	-	-	-	-	-
Epicoccum	-	-	-	-	-
Fusarium	-	-	-	-	-
Ganoderma	-	-	-	-	-
Myxomycetes++	-	-	-	Rare	-
Paecilomyces	-	-	-	-	-
Rust	Rare	-	-	-	-
Scopulariopsis	-	-	-	-	-
Stachybotrys	-	-	-	-	-
Torula	-	-	-	-	-
Ulocladium	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-
Zygomycetes	-	-	-	-	-
Fibrous Particulate	-	-	-	-	-
Hyphal Fragment	Rare	-	-	Rare	High
Insect Fragment	-	-	-	-	-
Pollen	-	-	-	-	-

Sample Comment: 241202942-0007 None Detected
Sample Comment: 241202942-0008 None Detected

Category: Count/per area analyzed
Rare: 1 to 10 Low: 11 to 100 Medium: 101 to 1000 High: >1000

Bipolaris++ = Bipolaris/Draschiera/Exserohilum Myxomycetes++ = Myxomycetes/Periconia/Smut
* = Sample contains fruiting structures and/or hyphae associated with the spores.

No discernable field blank was submitted with this group of samples.

Gloria V. Oriol, Laboratory Manager
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Collected: 07/17/2012
Received: 07/19/2012
Analyzed: 07/19/2012

Proj: 01997279.F7E

Test Report: Microscopic Examination of Fungal Spores, Fungal Structures, Hyphae, and Other Particulates from Swab Samples (EMSL Method: M041)

Lab Sample Number:	241202942-0011	241202942-0012			
Client Sample ID:	0718EWC-09	0718EWC-10			
Sample Location:	Armory- Sump Cover	Armory- Stairwell Wall			
Spore Types	Category	Category			
Agrocybe/Coprinus	-	-			
Alternaria	-	-			
Ascospores	-	-			
Aspergillus/Penicillium	*High*	*High*			
Basidiospores	-	-			
Bipolaris++	-	-			
Chaetomium	-	-			
Cladosporium	-	*High*			
Curvularia	-	-			
Epicoccum	-	-			
Fusarium	-	-			
Ganoderma	-	-			
Myxomycetes++	-	-			
Paecilomyces	-	-			
Rust	-	-			
Scopulariopsis	-	-			
Stachybotrys	-	-			
Torula	-	-			
Ulocladium	-	-			
Unidentifiable Spores	-	-			
Zygomycetes	-	-			
Fibrous Particulate	-	-			
Hyphal Fragment	Medium	Medium			
Insect Fragment	-	-			
Pollen	-	-			

Category: Count/per area analyzed
Rare: 1 to 10 Low: 11 to 100 Medium: 101 to 1000 High: >1000

Bipolaris++ = Bipolaris/Dreschlera/Exserohilum Myxomycetes++ = Myxomycetes/Periconia/Smut
* = Sample contains fruiting structures and/or hyphae associated with the spores.

No discernable field blank was submitted with this group of samples.

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Samples analyzed by EMSL Analytical, Inc. Wallingford, CT AIHA-LAP, LLC--EMLAP Lab 165118

Initial report from: 07/19/2012 17:45:07

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SECTION 03 01 30.71 - REHABILITATION OF CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Removal of deteriorated concrete and reinforcement and subsequent replacement and patching.
2. Replacing deteriorated steel structural reinforcement.
3. Provide all labor, materials, tools, equipment, appliances, transportation, supervision, and related work necessary or incidental to complete the work specified in this Section and as shown on the Drawings.

B. Related Sections

1. Division 3 Section 03 30 53 "Cast-in-Place Concrete" for Concrete Support Pedestal repairs and replacement.

1.3 SUBMITTALS

A. Qualification Data: For installers.

B. Material Certificates: For each type of product indicated, signed by manufacturers.

C. Rehabilitation Program: For each phase of rehabilitation process, including protection of surrounding materials and Project site during operations. Describe in detail materials, methods, equipment, and sequence of operations to be used for each phase of the Work.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Installer that employs workers trained and approved by manufacturer to apply concrete patching and rebuilding materials, and epoxy crack injection materials.

B. Manufacturer Qualifications: Manufacturer that employs factory-trained representatives who are available for consultation and Project-site inspection.

C. Source Limitations: Obtain concrete patching and rebuilding materials and epoxy crack injection materials, each, through one source from a single manufacturer.

D. Mockups: Build mockups for concrete removal and patching, and epoxy crack injection to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in manufacturer's original and unopened containers, labeled with type and name of products and manufacturers.

B. Comply with manufacturer's written instructions for minimum and maximum temperature requirements and other conditions for storage.

C. Store cementitious materials off the ground, under cover, and in a dry location.

D. Store aggregates, covered and in a dry location, where grading and other required characteristics can be maintained and contamination avoided.

1.6 PROJECT CONDITIONS

A. Environmental Limitations for Epoxies: Do not apply when air and substrate temperatures are outside limits permitted by manufacturer. During hot weather, cool epoxy components before mixing, store mixed products in shade, and cool unused mixed products to retard setting. Do not apply to wet substrates unless approved by manufacturer.

B. Cold-Weather Requirements for Cementitious Materials: Comply with the following procedures:

1. When air temperature is below 40 deg F, heat patching material ingredients and existing concrete to produce temperatures between 40 and 90 deg F.

2. When mean daily air temperature is between 25 and 40 deg F, cover completed Work with weather-resistant insulating blankets for 48 hours after repair or provide enclosure and heat to maintain temperatures above 32 deg F within the enclosure for 48 hours after repair.

3. When mean daily air temperature is below 25 deg F, provide enclosure and heat to maintain temperatures above 32 deg F within the enclosure for 48 hours after repair.

C. Hot-Weather Requirements for Cementitious Materials: Protect repair work when temperature and humidity conditions produce excessive evaporation of water from patching materials. Provide artificial shade and wind breaks, and use cooled materials as required. Do not apply to substrates with temperatures of 90 deg F and above.

PART 2 - PRODUCTS

2.1 BONDING AGENTS

A. Epoxy-Modified, Cementitious Bonding and Anticorrosion Agent: Product that consists of water-insensitive epoxy adhesive, Portland Cement, and water-based solution of corrosion-inhibiting chemicals that forms a protective film on steel reinforcement.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

a. Sika Corporation; Armatec 110 EpoCem.

b. Euclid Chemical Company.

c. Sonneborn, Div. of ChemRex.

d. Or equal.

2.2 PATCHING MORTAR FOR TYPE "A" AND TYPE "C" CONCRETE REPAIR

A. Polymer-Modified, Cementitious Patching Mortar: Packaged, dry mix complying with ASTM C 928, that contains a latex additive as either a dry powder or a separate liquid that is added during mixing.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

a. Sika Corporation; SikaTop 123 Plus.

b. Euclid Chemical Company.

c. Fox Industries, Inc.

d. Meadows, W. R., Inc.

e. Sonneborn, Div. of ChemRex.

f. Or equal.

2.3 CONCRETE FOR TYPE "B" AND TYPE "D" CONCRETE REPAIR

A. Repair Materials:

1. Sika Corporation; SikaRepair SHB.

2. Or approved equal.

B. Steel Reinforcement and Reinforcement Accessories: Comply with Division 3 Section "Cast-in-Place Concrete."

C. Form-Facing Materials: Comply with Division 3 Section "Cast-in-Place Concrete."

2.4 CHEMICAL ANCHORS

A. Epoxy Anchors: ASTM C881, high-strength, two-part adhesive epoxy system, conforming to the following:

1. Type: IV.
2. Grade: 3.
3. Class: A, B or C.
4. Compressive Strength: 10,000 psi.
5. Tensile Strength: 7,000 psi.

2.5 MIXES

A. Mix products, in clean containers, according to manufacturer's written instructions.

1. Do not modify patch material in any way in order to reduce the number of lifts required to achieve the total patch thickness.
2. Do not add water, thinners, or additives unless recommended by manufacturer.
3. When practical, use manufacturer's premeasured packages to ensure that materials are mixed in proper proportions. When premeasured packages are not used, measure ingredients using graduated measuring containers; do not estimate quantities or use shovel or trowel as unit of measure.
4. Do not mix more materials than can be used within recommended open time. Discard materials that have begun to set.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Notify Engineer seven days in advance of dates when areas of deteriorated or delaminated concrete and deteriorated reinforcing bars will be located.

B. Visually locate areas of deteriorated or delaminated concrete. Use hammer to sound concrete and determine limits of deterioration. Mark areas for removal by simplifying and squaring off boundaries. At walls make boundaries level and plumb, unless otherwise indicated.

1. Before proceeding with concrete removal and repair, obtain written approval of repair limits from Engineer.

3.2 PREPARATION

A. Protect people, motor vehicles, equipment, surrounding construction, Project site, plants, and surrounding buildings from injury resulting from concrete rehabilitation work.

B. Concrete Removal:

1. Saw-cut perimeter of areas indicated for removal to a depth of at least 1 inch. Make cuts perpendicular to concrete surfaces and no deeper than cover on reinforcement.

   a. Provide a 5 degree undercut towards sound concrete.

2. Remove deteriorated and delaminated concrete by breaking up and dislodging from reinforcement.

3. Remove additional concrete, if necessary, to provide a depth of removal as follows:

   a. Type A: 1-1/2 inch maximum.

   b. Type B: 3-1/4 inch minimum, 4-inch maximum.

   c. Type C: 1-1/2 inch maximum.

   d. Type D: 1 inch minimum behind existing reinforcement, 4-inch maximum.

4. Where half or more of the perimeter of reinforcing bar is exposed, bond between reinforcing bar and surrounding concrete is broken, or reinforcing bar is corroded, remove concrete from entire perimeter of bar and to provide at least a 1-inch clearance around bar.

5. Test areas where concrete has been removed by tapping with hammer, and remove additional concrete until unsound and disbonded concrete is completely removed. Notify the Engineer of any areas where the depth to sound concrete exceeds 4 inches.

6. Thoroughly clean removal areas of loose concrete, dust, and debris.

C. Reinforcing Bar Preparation: Remove loose and flaking rust from reinforcing bars until only tightly bonded light rust remains or as required by the manufacturer of patching material.

1. Where section loss of reinforcing bar is more than 25 percent, or 20 percent in 2 or more adjacent bars, cut bars and remove and replace as directed by Engineer. Remove additional concrete as necessary to provide at least 1-inch clearance at existing and replacement bars. Splice replacement bars to existing bars according to ACI 318, by lapping, welding, or using mechanical couplings.

D. Surface Preparation for Spall Repair: Remove spalled and deteriorated concrete surface material. Roughen surface of concrete to produce roughened surface profile sufficient for bonding of spall repair material.

3.3 DRILLING HOLES

A. Drill hole to indicated depth and diameter.

1. Immediately inform the Engineer if reinforcement or other obstructions are encountered during drilling of dowel hole in concrete.

B. Clean hole of drillings, debris and freestanding water.

3.4 CHEMICAL ANCHORS

A. Install anchors in accordance with manufacturer's written procedure.

3.5 APPLICATION

A. General: Comply with manufacturer's written instructions and recommendations for application of products, including surface preparation.

B. Do not exceed the maximum patch material thickness specified by the manufacturer.

C. Patching Mortar (Type "A" and Type "C" Repair): Unless otherwise recommended by manufacturer, apply as follows:

1. Place patching mortar by troweling toward edges of patch to force intimate contact with edge surfaces. For large patches, fill edges first and then work toward center, always troweling toward edges of patch. At fully exposed reinforcing bars, force patching mortar to fill space behind bars by compacting with trowel from sides of bars.
2. For vertical patching, place material in lifts of not more than 1-1/2 inches nor less than 1/4 inch. Do not feather edge.
3. After each lift is placed, consolidate material and screed surface.
4. Where multiple lifts are used, score surface of lifts to provide a rough surface for application of subsequent lifts. Allow each lift to reach final set before placing subsequent lifts.
5. Allow surfaces of lifts that are to remain exposed to become firm and then finish to match adjacent surface. For a smooth finish, surface with a wood or sponge float; for a rough surface, finish with a broom or burlap drag.
6. Wet-cure cementitious patching materials, including polymer-modified, cementitious patching materials, for not less than seven days by water-fog spray or water-saturated absorptive cover.

