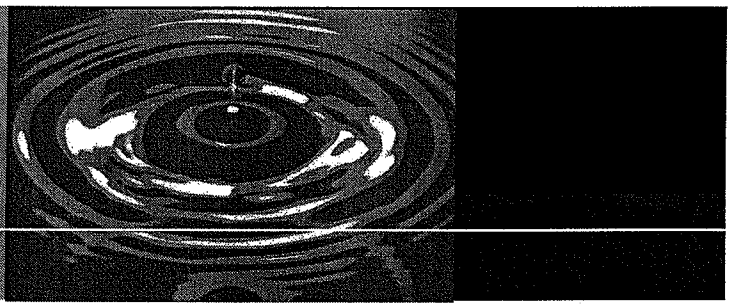
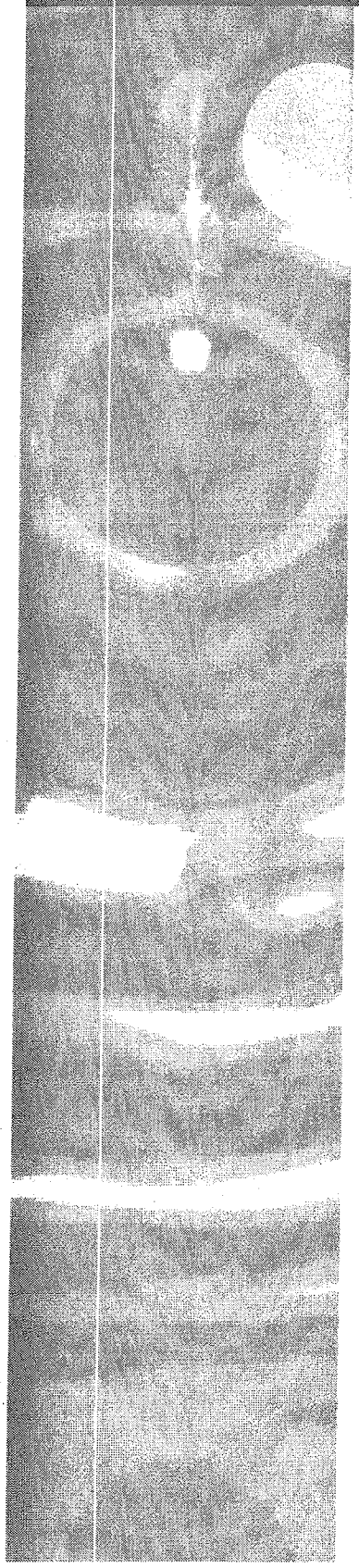