D. Concrete (Type "B" and Type "D" Repair):

1. Install in accordance with manufacturer's recommendations.

3.6 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to sample materials and perform tests as follows:

1. Patching Mortar, Packaged Mixes: 1 sample for each 50 square feet tested according to ASTM C 928.

2. Concrete: As specified in Division 03 Section "Miscellaneous Cast-in-Place Concrete."

B. Manufacturer's Representative: Arrange for a patch material manufacturer's representative to be on site for one day during the initial patch placement operations for each different type of patch material used.

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SECTION 03 30 53 – MISCELLANEOUS CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies cast-in-place concrete, including reinforcement, concrete materials, mix design, placement procedures, and finishes for the following:

1. Modifying any support structures to accommodate the shape and weight of replacement valves.

B. Related Sections

1. Division 03 Section "Concrete Rehabilitation" for drilling holes and chemical anchors.
2. Division 03 Section "Concrete Rehabilitation" for removing deteriorated concrete and reinforcement.

1.3 SUBMITTALS

A. Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:

1. Cementitious materials and aggregates.
2. Steel reinforcement and reinforcement accessories.

B. Product Certificate: Signed by producer or supplier certifying that each of the following items complies with requirements:

1. Design mix.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed concrete work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.

C. Source Limitations: Obtain each type of cement of the same brand from the same CTDOT approved batch plant, each aggregate from one source, and each admixture from the same manufacturer.

D. Comply with ACI 301, "Specification for Structural Concrete," including the following, unless modified by the requirements of the Contract Documents.

1. General requirements, including submittals, quality assurance, acceptance of structure, and protection of in-place concrete.
2. Formwork and form accessories.
3. Steel reinforcement and supports.
4. Concrete mixtures.
5. Handling, placing, and constructing concrete.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle steel reinforcement to prevent bending and damage.

PART 2 - PRODUCTS

2.1 FORMWORK

A. Furnish formwork and form accessories according to ACI 301.

2.2 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.

B. Plain-Steel Welded Wire Fabric: ASTM A496/497, fabricated from as-drawn steel wire into flat sheets. 75ksi

1. Galvanized: ASTM A461.

C. Stainless-Steel Bars and Shapes: ASTM A 276, Type 304

2.3 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, Types I or II or Type I/II.

B. Normal-Weight Aggregate: ASTM C 33, uniformly graded, not exceeding 1-1/2-inch nominal size.

C. Water: Potable and complying with ASTM C 94.

2.4 ADMIXTURES

A. General: Admixtures certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cement and to be compatible with other admixtures. Do not use admixtures containing calcium chloride.

B. Air-Entraining Admixture: ASTM C 260.

C. Water-Reducing Admixture: ASTM C 494, Type A.

2.5 CURING MATERIALS

A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry.

B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

2.6 CONCRETE MIXES

A. Comply with ACI 301 requirements for concrete mixtures.

B. Prepare design mixes, proportioned according to ACI 301, for normal-weight concrete determined by either laboratory trial mix or field test data bases, as follows:

1. Compressive Strength (28 Days):

   a. Valve Support Structures: 4000 psi.

2. Slump: 4 inches.

2.7 CONCRETE MIXING

A. Ready-Mixed Concrete: Comply with ASTM C 94.

1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until concrete structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:

1. Class A, 1/8 inch.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Chamfer exterior corners and edges of permanently exposed concrete.

F. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

G. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

H. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use Setting Drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

1. Install anchor bolts, accurately located, to elevations required.

3.3 REMOVING AND REUSING FORMS

A. General: Formwork, for sides of beams, walls, columns, and similar parts of the Work, that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete provided concrete is hard enough to not be damaged by form-removal operations and provided curing and protection operations are maintained.

B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Engineer.

3.4 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

1. Shop- or field-weld reinforcement according to AWS D1.4, where indicated.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

E. Install welded wire fabric in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.5 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Locate and install so as not to impair strength or appearance of concrete, at locations indicated or as approved by Engineer.

C. Isolation Joints: Install joint-filler strips at junctions with slabs-on-grade and vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Extend joint fillers full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.

3.6 CONCRETE PLACEMENT

A. Comply with recommendations in ACI 304R for measuring, mixing, transporting, and placing concrete.

B. Do not add water to concrete during delivery, at Project site, or during placement.

C. Consolidate concrete with mechanical vibrating equipment.

D. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation.

E. Deposit concrete in forms in horizontal layers no deeper than 24 inches and in a manner to avoid inclined construction joints. Place each layer while preceding layer is still plastic, to avoid cold joints.

1. Consolidate placed concrete with mechanical vibrating equipment. Use equipment and procedures for consolidating concrete recommended by ACI 309R.

2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations no farther than the visible effectiveness of the vibrator. Place vibrators to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mix constituents to segregate.

F. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.

2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators, unless otherwise specified and approved in mix designs.

G. Hot-Weather Placement: Place concrete according to recommendations in ACI 305R and as follows, when hot-weather conditions exist:

1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.

2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.

3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.7 FINISHING FORMED SURFACES

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defective areas repaired and patched, and fins and other projections exceeding 1/4 inch in height rubbed down or chipped off.

1. Apply to concrete surfaces not exposed to public view.

B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defective areas. Completely remove fins and other projections.

1. Apply to concrete surfaces exposed to public view or to be covered with a coating or covering material applied directly to concrete, such as waterproofing, dampproofing, veneer plaster, or painting.

2. Apply the following rubbed finish, defined in ACI 301, to smooth-formed finished concrete.

a. Smooth-rubbed finish.

C. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.8 FINISHING UNFORMED SURFACES

A. General: Comply with ACI 302.1R for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Screed surfaces with a straightedge and strike off. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane before excess moisture or bleedwater appears on the surface.

1. Do not further disturb surfaces before starting finishing operations.

C. Float Finish: Apply float finish to surface of valve support structure.

D. Trowel and Fine-Broom Finish: Apply a partial trowel finish, stopping after second troweling. Immediately after second troweling, and when concrete is still plastic, slightly scarify surface with a fine broom.

3.9 TOLERANCES

A. Comply with ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

3.10 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection, and follow recommendations in ACI 305R for hot-weather protection during curing.

B. Begin curing after finishing concrete, but not before free water has disappeared from concrete surface.

C. Curing Methods: Cure formed and unformed concrete for at least seven days by moisture curing, moisture-retaining-cover curing, or a combination of these as follows:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

a. Water.

b. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

3.11 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement. Tests will be performed according to ACI 301.

1. Testing Frequency: Obtain at least one composite sample for each 50 cu. yd. or fraction thereof of each concrete mix placed each day.

3.12 REPAIRS

A. Remove and replace concrete that does not comply with requirements in this Section.

END OF SECTION

SECTION 33 45 03 – SUMP PUMPS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Contractor shall furnish all labor, material, equipment and incidentals required to submersible centrifugal dewatering pumps for the South Meadows Stormwater Pumping Station.

B. Section Includes:

1. Submersible sump pumps, controls and appurtenances.
2. Demolition of existing sump pumps, controls, piping and appurtenances

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

B. Wiring Diagrams: For power, signal, and control wiring.

C. Piping, valves, check valves, pipe supports and piping appurtenances.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For pumps and controls, to include in operation and maintenance manuals.

1.5 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. UL Compliance: Comply with UL 778 for motor-operated water pumps.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Retain shipping flange protective covers and protective coatings during storage.

B. Protect bearings and couplings against damage.

C. Comply with pump manufacturer's written rigging instructions for handling.

PART 2 - PRODUCTS

2.1 SMALL SUMP PUMP

A. Manufacturer and Model: Zoeller Engineered Products of Louisville, Ky. (800-928-7867), close coupled U.L. and/or CSA listed Model N6163 or equal.

B. Operating Conditions:

1. Each submersible pump shall be rated at 1/2 H.P., 115 volts, 1 phase, 60 HZ., 3450 R.P.M. The unit shall produce 46 G.P.M. at 40 feet of T.D.H (approximately 66 feet Dead Head, 61 gpm at 5 feet).

2. The submersible pump shall be non-overloading throughout the length of the curve and be capable of operating un-submerged without damaging the pump. The reserve service factor shall be a minimum of 1.15. The submersible pump shall pass a 0.75-inch spherical solid. The submitted performance curve shall show the flow and head capacity of the pump.

3. The pump housing configuration shall have a 2-inch N.P.T. vertical discharge.

C. Construction: The castings shall be constructed of epoxy coated class 30 cast iron. The motor housing shall be finned and oil-filled to dissipate heat. All external mating parts shall be machined and sealed with a Viton square ring. All fasteners exposed to the liquid shall be 300 series stainless steel. The motor shall be protected on the top side with an attached sealed junction box chamber which in the event of cord damage will prevent moisture wicking into the motor housing. The motor shall be protected on the lower side with a tandem mechanical seal arrangement, with each seal having a separate spring assembly. The upper and lower ball bearings shall be capable of handling all thrust loads. The pump housing shall be of the concentric design thereby equalizing the pressure forces inside the housing which will extend the service life of the seals and bearings. The top cap shall have a SS lifting handle. Inlet screens or strainers are prohibited.

1. As an optional feature include seal leak probes in the seal chamber.

D. Electrical Power Cord:

1. The pump shall be supplied with 50 feet of multi-conductor power cord. It shall be SO type cord capable of continued exposure to the pumped liquid. Power cord shall be sized for the rated full load amp loading of the pump in accordance with the National Electric Code. Power cable shall enter into the junction box through a compression type sealing gland. Water sealing and strain relief are separated. The entire junction chamber shall be sealed off from the motor housing by thru wall terminals to protect the motor from moisture.

E. Motor:

1. The oil-filled motor shall be a Class B insulated NEMA B design. At maximum load, the winding temperature will not exceed 220 degrees F un-submerged. Since air-filled motors are not capable of dissipating heat, they shall not be considered equal.

   a. Single-phase motors shall include an integral thermal overload switch and the capacitor circuit shall be located in the pump assembly.

   b. Three phase motors shall use magnetic starters with overload relays in the control panel for further protection.

F. Bearings And Shaft:

1. The upper and lower ball bearings are continuously lubricated by the oil which fills the motor housing. The motor shaft shall be made of 416 SS and have a minimum diameter of 0.625 inches.

G. Seals:

1. Pump shall have a dual mechanical seal configuration with the seals mounted in tandem. The lower silicon carbide/carbon and upper carbon/ceramic seals are constructed faces with Buna-n elastomers and a 316 SS spring.

   a. It shall be equal to a Crane Type 6a configuration.

   b. Double seals with a common intermediate spring shall not be considered equal.

2. Optional seal faces shall be Silicon carbide / carbon for Upper and Silicon carbide / silicon carbide for Lower.

H. Impeller:

1. The impeller shall be of a fully balanced bronze vortex design. It shall be capable of passing a solid sphere of 0.75 inches. It shall have pump out vanes located on the back shroud to keep debris away from the seal area. Attempts to improve efficiency by coating impeller shall not be acceptable.

I. Painting:

1. The castings shall be protected with a green powder-coated finish.

2. Optional coating shall be double epoxy finish protecting all castings coming in contact with the liquid.

J. Serviceability:

1. Components required for the repair of the pump shall be readily available within 24 hours. Components such as mechanical seals and bearings shall not be of a proprietary design and be available from local industrial supply houses. Special tools shall not be required to service the pump. A network of service stations shall be

available nationwide in those cases where service requirements are beyond the scope of in-house service mechanics.

K. Support:

1. The pump shall have cast iron support legs enabling it to be a free standing unit.

L. Testing:

1. Each pump shall run in liquid before being shipped. It shall be checked at its maximum running point for performance, amps, grounding, winding insulation, and water tightness.

   a. An optional certified performance test based on the Hydraulic Institute or SWPA (Submersible Wastewater Pump Association) Test Standard for submersible pumps.

   b. Provide start up services at the job site by an authorized representative of Zoeller Engineered Products. Complete start-up report form ZM1074 in the presence of the Installers, and return to the Project Engineer or Zoeller Engineered Products.

M. Warranty:

1. Standard warranty shall be 24 months from date of installation. Warranty repairs shall be provided by an authorized service station.

2.2 CONTROL FOR SMALL SUMP PUMP

A. General

1. Provide all labor, materials, equipment and incidentals required to provide a UL listed pump control panel compatible with the submersible pump(s) specified.

2. The control panel shall be assembled and tested by a supplier meeting UL Standard 508 for industrial controls. The same manufacturer supplying the submersible pump so as to insure compatibility and assurance in matching the proper panel and features with the pump being supplied shall furnish the control panel and to assure single source responsibility for the equipment supplied.

3. The panel shall be of a Simplex (1 pump) configuration.

4. The panel shall be configured for 120 Volt 1 phase service.

5. The panel shall be Zoeller Simplex Control Panel Part Number 10-1038 meeting requirements of the Zoeller 1/2 HP, 115Volt, 1 Phase N6163 solids handling pump.

B. Construction

1. The control panel shall be housed in a NEMA 4X SS enclosure. Panel shall include a visible and audible high water alarm with a dry auxiliary contact, motor contactor,

pump disconnect switch, control power disconnect switch, selector switches and pilot lights.

2. The panel circuitry is to be mounted on a steel plate, which is bolted to the enclosure with 300 series SS fasteners. The enclosure shall have a hinged front cover with lockable hasp.
3. The control panel shall provide adjustable overload protection if the pump(s) being controlled does not have an integral thermal overload protection in its motor winding.
4. If the single-phase pump has external start capacitors and relay, they shall be mounted in the control panel.
5. The control panel shall include a seal leak monitoring circuit, including a relay, with indicator on the face of enclosure, when the pump(s) is equipped with seal leakage probes.
6. The control panel shall include a thermal cutout circuit, interfaced with the motor contactor, to prevent overheating, when the pump(s) is equipped with thermal sensor protection.
7. Pump run pilot lights shall be mounted on the exterior door of the enclosure.
8. Pump selector switch shall consist of hand-off-auto selections.
9. Audible alarm shall be equipped with a silence switch.
10. Visual alarm shall be a top mounted red beacon with 360-degree visual check.
11. The alarm circuit shall be provided with an auxiliary dry contact, which will enable a high water alarm signal to be transmitted to a remote monitoring location.
12. The 120-volt control voltage shall be an external dedicated source in single-phase panel. A three-phase panel shall get its 120-volt control power from an internal transformer.
13. Wire ties shall be used to maintain panel wiring in neat bundles for maintenance and to prevent interference with operating devices.
14. A wiring schematic shall be provided and stored in a plastic packet provided in the enclosure. The schematic is to be an exact representation of the panel circuitry identifying the terminal locations for the float switch, pump(s) and incoming power connections.
15. All ground wires shall be terminated at the grounding lug furnished inside the enclosure.
16. Contractor is responsible for installing the panel so as to maintain the NEMA 4X rating. This means that all conduit, cord connections and enclosure openings are to be properly sealed in a manner, which prevents any liquids or vapors from entering the enclosure.

17. A properly sized and rated disconnect switch, not included with the panel, for the system power feed is to be installed by the contractor before the panel and pump(s), per NEC Code.

C. Provide the following options

1. Flashing high water alarm light.
2. Elapsed time meter. Tracks the number of hours that each pump has operated.
3. Cycle counter. Tracks the number of cycles that each pump has operated.
4. Dead front enclosure. Aluminum inner doors where all pilot lights, selector switches and various optional monitoring features are mounted. Outer door is blank.
5. Intrinsically safe relays. Enable the voltage passing through the float switches to decrease to less than 12 volts, which will prevent any arcing in case of float damage. Feature is required when a "hazardous environment" designation is applied.
6. Redundant off switch. Provides an additional off switch, which will shut down the pump(s) in case the primary "off" float switch malfunctions.
7. Lightning arrestor. Protect the panel components and pump motor from lightning strikes.
8. Condensation heater. An adjustable thermostat, which protects the internal, panel components from moisture by keeping the air temperature above dew point.
9. Additional dry contact for remote monitoring: Pump Run; Seal Fail; and Pump Failure.
10. Control Power Loss
11. Stainless Steel enclosure.
12. IEC rated starters.
13. Heavy duty oil-tight pilot lights and selector switches.

D. Float Switches And Mounting Accessories

1. Provide 4 each pump (QTY.) UL listed narrow-angle sensor switch with normally open contact, which closes as the float tips slightly above the horizontal plane. Rated at 5 amps, with 2 conductor 16-gauge cable. Float housing to consist of high impact corrosion resistant PVC. The switch shall be suitable for intrinsically safe control circuits.
2. Mounting type shall be of a pipe type clamp where the float switch is attached to the discharge pipe or similar pipe.
3. The float switch cable length shall be: 50 feet or as required to control panel.

2.3 LARGE SUMP PUMP

A. Manufacturer and Model: Zoeller Engineered Products of Louisville, Ky. (800-928-7867), close coupled Model J6124 submersible type or equal.

B. Operating Conditions:

1. Each pump shall be rated at 5 HP, 200 Volts, 17.5 Amps, 3 Phase, 60 Hz, 1750 RPM. The unit shall produce 240 GPM at 38 feet of TDH (55 feet Dead Head, 440 gpm at 20 feet head).

2. The pump shall be non-overloading throughout the length of the curve and be capable of operating continuously un-submerged without damaging the pump. The reserve service factor shall be a minimum of 1.20. The submitted performance curve shall show in addition to the head and capacity performance, the efficiency and the motor rating curve. The curve data shall be per the SWPA (Submersible Wastewater Pump Association) approved curve format.

3. The pump housing configuration shall have a 4-inch flanged horizontal discharge with 2.5-inch solids capacity.

C. Construction:

1. The castings shall be constructed of epoxy coated class 30 cast iron. The motor housing shall be finned and oil-filled to dissipate heat and enable the unit to operate for continuous duty un-submerged without damage to the motor. All external-mating parts shall be machined and sealed with a Buna-N square ring. All fasteners exposed to the liquid shall be 300 series stainless steel. The motor shall be protected on the topside with sealed junction chamber, which in the event of cord damage will prevent moisture wicking into the motor housing. The motor shall be protected on the lower side with a tandem mechanical seal arrangement with each seal having a separate spring assembly. The upper and lower ball bearings shall be capable of handling all thrust loads. The pump housing shall be of the concentric design thereby equalizing the pressure forces inside the housing, which will extend the service life of the seals and bearings. The top cap shall have cast in lifting lugs.

2. Provide pump with sensor option. This includes the patented moisture detection system, protecting the motor against moisture entering into the upper junction chamber or lower seal cavity. It also includes the thermal sensors inside the motor housing, providing temperature protection.

D. Electrical Power Cord:

1. The pump shall be supplied with 50 feet of multi-conductor power cord. It shall be SO type cord capable of continued exposure to the pumped liquid. Power cord shall be sized for the rated full load amp loading of the pump in accordance with the National Electrical Code. Power cable shall enter into the junction chamber through a compression type-sealing gland. Water sealing and strain relief is separated. Each individual conductor shall be sealed against wicking should the cable become damaged. The entire junction chamber shall be sealed off from the motor housing.

The junction chamber shall contain a set of moisture detection probes, activating an alert signal in the case of liquid entry.

E. Motor:

1. The oil-filled motor shall a Class F insulated NEMA B design rated for continuous duty. At maximum load, the winding temperature will not exceed 250 degrees F un-submerged. Since air-filled motors are not capable of dissipating heat, they shall not be considered equal.

F. Bearings And Shaft:

1. Upper and lower ball bearings made of high carbon chromium steel shall be provided to prevent shaft deflection by withstanding all thrust and radial loads. The motor shaft shall be made of 416 SS and have a minimum diameter of 1.125 inches.

G. Seals:

1. Pump shall have a dual mechanical seal configuration with the seals mounted in tandem. Each seal assembly having carbon rotary and ceramic stationary faces with buna-n elastomer and 316 SS spring.

   a. It shall be equal to a Crane Type 21 configuration.

   b. Double seals with a common intermediate spring shall not be considered equal.

2. Provide optional seal faces – Seals shall be Silicon carbide / carbon for Upper and Silicon carbide / silicon carbide for Lower.

H. Impeller:

1. The impeller shall be a fully balanced semi-open design not requiring wear ring for maintaining efficiency. The impeller shall be made of ductile iron. It shall be capable of passing a solid sphere equal to the solids capacity specified in section 2.01. It shall have pump out vanes located on the back shroud to keep debris away from the seal area. It is to be keyed and bolted to the shaft. Attempts to improve efficiency by painting impeller shall not be acceptable.

I. Painting:

1. The pump shall have a corrosion resistant baked on epoxy powder coating on all exterior surfaces.

2. Provide optional coating-shall be double epoxy finish protecting all castings coming in contact with the liquid.

J. Serviceability:

1. Components required for the repair of the pump shall be readily available within 24 hours. Components such as mechanical seals and bearings shall not be of a proprietary design and be available from local industrial supply houses. Special tools

shall not be required to service the pump. A network of service stations shall be available nationwide in those cases where service requirements are beyond the scope of in-house service mechanics.

K. Support:

1. The pump shall have cast in support legs enabling it to be a freestanding unit. The legs will be high enough to allow the solids capacity listed in 2.01 to pass below the housing.

L. Testing:

1. Each pump shall have a 20 - 30 minute operational test before shipment. The test shall be conducted with the pump submerged in a tank thereby duplicating its actual performance. A computer-generated report shall be available following this test. The report will show pump performance, amp draws, efficiencies and power consumption at various performance points for each pump supplied at various heads.

2. Provide start-up services at the job site by an authorized representative of Zoeller Engineered Products. Complete start-up report form ZM1074 in the presence of the Installers and return to the Project Engineer or Zoeller Engineered Products.

M. Warranty:

1. The five year pro-rated warranty for permanent municipal wastewater lift stations shall be in writing in a published service bulletin. Labor charges from an authorized service station for repairs will be included in this warranty agreement during the first 24 months of operation.

2.4 CONTROL PANEL SPECIFICATIONS FOR LARGE SUMP PUMP

A. General

1. Provide all labor, materials, equipment and incidentals required to provide a UL listed pump control panel compatible with the submersible pump(s) specified.

2. The control panel shall be assembled and tested by a supplier meeting UL Standard 508 for industrial controls. The same manufacturer supplying the submersible pump so as to insure compatibility and assurance in matching the proper panel and features with the pump being supplied shall furnish the control panel and to assure single source responsibility for the equipment supplied.

3. The panel shall be of a Simplex (1 pump) configuration.

4. The panel shall be configured for 208 Volt 3 phase service.

5. The panel shall be Zoeller Simplex Control Panel Part Number 10-1086 meeting requirements of the Zoeller 5 HP, 200Volt, 3 Phase J6124 solids handling pump with thermal and moisture sensors in it.

B. Construction

1. The control panel shall be housed in a NEMA 4X SS enclosure. Panel shall include a visible and audible high water alarm with a dry auxiliary contact, motor contactor, pump disconnect switch, control power disconnect switch, selector switches and pilot lights.
2. The panel circuitry is to be mounted on a steel plate, which is bolted to the enclosure with 300 series SS fasteners. The enclosure shall have a hinged front cover with lockable hasp.
3. The control panel shall provide adjustable overload protection if the pump(s) being controlled does not have an integral thermal overload protection in its motor winding.
4. If the single- phase pump has external start capacitors and relay, they shall be mounted in the control panel.
5. The control panel shall include a seal leak monitoring circuit, including a relay, with indicator on the face of enclosure, when the pump(s) is equipped with seal leakage probes.
6. The control panel shall include a thermal cutout circuit, interfaced with the motor contactor, to prevent overheating, when the pump(s) is equipped with thermal sensor protection.
7. Pump run pilot lights shall be mounted on the exterior door of the enclosure.
8. Pump selector switch shall consist of hand-off-auto selections.
9. Audible alarm shall be equipped with a silence switch.
10. Visual alarm shall be a top mounted red beacon with 360-degree visual check.
11. The alarm circuit shall be provided with an auxiliary dry contact, which will enable a high water alarm signal to be transmitted to a remote monitoring location.
12. The 120-volt control voltage shall be an external dedicated source in single-phase panel. A three-phase panel shall get its 120-volt control power from an internal transformer.
13. Wire ties shall be used to maintain panel wiring in neat bundles for maintenance and to prevent interference with operating devices.
14. A wiring schematic shall be provided and stored in a plastic packet provided in the enclosure. The schematic is to be an exact representation of the panel circuitry identifying the terminal locations for the float switch, pump(s) and incoming power connections.
15. All ground wires shall be terminated at the grounding lug furnished inside the enclosure.
16. Contractor is responsible for installing the panel so as to maintain the NEMA 4X rating. This means that all conduit, cord connections and enclosure openings are to be properly sealed in a manner, which prevents any liquids or vapors from entering the enclosure.

17. A properly sized and rated disconnect switch, not included with the panel, for the system power feed is to be installed by the contractor before the panel and pump(s), per NEC Code.

C. Provide the following options

1. Flashing high water alarm light.
2. Elapsed time meter. Tracks the number of hours that each pump has operated.
3. Cycle counter. Tracks the number of cycles that each pump has operated.
4. Dead front enclosure. Aluminum inner doors where all pilot lights, selector switches and various optional monitoring features are mounted. Outer door is blank.
5. Intrinsically safe relays. Enable the voltage passing through the float switches to decrease to less than 12 volts, which will prevent any arcing in case of float damage. Feature is required when a "hazardous environment" designation is applied.
6. Redundant off switch. Provides an additional off switch, which will shut down the pump(s) in case the primary "off" float switch malfunctions.
7. Lightning arrestor. Protect the panel components and pump motor from lightning strikes.
8. Condensation heater. An adjustable thermostat, which protects the internal, panel components from moisture by keeping the air temperature above dew point.
9. Additional dry contact for remote monitoring: Pump Run; Seal Fail; and Pump Failure.
10. Control Power Loss
11. Phase monitor for 3 phase power systems.
12. Stainless Steel enclosure.
13. IEC rated starters.
14. Heavy duty oil-tight pilot lights and selector switches.

D. Float Switches And Mounting Accessories

1. Provide 4 each pump (QTY.) UL listed narrow-angle sensor switch with normally open contact, which closes as the float tips slightly above the horizontal plane. Rated at 5 amps, with 2 conductor 16-gauge cable. Float housing to consist of high impact corrosion resistant PVC. The switch shall be suitable for intrinsically safe control circuits.
2. Mounting type shall be of a pipe type clamp where the float switch is attached to the discharge pipe or similar pipe.
3. The float switch cable length shall be: 50 feet or as required to control panel.

2.5 PIPE

A. 2 Inch Pipe for Smaller Sump Pumps

1. Galvanized: Schedule 40, NPT.

B. 4 Inch Ductile Iron Pipe for larger sump pumps

1. Class 52 cement lined ductile iron pipe
2. Elbows, tees and fittings – 4-inch flanged ductile iron
3. Flange Adapters for 4 Inch ductile iron pipe:

   a. Restrained flange adapters may be used in lieu of flanged spool pieces. Flange adapters shall be made of ductile iron conforming to ASTM A536 and have flange bolt circles that are compatible with ANSI/AWWA C110/A21.10.

   b. Restraint for the flange adapter shall consist of a plurality of individual actuated gripping wedges to maximize restraint capability. Torque limiting actuating screws shall be used to insure proper initial set of gripping wedges.

   c. The flange adapter shall be capable of deflection during assembly, or permit lengths of pipe to be field cut, to allow a minimum of 0.6" gap between the end of the pipe and the mating flange without affecting the integrity of the seal.

   d. For PVC pipe, the flange adapter will have a pressure rating equal to the pipe.

   e. For ductile iron pipe, the flange adapter shall have a safety factor of 2:1 minimum.

   f. The flange adapter shall be the SERIES 2100 MEGAFLANGE adapter, as produced by EBAA Iron, Inc., or approved equal.

   g. Traceability

      1) An identification number consisting of year, day, plant and shift (YYDDD)(plant designation)(Shift number), shall be cast into each gland body.

      2) All physical and chemical test results shall be recorded such that they can be accessed via the identification number on the casting. These Material Traceability Records (MTR's) are to be made available, in hard copy, to the purchaser that requests such documentation and submits his gland body identification number.

      3) Production pieces that are too small to accommodate individual numbering, such as fasteners and wedges, shall be controlled in segregate inventory until such time as all quality control tests are passed. These component parts may then be released to a general inventory for final assembly and packaging.

4) All components shall be manufactured and assembled in the United States. The purchaser shall, with reasonable notice, have the right to plant visitation at his/her expense.

h. Coating for restraint devices shall consist of the following:

1) All wedge assemblies and related parts shall be processed through a phosphate wash, rinse and drying operation prior to coating application. The coating shall consist of a minimum of two coats of liquid thermoset epoxy coating with heat cure to follow each coat.

2) All casting bodies shall be surface pretreated with a phosphate wash, rinse and sealer before drying. The coating shall be electrostatically applied and heat cured. The coating shall be a polyester based powder to provide corrosion, impact and UV resistance.

3) The coating system shall be MEGA-BOND by EBAA Iron, Inc. or approved equal. Requests for approved equal must submit coating material and process details for review prior to bid.

4) For more information regarding MEGA-BOND, refer to the MEGA-BOND brochure or visit www.ebaa.com.

C. Pipe Supports for 4 Inch Pipe

1. Wall Brackets: Anvil Fig 195-1

2. Concrete Anchor Bolts: Hilti HIT-HY150 Max Adhesive Anchors w/ 2-7/8 inch embedment.

3. Riser Clamps: Anvil Fig 140-4"

4. Galvanized threaded rod: Anvil Fig 140-5/8"

5. Rod Attachment: Anvil Fig 290-5/8"

2.6 ELECTRICAL

A. Source of electrical for sump pumps: MCC – use breaker compatible with the existing General Electric MCC located on the top level of the pump station. The MCC has unused buckets that shall be modified for the new sump pump use. Contractor to verify that a conduit run to the lower level exists and can be adapted for this project.

B. Three phase subpanel:

1. Minimum of 4 – 18 poles.

2. NEMA 4X metal enclosure

3. Rated for 208Y, 120 V, 100 amps.

4. Square D QO320L125GRB 125A Main Lugs or approved by owner and Engineer.

C. Conduit: galvanized rigid metal conduit

D. Conductors: THHN/THWN copper

E. J-Boxes – NEMA 4X (stainless steel)

F. Adapt from RGC to sump pump SO cord – use watertight crimp style cord connector

2.7 Safety Grating

A. Provide safety grating for sump pump area as required on drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roughing-in for plumbing piping to verify actual locations of storm drainage piping connections before sump pump installation.

3.2 INSTALLATION

A. Pump Installation Standards: Comply with HI 1.4 for installation of sump pumps.

B. Use existing temporary sump pump during construction.

3.3 CONNECTIONS

A. Install piping adjacent to equipment to allow service and maintenance.

3.4 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.

B. Perform tests and inspections.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

C. Tests and Inspections:

1. Perform each visual and mechanical inspection.
2. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
3. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.

4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment:

D. Pumps and controls will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports.

3.5 STARTUP SERVICE

A. Engage a factory-authorized service representative to perform startup service.

1. Complete installation and startup checks according to manufacturer's written instructions.

3.6 ADJUSTING

A. Adjust pumps to function smoothly, and lubricate as recommended by manufacturer.

B. Adjust control set points.

3.7 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain controls and pumps.

END OF SECTION

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SECTION 43 01 21 – PUMP REPAIR

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Refurbishment of Pump Seals
2. Pump inspection and shaft rehabilitation/replacement.
3. General inspection, cleaning, re-painting of pump volute.

B. For work restrictions, see Division 01 Section "Summary"

1.2 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

1. National Fire Protection Association (NFPA)

   NFPA 70 (2008; TIA 08-1) National Electrical Code

1.3 SUBMITTALS

A. Pump Evaluation Report. Submit two copies. Report shall include:

1. Photographs of pump volute and shaft sleeve. Any signs of damage shall be photographed and documented.
2. Any identifying marks located on pump
3. Packing Materials, Lantern Rings, Bearings, Packing Glands, Shafts, Paint

1.4 WARRANTY

A. Provide an industry standard Pump Repair Warranty for the work done. Minimum two year warranty is required.

PART 2 - PRODUCTS

2.1 PACKING MATERIAL

A. Packing material shall be sized and be appropriate for the application.

2.2 LANTERN RINGS

A. Lantern Rings shall match existing lantern rings.

2.3 BEARINGS

A. Bearings are of either babbit/bushing or ball or roller type.

B. Lubrication shall be grease type. Bearings shall be provided with oil or grease lubrication tubing/piping matching existing lubrication tubing or piping, extended to convenient locations. The grease fittings shall be of a type that prevent over lubrication and the buildup of pressure injurious to the bearings. Grease fittings shall match existing grease fittings.

C. Bearings shall match existing bearings.

2.4 PACKING GLANDS

A. Packing glands and fasteners shall match existing products.

2.5 PAINT SCHEDULE

A. Do not paint stainless steel, galvanized steel, and nonferrous surfaces.

B. Exposed Ferrous Surfaces on Exterior of Pumps

1. Preparation: Sandblast and prepare in accordance with pump and paint manufacturer's recommendations.
2. Primer: Enamel paint meeting SSPC 25, one coat.
3. Intermediate and Top Coat: Enamel paint meeting SSPC 21, one coat each.
4. Color: Match existing equipment at pump station.

PART 3 - EXECUTION

3.1 COORDINATION

A. This section applies to the following pumps:

1. South Meadows Pumping Station
   a. Pumps 3,4 – 36" Vertical Mixed Flow
2. North Meadows Pumping Station
   Pumps 3– 36" Centrifugal Non Clog – Inspection Only
3. Armory Pumping Station

a. Pumps 2- 20" Centrifugal Non Clog – Inspection Only (Inspect gearbox)

3.2 SCOPE

A. General

1. Pump will be disassembled, shipped to repair shop for assessment & repair, then reinstalled.

2. Refurbish pump shaft seals: Remove old packing, inspect and document shaft seal condition. Prepare shaft sleeve and coordinate with Owner's Representative for Owner's inspection. Install new packing and packing rings, lubricate and place pump back in service. Any excessive wear or damage which could affect the performance of the equipment or system identified at any stage of the work shall be immediately reported to the Owner's Representative; i.e., either in-place, prior to disassembly, during examination, or reassembly.

3. All electrical work shall be performed in accordance with NEC.

B. Dewatering plan/valve and pump isolation procedure for pump repair at each pump station.

1. Contractor shall submit their proposed means, methods and materials for isolating the valves and pump train at each pump/pump station.

2. Plan must be reviewed and approved by City before beginning work. Allow City 4 weeks to review plan.

3. Plan to assure station does not flood if the Connecticut River rises to flood levels.

4. Plan must not interfere with the operation of the remaining pumps in the stormwater pumping station.

5. This plan must be submitted with the bid proposal.

C. Lock Out Tag Out of Equipment

1. Isolate pump by closing suction and discharge valves, follow site specific Lock-out/Tag-out (LOTO) procedure. If pump shaft seals are being replaced/repacked at the same time as the valves are being rebuilt, pump should already be isolated.

2. Lock out and tag the diesel engine for the pump. Follow site specific LOTO procedure.

D. Disassembly

1. Remove the packing gland (use penetrant/lubricant on packing gland bolts before loosening), glands are split for removal from shaft.

2. Remove old packing and seal rings. Document the quantity, quality and removal order of the removed materials.

E. Inspection and Repair

1. Provide advanced notice to the Owner's Representative when the pump inspection is scheduled so they may observe and inspect at their discretion. Clean pump for inspection, take photographs. Provide photos of the sleeve in each quadrant. Note any asymmetries and describe the wear or any issues.
2. After approval from the Owner's Representative to proceed with pump re-packing, replace packing and seal rings with appropriately sized packing and material for the seal. Packing shall be non-asbestos. Pre-lubricate the packing. Stagger by 180 degrees the joints in the packing. Document the size and part numbers for the packing and seal rings furnished and installed in each seal.
3. Contractor shall laser align the shaft from the gearbox to the pump. In the case that gearbox is not is correct location, the Contractor shall submit report and a Change Order would be issued to realign gear box to engine if needed.
4. Replace the packing gland and seal rings.
    a. Replace any damaged components. Replacement gland (if applicable) shall be split-bronze type with ASTM F 593 stainless steel eyebolts and pins or studs. Replacement Hex-nuts (if applicable) shall be bronze or non-galling stainless steel.
    b. Do not over-tighten the packing gland. Upon initial installation, packing shall drip no less than 80 drops per minute and no more than 100 drops per minute during pump operation when tightened appropriately. After 40 operating hours, leakage rate may be reduced to 50 drops per minute or to the rate recommended by the manufacturer. When tightening the packing gland, proper LOTO procedure shall be followed to prevent pump rotation.
5. Power-wash interior and sandblast exterior of the pump. Inspect for damage to casing, document and photograph any damage. Document and photograph any identifying marks (serial number, order number, model number, dates, etc) prior to and following cleaning.
6. Painting. Do not paint stainless steel, galvanized steel, and nonferrous surfaces. Paint exposed ferrous surfaces on the exterior of pumps
7. Upon completion of work, submit a Pump Evaluation Report to the Owner's Representative for approval.
8. The Pump Evaluation Report shall include the following:
    a. Documentation regarding packing and seal rings removal specified in Paragraph 3.2 D.2.
    b. Replacement packing and seal ring information specified in Paragraph 3.2 E.4
    c. Identifying marks, damaged components and supporting photographs as specified in Paragraph 3.2.E.5.

END OF SECTION

SECTION 43 01 22 – VALVE REPLACEMENT/RETROFIT

PART 1 - GENERAL

1.1 SUMMARY

A. For work restrictions, see Division 01 Section "Summary"

B. This Section includes the following:

1. Replacement and retrofit of valves and actuators, including calibration of actuators and removal of hydraulic cylinders. .

1.2 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

1. National Fire Protection Association (NFPA)

   NFPA 70 (2008; TIA 08-1) National Electrical Code

1.3 SUBMITTALS

A. Preconstruction Submittals

1. Evaluation Report; G; G, Mech

B. Test Reports

1. Valve Leak Test Report
2. Actuator Test and Calibration Report

C. O & M manuals: valves, actuator.

D. Couplings, joint restraints, valves, stems, actuators, discs, wedges, gates, seat rings, tags, lead and oakum, pipe, fittings, blind flanges, bolts and nuts.

E. Dewatering plan/valve and pump isolation procedure for valve removal at each pump station.

1. Contractor shall submit their proposed means, methods and materials for isolating the valves and pump train at each pump/pump station.
2. Plan must be reviewed and approved by City before beginning work. Allow City 4 weeks to review plan.
3. Plan to assure station does not flood if the Connecticut River rises to flood levels.
4. Plan must not interfere with the operation of the remaining pumps in the stormwater pumping station.

5. This plan must be submitted with the bid proposal.

F. Warranty

1. Provide an industry standard Valve Warranty for the work done, minimum two year warrantee is required.

PART 2 - PRODUCTS

2.1 VALVES

A. Gate Valves

All new gate valves shall be metal seated double disc gate valve.

1. If it is necessary to install the gate at an angle from vertical, the valve must be suitable le for such installation and adequate support shall be provided as needed
2. Replace valves in kind unless replacement requires replacement of a solid wedge gate valve in a non-vertical position. Replace solid wedge gate valves requiring non vertical installation with rotating double disc gate valves.
3. Valve shall be designed, manufactured and tested in accordance with AWWA C500
4. Working pressure rating: 150 psi
5. Flanges conform to ANSI B16.1, Class 125. Contractor to verify valve flanges match existing wall flanges.
6. Materials:
   a. Body, bonnets, discs, hand wheel, yoke: ductile iron
   b. Provide 316 stainless steel guides, rollers and tracks, and self-adjusting scraper
7. Valve coating shall be in accordance with AWWA C550.
8. Valve shall have support yoke.
9. Manufacturer:
   a. J&S or equal approved by engineer.

2.2 ACTUATORS

A. Existing Rotork electric actuators shall be sent back to the factory for refurbishments and possible upgrades. Each refurbished actuator shall include a functional factory test, with a test report to be provided. All wiring termination points, mounting shall be suitable for the new valves.

B. Electric actuators that are provided as new, shall be Rotork, to match the existing electric actuators using in these pumping stations.

C. Actuators shall have a LCD display, able to provide valve position in %. This display shall remain functional on power loss for a minimum of 24 hours. In addition diagnostic information shall be provided on the local LCD display.

D. Limits and torque shall be set via a non-intrusive method. The use of control knobs, or other means which require removal of actuator covers shall not be permissible. A right to work tool shall be provided, to communicate with the actuator. Right to work tool shall be capable of both infra-red and Bluetooth communication methods.

E. Four programmable remote indication shall be provided for customer use. Remote indication contacts shall be field programmable with a right to work tool per paragraph F. At a minimum these shall be programmable for;

1. Open/Close
2. Torque Trip open or close.
3. Alarm
4. Each contact shall be programmable for normally open as well as normally closed.

F. A fifth remote indication contact shall be provided to indicate if actuator is not able to run in a remotely. This contact shall change state if;

1. Local or stop is selected.
2. Motor issues (over temperature)
3. Alarm conditions.

G. Actuator enclosure shall be double o-ring sealed, and be able to withstand submergence of 30 feet for 72 hours. NEMA 6 / 7. Use of breathers, drains, external conduit is not permitted. Use of space heaters shall not be required.

H. Refurbished actuator shall be certificated with one year warranty. All new actuators shall include a three year manufacturer warranty. The contractor shall coordinate with actuator manufacturer for start-up services. A factory report, including baseline diagnostic data shall be provided on a USB drive for the client. The information shall include the following at a minimum; torque profile curve, and actuator configuration file. In addition a copy of Insight Software shall be provided on a USB drive for client use.

I. Actuator manufacturer to provide one day of training on equipment provided. Training shall include

1. Setting of limits/torque.
2. Reviewing of the actuator diagnostic screens.
3. Maintenance.

2.3 CI PIPE JOINTS

A. Packing. Twisted jute complying with Federal Specification "Packing: Jute, Twisted" Serial No. HH-P-117-2, Type II.

B. Caulking: Lead complying with Federal Specification "Lead, Caulking" Serial No.QQ-C-40.

2.4 Concrete for repair of valve support.

A. Where applicable, see Section 03 30 53 Miscellaneous Cast-in-Place Concrete.

2.5 Fasteners

A. All fasteners, including flange bolts, nuts, couplings, flange adapters, etc., shall be SS 304.

PART 3 - EXECUTION

3.1 COORDINATION

A. This section applies to each suction and discharge valve at the following pumping stations:

1. South Meadows Pumping Station: all gate valves including knife gate valve.

3.2 SCOPE

A. General

1. In order to provide sufficient standby pumping capacity, each pump station will have a maximum of 1 pump shut down for equipment renewal at any given time. Valve rebuild turn-around time is estimated to be 4-6 weeks. In order to speed full implementation of the equipment renewal process, no more than one pump & valve set from each pump station shall be simultaneously under repair or replacement.
2. Perform electrical work in accordance with the NEC.
3. Replace/retrofit valves or valve components as directed by the Owner's Representative.

B. Valve Replacement/Retrofit Sequence of Construction

1. Valve retrofit/replacement is to remove the previous hydraulic cylinder if exists, replace valves and directly install valve actuators on the new valve bonnets with new support yokes.
2. Suction and discharge valves of the pump shall be closed prior to working on a pump.
3. Valve actuators associated with the pump being serviced shall be disconnected by an electrician. For existing Rotork actuators to be reused, the actuator shall be refurnished per Paragraph 2.2 ACTUATORS.

4. Actuators shall be mechanically removed to facilitate valve retrofit/replacement.
5. Prepare for valve retrofit/replacement. Contractor shall follow "Dewatering plan/valve and pump isolation procedure for valve removal at each pump station" before removing the valves.
6. Suction and discharge sluice gates for the pumping station shall be closed if water levels are high enough to discharge water into the pump room during equipment disassembly. Water levels shall be field identified before proceeding. Additional equipment/pumps may be required for dewatering. Submit "Dewatering plan/valve and pump isolation procedure for valve removal at each pump station" to City. Approval required before proceeding. Pump Station personnel must be present during valve retrofit/replacement.
7. Provide temporary supports for pipe ends before removing valves. Unbolt / de-lead and remove suction and discharge valves. Some valves may be difficult to remove. Contractor is responsible for any rigging to move valves and remove from building.
8. Install blind flange on wall side of suction and discharge flanges to prevent high headwater or backwater from flowing into station. Provide all new gaskets and fasteners.
9. Remove hydraulic cylinder if the existing actuator is installed on hydraulic cylinder, as required on drawings.
10. Remove blind flanges from the wall flanges to install new valves.
11. New valves will have different stem lengths than the existing valves. Contractor shall adapt existing actuators to function with the new valve if the existing actuators are required to be reused on drawings. In the event that the existing actuator does not meet the torque requirements of the new valve, the contractor shall provide and install a new actuator for the new valve.
12. New valves will have different dimensions and weight than existing valves:
    a. Contractor is required to orient the valve for fit and avoid interferences with existing pipes.
    b. Contractor shall modify any support structures to accommodate the shape and weight of the new valve and pipes or provide new support as needed.
    c. Contemporary standard gate valve designs are longer (flange to flange) than the existing valves. Contractor shall modify existing spool pieces or replace existing spool pieces to provide proper fit for new valves. See drawings for more details.
13. Install valves:
    a. Provide appropriate concrete/metal support for valves/pipes as shown on drawings.
    b. Flanged joints: Provide new EPDM gaskets and 304 Stainless Steel fasteners. Provide gasket thickness or wafers as necessary to provide acceptable fit.

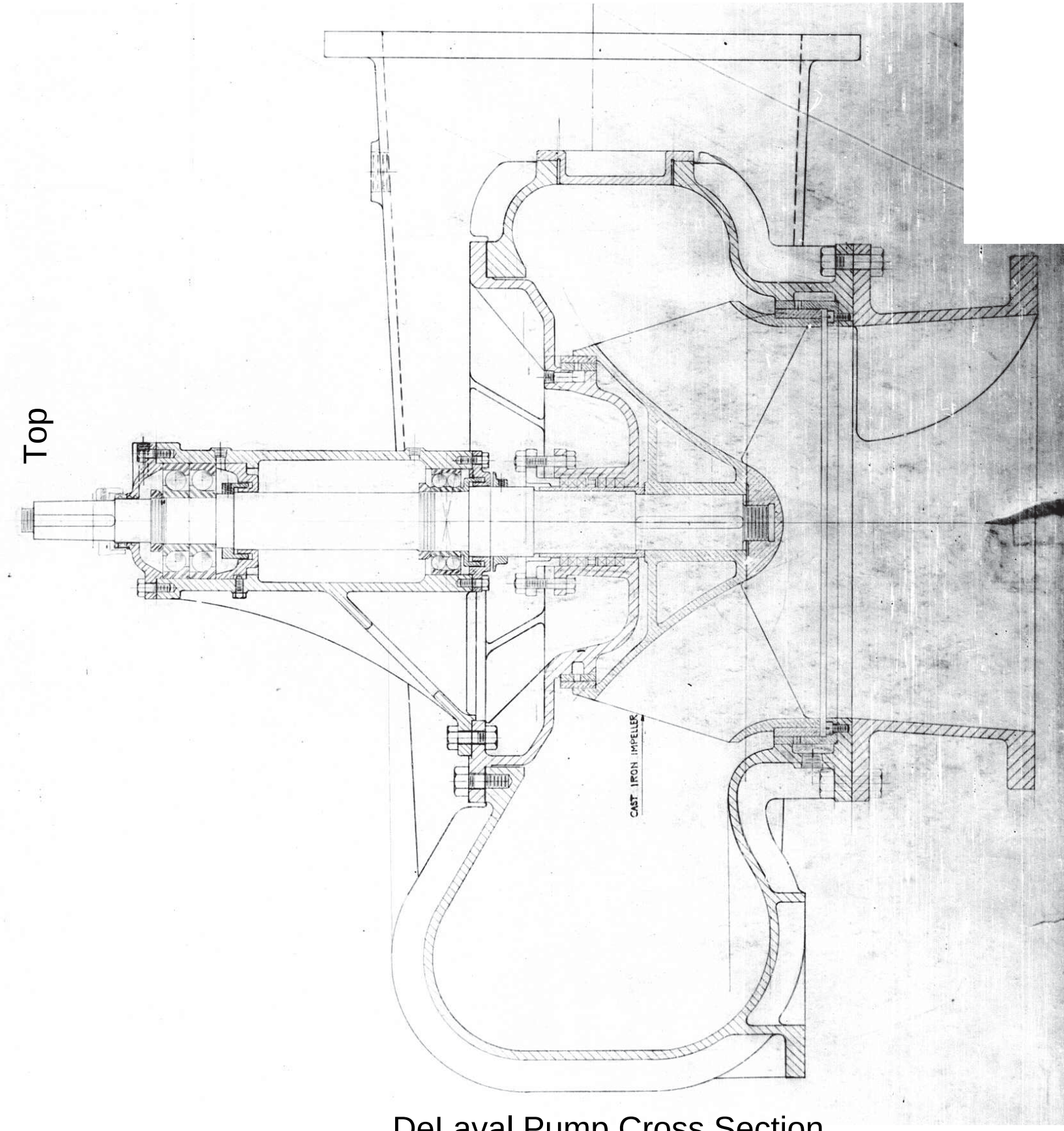
14. Re-install new or the refurnished existing valve actuators (as required on drawings) on valve bonnets with new support yokes.
15. Test valve actuators to verify that limits are set correctly, valves fully open and fully close, actuator motors are not overloading, all electrical re-integration (position feedback, limit switches as appropriate) was satisfactorily completed.
16. Pump station suction and discharge sluice gates to be re-opened.
17. Test system to verify that all gasket and joints are properly sealed pursuant to 43 01 22 3.2 C
18. All valves and any new or modified piping shall have new paint. Touch up paint any spots on valves/piping where paint was chipped during installation or assembly.

C. Test Installed Valves

1. Test valves per AWWA C500 Section 5.1.3, to a test pressure of 25psig. Leakage rates shall not exceed 1 oz/hr/inch nominal valve size.

END OF SECTION

APPENDIX "A"



DeLaval Pump Cross Section

North Meadows

Pumps 2, 3 and 4 only

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SECTION 3

GENERAL INFORMATION FOR PREPARATION AND DELIVERY OF A RESPONSE

Rev. 06/04/12

Definitions:

Request for Response (RFR) refers to any form of solicitation the City may use, such as a Request for Bids (RFB), Request for Proposal (RFP), Request for Information (RFI) or Request for Quotation (RFQ).

Candidate or Respondent refers to an individual or company who is considering or has submitted a response to a solicitation. This is also commonly referred to as "bidder."

City refers to the City of Hartford, the Hartford Public Schools and any other governmental entity participating in the RFR process and/or resulting award(s).

Provider refers to the Candidate or Candidates who receive an award and who enter into a contract with the City.

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3.1 HOW TO RESPOND: Supply the required information on and along with the response forms. An officer or explicit agent of your organization must sign the response form and any supplementary proposal document.

If this request has a "Specification Offered" column opposite the specifications, complete as follows and return these pages with your pricing sheet(s):

In the "specification offered" column type in:

a) "As specified"
b) "Exceeds specifications" - Identify what exceeds the specification and why
c) "Exception to specifications" - Identify the substitute and define its effect

Failure to follow these guidelines may be just cause for rejection of the response.

3.2 QUESTIONS & ADDENDA: Questions related to this project must be received in writing 72 hours in advance of the response submittal deadline. Written questions must be sent via email to the buyer whose name appears on the invitation to respond. Responses shall be in writing and posted in the form of an addendum. Candidates are responsible for obtaining all addenda related to this RFR and thus advised to check for any addenda a minimum of twenty-four hours in advance of the response deadline.

The bids submitted for the work must be based upon the text of this document including the Standard instructions, Special Instructions, Specifications, all Addenda, and any referenced plans, and no oral or informal statement or representation by any representative or employee of the City of Hartford or the Architect shall be considered an amendment to or waiver of any statements in or requirement of such bidding or proposed contract documents and no claim or right of action shall accrue in favor of any respondent as a result of or founded on such oral or informal statements or representations. The City or its agents shall not be responsible for any oral instructions or interpretations given to a Candidate.

Note: All communications related to this project are to be directed to buyer noted on the invitation to respond. Candidates found to be communicating with City or School staff outside of the Procurement Services Unit will have their response rejected.

3.3 QUALIFICATIONS OF CANDIDATES OFFERING A RESPONSE: The City may make such investigations as deemed necessary to determine the ability of the Candidate to perform the work and the degree to which any Candidate meets the criteria for award listed herein. Each Candidate agrees to furnish the City any additional information requested.

3.4 OBLIGATIONS OF THE CANDIDATE: At the time of the opening of proposals, each Candidate will be presumed to be thoroughly familiar with the City's requirements, and the objectives for each element of the project, item or service. A plea of mistake in the accepted response shall not be available to the Candidate for the recovery of the bid surety or as a defense to any action based upon an accepted response.

3.5 NON-DISCRIMINATION: The candidate agrees and warrants that in the performance of the contract such candidate will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age, marital status, national origin, ancestry, sex, mental retardation, mental or physical disability, in any manner prohibited by the laws of the United States or of the State of Connecticut.

3.6 AFFIRMATIVE ACTION REQUIREMENTS:

3.6.1 No Contract or Purchase Order, regardless of how procured, shall be awarded to any Person or Candidate that is not an equal opportunity employer. The successful respondent, as a condition of being awarded this contract shall agree to comply with all contractual Equal Employment Opportunity/Affirmative Action performance requirements as outlined herein.

3.6.2 The successful respondent, as a requirement of final contract execution will additionally agree to comply with the following provisions*:*

a. Submit a report of current company employment statistics on the EEO Certification Form and a copy of the company Affirmative Action / Equal Employment Opportunity Policy Statement, properly signed by Company official on company letterhead, in accordance with paragraph 3.6.3 below.
b. Sign and submit the document entitled "Hartford Affirmative Action Plan / Equal Employment Opportunity Agreement and Affidavit". *(Construction/Infrastructure projects only)*

3.6.3 Candidate's EEO Report: As a condition of doing business with the City the selected respondent must be certified by the City as an Equal Employment Opportunity Employer. Certifications must be renewed annually. Submit completed EEO Certification forms and EEO Policy Statement with your response. To check the current status of your EEO certification contact Aileen Ortiz at 860.757.9784, fax 860.722.6607 or email: ORTIA005@hartford.gov.

3.6.4 The candidate agrees to take affirmative action to insure that applicants with job-related qualifications are employed and that employees are treated, when employed, without regard to race, color, religious creed, age, marital status, national origin, ancestry, sex, mental retardation, mental or physical disability. The advertisement of employment opportunities shall be carried out in such manner as not to restrict such employment.

3.6.5 The successful respondent shall agree that neither he/she nor any subcontractors will discharge, expel or otherwise discriminate against any person because he/she has opposed any unfair employment practice or because he/she has filed a complaint or testified or assisted in any proceeding under Section 31-127 of the Connecticut General State Statutes.

3.6.6 *(Construction/Infrastructure projects only)* During the Performance of this contract, the contractor agrees to permit authorized City of Hartford staff to perform on-site project monitoring related to the contractual equal employment opportunity/affirmative action performance requirements. The prime contractor additionally agrees on behalf of his/her company and all subcontractors to submit the following compliance reports, available at www.hartford.gov/procurement, while performing under this contract:

a. Payroll Certification Form within 10 working days of end of reporting month
b. Minority/Women Business Enterprise (MWBE) Monthly Payment Status Reports
c. Minority/Women Business Enterprise (MWBE) Final Payment Status Reports
d. Monthly Employment Utilization Report
    1. Minimum of 15% of the total project hours by trade shall be allocated to minority workers.
    2. Hartford resident employment goal of 30% by trade.
e. Status reports as to special training and/or employment residency requirements

3.6.7 The successful respondent further agrees that the requirements as noted in paragraphs 3.5 and 3.6 shall likewise apply to all construction sub-contractors.

3.7 RESPONSE DEVELOPMENT: Candidates are responsible for all costs and expenses incurred in the preparation of a response and for any subsequent work on the response that is required by the City of Hartford. Any submittal is the property of the City of Hartford and will not be returned.

3.8 TIME PROVISIONS: The content of any response submitted is to remain valid and available to the City for ninety (90) days from the day proposals are due.

3.9 CORRECTION OR WITHDRAWAL OF RESPONSES, CANCELLATION OF AWARDS. Correction or withdrawal of inadvertently erroneous bids, including corrections to pricing must be submitted to the Procurement Agent prior to the bid response deadline. Corrections before or after award, or cancellation of awards of Contracts or Purchase Orders based on such mistakes, may also be permitted with the approval, in writing, of the Procurement Agent, otherwise withdrawal of bid by respondent shall be cause for forfeiture of bid surety to the City.

3.10 QUANTITIES AND/OR USAGES: Quantities and/or usages are estimates only and in no way represent a commitment and/or intent to purchase the estimated amount. Actual quantities and delivery locations may vary. The City reserves the right to order all quantities that may be needed, at the contract price, during the contract term regardless of the estimates provided in this RFR.

3.11 ACCEPTABLE BRANDS: The RFR specifications are not intended to limit consideration to the particular service organization or manufacturer from which they were developed. References to brand names or numbers are to be interpreted as establishing a standard of quality, unless specifically limited by the term “no substitute”, otherwise brand names used within these specifications shall be presumed to be followed by the words "or approved equal". Burden of proving a product and/or material as equal to a specific product and/or material by brand name is the responsibility of the Provider. Final determination as to what is an "or equal" product will be made by the Procurement Agent in conjunction with other City staff. The City will award on the basis of the criteria stated herein, and reserves the right to waive or require compliance with any element of the specifications.

3.12 SAMPLES: Samples are furnished free of charge and may be held for comparison with deliveries. Candidate must arrange for their return if desired. Samples are assumed to meet, at a minimum, City specifications for quality. All deliveries shall have at least the same quality as the accepted proposal sample. Latent deficiencies will be remedied by the contractor at no additional cost, or loss of service, to the City.

3.13 SITE INSPECTION: Information contained in these documents is provided in good faith only that all Candidates may have access to the same information utilized by the City, and is not intended as a substitute for personal investigations, interpretations and judgment of the Candidate. As information may be approximated or incomplete, Candidates should conduct a thorough inspection, review of existing conditions/equipment, examination of the site and compare it to the specifications and drawings. Any discrepancies or needs for clarifications must be brought to the attention of the department managing the RFR prior to the bid opening.

Pre-bid / Response conferences are noted on the invitation to respond. Submission of a bid shall be evidence that respondent has examined the site, compared it with the drawings and specifications and satisfied itself of the conditions existing at the site, the storage and handling of materials, and all other

matters incidental to the work under this contract. No additional compensation will be allowed for difficulties which the respondent could have discovered or reasonably anticipated prior to bidding.

3.14 CONTRACTING: The City reserves the right to require the successful Candidate to execute a contract in a format supplied by the City. The terms and conditions of the contract to be signed upon the award of the RFR will supersede any inconsistent provision of the RFR documents.

The award of any contract is subject to the following conditions and contingencies:

(1) The approval of such governmental agencies as may be required by law.
(2) The appropriation of adequate funds by the proper agencies.
(3) Compliance with all applicable laws, regulations, ordinances and codes of the United States, the State of Connecticut and the City of Hartford.
(4) The selected Candidate must be current in all tax or any other monetary obligation owed to the City of Hartford.
(5) The selected Candidate must have a current EEO certification on file with the City.

Unless otherwise indicated the duration of the Contract will be one (1) year. Further, Contract terms may be negotiated on award anniversaries. City Ordinance Sec 2-588 (C) allows for a maximum of three Contract extensions provided that the funds are available, approved by the City for this purpose and that the Provider has established a satisfactory performance record.

Notwithstanding the failure of City to exercise any option to renew this contract for an additional year, the Managing Authority reserves the right to unilaterally extend this contract on a month to month basis for a period not to exceed three (3) months under the same terms and conditions applicable to the preceding contract period.

3.15 CONTRACT DOCUMENTS: The Contract documents consist of the Agreement between Owner and Contractor (hereinafter the Agreement), this Request for Response (RFR) and its referenced documents, General and Supplementary Conditions, drawings, any Addenda issued, the Contractor's response to the RFR, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a Minor change in the Work issued by the Design Professional on behalf of the City; the Contract Documents do include other documents such as bidding requirements.

3.16 RETAINAGE *(Construction/Infrastructure projects only)*: When progress payments are being made for items being built or designed, the City may withhold at least 5% of the total project cost, or as otherwise specified in the contract for this project.

3.17 INSURANCE: Refer to the exhibit noted on the Invitation to Respond for specific insurance requirements. List the name and address of the respondent's insurance agent on the response form. The successful candidate shall be required to furnish a Certificate of Insurance (Accord Form), acceptable to the City, within ten (10) days from notice of award and must name the City as an additional insured on the face of the document. The insurance certificate and coverage requested must be updated and kept current throughout the life of the contract, including any extensions. If at any time during the term of the contract or any extension thereof, any required policies of insurance should renew, expire, or be cancelled, it will be the responsibility of the Provider to furnish to the City a Certificate of Insurance indicating renewal or an acceptable replacement of the expiring policy prior to

the expiration or cancellation, so that there will be no lapse in any coverage. The candidate shall obtain and maintain such required insurance at its own cost and expense.

3.18 BID BONDS: A Bid bond, cashiers or certified check may be required with your response. The City of Hartford provides contractors with the option of submitting an electronic Bid Bond through the Surety2000 website. Surety 2000 is an Internet-based surety processing, verification and security system, developed in cooperation with the surety industry. You may contact Surety 2000 at 1-800-660-3263 or www.surety2000.com, for more information.

Certified checks will be returned to all unsuccessful Candidates upon the awarding of the contract. If your response is not accompanied by a bond, certified check or proof that a valid bond has been obtained at the RFR opening it may be rejected.

If you manage a *small business* and have difficulty obtaining bonds help is available from the Small Business Administration (SBA) through "The Surety Bond Guarantee Program. For more information go to www.sba.gov, choose "Services." Then select "Financial Assistance" and click on "Surety Bond."

3.19 PERFORMANCE BOND AND PAYMENT BOND: If requested, the successful contractor will be required to submit a Performance Bond and Payment (Labor & Material) Bond in the amount of 100% of contract award within 10 days of award if the contract value exceeds $50,000. Said bonds shall be issued by an insurance company and said surety companies must be listed on the current Federal Register, licensed in the State of Connecticut with an underwriting limitation exceeding the value of the project with no more than 5% of capital in surplus tied to any one risk. Banks must have a branch office in Connecticut with insurance provided by the FDIC. The bonds must be signed by an officer of the company and of the surety company above their official titles and their corporate seals must be affixed over the signatures.

Indicate the cost for these bonds, to be added to the contract sum, on the response form.

3.20 PREVAILING WAGES *(Construction/Infrastructure projects only)*: Pursuant to Section 2-559 (B), Required Provisions. Each Agreement for the construction, remodeling or repair of any Infrastructure Facilities shall contain both of the following provisions:

(1) "The wages paid to any mechanic, laborer or workman employed upon the work herein contracted to be done shall be at a rate equal to the prevailing wage rate in the State of Connecticut and or federal government, whichever is applicable, for the same work in the same trade or occupation."

(2) "Each contractor and subcontractor, or an authorized officer or employee, responsible for supervision of the payment of wages shall submit, on a weekly basis within seven (7) days after the regular payment date of the payroll period, to the Procurement Services Unit, a "Weekly Certified Statement of Compliance." Due and timely compliance with this provision shall be a condition precedent to the approval and transmittal of the next and succeeding payments by the city or its authorized officers or agents to the contractor under the terms of this agreement."

3.21 SUBCONTRACTORS: The respondent shall not subcontract any portion of the project to be performed unless the prior consent of the City is given for both the work to be subcontracted and the subcontractor to perform the same. The terms and conditions of the underlying contract between the City and Contractor will become part and parcel of the terms and conditions of each subcontract. Respondents are required to provide subcontractor information in the space provided in 1.4 "Subcontractor Utilization" of the response forms. Complete a separate form for the Base Bid and each Alternate. MWBE's must certified with the City of Hartford at the time of response submission.

3.22 MINORITY BUSINESS UTILIZATION *(Construction/Infrastructure projects only)*: Respondents are required to set-aside for Minority Businesses 15% of the construction work. Respondents are encouraged to exceed the set-aside requirement specified. The City's Minority Business listing as further described in paragraph 3.23.3 shall be used by respondents in selecting minority business contractors.

The sum of all minority business subcontracts shall be equal to or greater than 15% regardless of how the bid is awarded (base only or base plus one or more alternates). Failure to comply with the required percentage of minority business utilization will be cause for rejection of bid.

3.22.1 City Certification Required

Respondents shall utilize Minority subcontractors who hold a current MWBE certificate with the City of Hartford at the time of response submission. Certifications by any other government entity shall not be sufficient to qualify the subcontractor to participate in the City of Hartford's minority business utilization preference program. In selecting its minority subcontractors, respondent is cautioned to seek documented proof that its subcontractors hold valid certification by the City. Failure to identify City certified Minority Business subcontractors will be cause for rejection of bid.

3.22.2 Percentage of Work to be Performed

Designated MWBE's shall perform at least 70% of the work with their own forces and as part of their own operations excluding the manufacture or purchase of proprietary products.

3.22.3 Minority Business Listing

A listing of Minority Businesses holding certification by the City of Hartford is available at www.hartford.gov/procurement or in the Procurement Services Unit, Room 100, 550 Main Street, Hartford, CT 06103. The City's listing of minority businesses is comprised of companies whereby at least 51% of the company is owned and operated by one or more of the following group persons: Black Americans, Hispanic Americans, Women, Asian Pacific Americans, Pacific Islanders, American Indians and descendants from the Iberian Peninsula. It should be understood that such listings are made available to assist respondents in satisfying bid requirements; however, respondent's selection of a subcontractor is its sole responsibility and all work performed under the contract shall be respondent's sole responsibility. The City does not sponsor or recommend the selection of any one vendor. Certification by the City of Hartford as a minority business does not imply that the business is qualified to perform the work specified in this bid. The City reserves the right to request alternate minority subcontractors for whatever reason.

3.22.4 Proof of Minority Business Utilization Required

Prior to execution of contract, the successful respondent shall be required to file with the City Engineer the actual form of subcontract with subcontractor(s) named in at least the minimum dollar value as stated in the "Subcontractor Utilization" form. The subcontract shall state the percentage of work which will be performed by the MWBE with its own forces and as part of its operation. Failure to comply with proof of subcontract within 10 days of notification may result in the rejection of bid and may be cause for forfeiture of respondents' bid surety. Further, the City reserves the right to monitor the performance and payment of such subcontracts; therefore, upon request by the City, the successful respondent shall be required to furnish proof of payment to its subcontractors. Failure to comply with such monitoring requirements within ten days of written request will result in withholding of payment to respondent.

3.22.5 Changes in Subcontractors after Award

The successful respondent may not change subcontractor(s) after the contract has been let unless and

until it has received written approval from the City of Hartford. Any such approval shall be based upon a written request by the Contractor or City, which details performance and/or other issues related to the subcontractor(s).

3.23 SET-ASIDE PROGRAM: If this RFR is set-aside for award to a small, minority or women owned business enterprise you must receive a City of Hartford SC/MWBE certification prior to submission of bid response. This program is described in Sec. 2-660 of the Hartford Municipal Code.

3.24 CITY-BASED SMALL CONTRACTOR PREFERENCE: Any City-based SC/MWBE Certified Small Business which has submitted a bid not more than fifteen (15) percent higher than the low bid, provided such respondent agrees to accept the award at the amount of the low bid, shall be selected as the lowest responsible candidate. If more than one City-based SC/MWBE Certified Small Business has submitted bids not more than fifteen (15) percent higher than the low bid, the City shall select the lowest Responsible candidate among such respondents which submitted the lowest bid.

3.25 CRITERIA FOR AWARD: This Request for Response does not necessarily contemplate an award based solely on price. Rather, the City reserves its rights to accept or reject any or all responses or any portion thereof that it may determine to be in its own best interests, for whatever reason.

3.26 NOTICE OF AWARD: The selected vendor will be provided with a written Notice of Award which shall be contingent upon the submission by the respondent of all documents required of the successful candidate, including, but not limited to, proper insurance certificates, performance and payment bonds, verification of MWBE percentage contribution to the work and execution of contract within 10 days of the notice of award.

3.27 PERFORMANCE EVALUATION: The Contractor understands that during the course of and at the conclusion of the project that the City will evaluate his/her overall performance. Based on information gathered from the City's project management team, the Procurement Agent will assess factors including, but not limited to, quality of work or service, completion record, job supervision, working relationship with other providers, bills for extras, organization, cooperation, worksite cleanliness and compliance with City MBE requirements. This evaluation will be considered in the issuance of future awards. The contractor further understands and agrees that this record will be available for public scrutiny for a minimum of two years.

END OF SECTION

Project: South Meadow Pumping Station Improvements

Minimum Rates and Classifications
for Heavy/Highway Construction

ID#: **H** 19402

Connecticut Department of Labor
Wage and Workplace Standards Division

By virtue of the authority vested in the Labor Commissioner under provisions of Section 31-53 of the General Statutes of Connecticut, as amended, the following are declared to be the prevailing rates and welfare payments and will apply only where the contract is advertised for bid within 20 days of the date on which the rates are established. Any contractor or subcontractor not obligated by agreement to pay to the welfare and pension fund shall pay this amount to each employee as part of his/her hourly wages.

Project Number: DPW#14-43

Project Town: Hartford

FAP Number:

State Number:

Project: South Meadow Pumping Station Improvements

CLASSIFICATION	Hourly Rate	Benefits
01) Asbestos/Toxic Waste Removal Laborers: Asbestos removal and encapsulation (except its removal from mechanical systems which are not to be scrapped), toxic waste removers, blasters. **See Laborers Group 5 and 7**		
1) Boilermaker	33.79	34% + 8.96
1a) Bricklayer, Cement Masons, Cement Finishers, Plasterers, Stone Masons	32.50	27.06
2) Carpenters, Piledrivermen	31.00	22.50

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2a) Diver Tenders	31.00	22.50
3) Divers	39.46	22.50
4) Painters: (Bridge Construction) Brush, Roller, Blasting (Sand, Water, etc.), Spray	44.25	17.75
4a) Painters: Brush and Roller	30.62	17.75
4b) Painters: Spray Only	33.62	17.75
4c) Painters: Steel Only	32.62	17.75
4d) Painters: Blast and Spray	33.62	17.75

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4e) Painters: Tanks, Tower and Swing	32.62	17.75
5) Electrician (Trade License required: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9)	37.60	22.22+3% of gross wage
6) Ironworkers: Ornamental, Reinforcing, Structural, and Precast Concrete Erection	33.50	28.98
7) Plumbers (Trade License required: (P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2) and Pipefitters (Including HVAC Work) (Trade License required: S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4 G-1, G-2, G-8, G-9)	39.31	26.27
----LABORERS---- -		
8) Group 1: Laborer (Unskilled), Common or General, acetylene burner, concrete specialist	27.05	17.80
9) Group 2: Chain saw operators, fence and guard rail erectors, pneumatic tool operators, powdermen, air tool operator	27.30	17.80

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10) Group 3: Pipelayers	27.55	17.80
11) Group 4: Jackhammer/Pavement breaker (handheld); mason tenders (cement/concrete), catch basin builders, asphalt rakers, air track operators, block pavers and curb setters	27.55	17.80
12) Group 5: Toxic waste removal (non-mechanical systems)	29.05	17.80
13) Group 6: Blasters	28.80	17.80
Group 7: Asbestos Removal, non-mechanical systems (does not include leaded joint pipe)	28.05	17.80
Group 8: Traffic control signalmen	16.00	17.80

----LABORERS (TUNNEL CONSTRUCTION, FREE AIR). Shield Drive and Liner Plate Tunnels in Free Air.----

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13a) Miners, Motormen, Mucking Machine Operators, Nozzle Men, Grout Men, Shaft & Tunnel Steel & Rodmen, Shield & Erector, Arm Operator, Cable Tenders	31.28	17.80 + a
13b) Brakemen, Trackmen	30.37	17.80 + a
14) Concrete Workers, Form Movers, and Strippers	30.37	17.80 + a
15) Form Erectors	30.68	17.80 + a
----ROCK SHAFT LINING, CONCRETE, LINING OF SAME AND TUNNEL IN FREE AIR:----		
16) Brakemen, Trackmen, Tunnel Laborers, Shaft Laborers	30.37	17.80 + a
17) Laborers Topside, Cage Tenders, Bellman	30.26	17.80 + a

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18) Miners	31.28	17.80 + a
----TUNNELS, CAISSON AND CYLINDER WORK IN COMPRESSED AIR: ----		
18a) Blaster	37.41	17.80 + a
19) Brakemen, Trackmen, Groutman, Laborers, Outside Lock Tender, Gauge Tenders	37.22	17.80 + a
20) Change House Attendants, Powder Watchmen, Top on Iron Bolts	35.35	17.80 + a
21) Mucking Machine Operator	37.97	17.80 + a
----TRUCK DRIVERS----(*see note below)		

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Two axle trucks	28.33	19.14 + a
Three axle trucks; two axle ready mix	28.43	19.14 + a
Three axle ready mix	28.48	19.14 + a
Four axle trucks, heavy duty trailer (up to 40 tons)	28.53	19.14 + a
Four axle ready-mix	28.58	19.14 + a
Heavy duty trailer (40 tons and over)	28.78	19.14 + a
Specialized earth moving equipment other than conventional type on-the road trucks and semi-trailer (including Euclids)	28.58	19.14 + a

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----POWER EQUIPMENT OPERATORS----

Group 1: Crane handling or erecting structural steel or stone, hoisting engineer (2 drums or over), front end loader (7 cubic yards or over), Work Boat 26 ft. & Over. (Trade License Required)	36.80	22.30 + a
Group 2: Cranes (100 ton rate capacity and over); Excavator over 2 cubic yards; Piledriver ($3.00 premium when operator controls hammer); Bauer Drill/Caisson. (Trade License Required)	36.48	22.30 + a
Group 3: Excavator/Backhoe under 2 cubic yards; Cranes (under 100 ton rated capacity), Gradall; Master Mechanic; Hoisting Engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power of operation), Rubber Tire Excavator (Drott-1085 or similar);Grader Operator; Bulldozer Fine Grade (slopes, shaping, laser or GPS, etc.). (Trade License Required)	35.74	22.30 + a
Group 4: Trenching Machines; Lighter Derrick; Concrete Finishing Machine; CMI Machine or Similar; Koehring Loader (Skooper)	35.35	22.30 + a
Group 5: Specialty Railroad Equipment; Asphalt Paver; Asphalt Spreader; Asphalt Reclaiming Machine; Line Grinder; Concrete Pumps; Drills with Self Contained Power Units; Boring Machine; Post Hole Digger; Auger; Pounder; Well Digger; Milling Machine (over 24" Mandrell)	34.76	22.30 + a
Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller.	34.76	22.30 + a

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Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	34.45	22.30 + a
Group 7: Asphalt Roller; Concrete Saws and Cutters (ride on types); Vermeer Concrete Cutter; Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24" and Under Mandrel).	34.11	22.30 + a
Group 8: Mechanic, Grease Truck Operator, Hydroblaster, Barrier Mover, Power Stone Spreader; Welder; Work Boat under 26 ft.; Transfer Machine.	33.71	22.30 + a
Group 9: Front End Loader (under 3 cubic yards), Skid Steer Loader regardless of attachments (Bobcat or Similar); Fork Lift, Power Chipper; Landscape Equipment (including hydroseeder).	33.28	22.30 + a
Group 10: Vibratory Hammer, Ice Machine, Diesel and Air Hammer, etc.	31.24	22.30 + a
Group 11: Conveyor, Earth Roller; Power Pavement Breaker (whiphammer), Robot Demolition Equipment.	31.24	22.30 + a
Group 12: Wellpoint Operator.	31.18	22.30 + a

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Group 13: Compressor Battery Operator.	30.60	22.30 + a
Group 14: Elevator Operator; Tow Motor Operator (Solid Tire No Rough Terrain).	29.46	22.30 + a
Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.	29.05	22.30 + a
Group 16: Maintenance Engineer/Oiler	28.40	22.30 + a
Group 17: Portable asphalt plant operator; portable crusher plant operator; portable concrete plant operator.	32.71	22.30 + a
Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (minimum for any job requiring CDL license).	30.29	22.30 + a

**NOTE: SEE BELOW

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----LINE CONSTRUCTION----(Railroad Construction and Maintenance)----

20) Lineman, Cable Splicer, Technician	44.30	6.5%+17.70
21) Heavy Equipment Operator	39.87	6.5%+15.83
22) Equipment Operator, Tractor Trailer Driver, Material Men	37.66	6.5%+15.40
23) Driver Groundmen	24.37	6.5%+10.04
23a) Truck Driver	33.23	6.5%+14.28

----LINE CONSTRUCTION----

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24) Driver Groundmen	30.92	6.5% + 9.70
25) Groundmen	22.67	6.5% + 6.20
26) Heavy Equipment Operators	37.10	6.5% + 10.70
27) Linemen, Cable Splicers, Dynamite Men	41.22	6.5% + 12.20
28) Material Men, Tractor Trailer Drivers, Equipment Operators	35.04	6.5% + 10.45

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Welders: Rate for craft to which welding is incidental.

**Note: Hazardous waste removal work receives additional $1.25 per hour for truck drivers.*

***Note: Hazardous waste premium $3.00 per hour over classified rate*

ALL Cranes: When crane operator is operating equipment that requires a fully licensed crane operator to operate he receives an extra $1.00 premium in addition to the hourly wage rate and benefit contributions:

1) Crane handling or erecting structural steel or stone; hoisting engineer (2 drums or over)

2) Cranes (100 ton rate capacity and over) Bauer Drill/Caisson

3) Cranes (under 100 ton rated capacity)

Crane with 150 ft. boom (including jib) - $1.50 extra
Crane with 200 ft. boom (including jib) - $2.50 extra
Crane with 250 ft. boom (including jib) - $5.00 extra
Crane with 300 ft. boom (including jib) - $7.00 extra
Crane with 400 ft. boom (including jib) - $10.00 extra

All classifications that indicate a percentage of the fringe benefits must be calculated at the percentage rate times the "base hourly rate".

Apprentices duly registered under the Commissioner of Labor's regulations on "Work Training Standards for Apprenticeship and Training Programs" Section 31-51-d-1 to 12, are allowed to be paid the appropriate percentage of the prevailing journeymen hourly base and the full fringe benefit rate, providing the work site ratio shall not be less than one full-time journeyperson instructing and supervising the work of each apprentice in a specific trade.

~~Connecticut General Statute Section 31-55a: Annual Adjustments to wage rates by contractors doing state work ~~

The Prevailing wage rates applicable to this project are subject to annual adjustments each July 1st for the duration of the project.

Each contractor shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.

It is the contractor's responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's website.

The annual adjustments will be posted on the Department of Labor's Web page: www.ct.gov/dol.

The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project.

All subsequent annual adjustments will be posted on our Web Site for contractor access.

Contracting Agencies are under no obligation pursuant to State labor law to pay any increase due to the annual adjustment provision.

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Effective October 1, 2005 - Public Act 05-50: any person performing the work of any mechanic, laborer, or worker shall be paid prevailing wage

All Person who perform work ON SITE must be paid prevailing wage for the appropriate mechanic, laborer, or worker classification.

All certified payrolls must list the hours worked and wages paid to All Persons who perform work ON SITE regardless of their ownership i.e.: (Owners, Corporate Officers, LLC Members, Independent Contractors, et. al)

Reporting and payment of wages is required regardless of any contractual relationship alleged to exist between the contractor and such person.

~~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 clause (29 CFR 5.5 (a) (1) (ii)).

Please direct any questions which you may have pertaining to classification of work and payment of prevailing wages to the Wage and Workplace Standards Division, telephone (860)263-6790.

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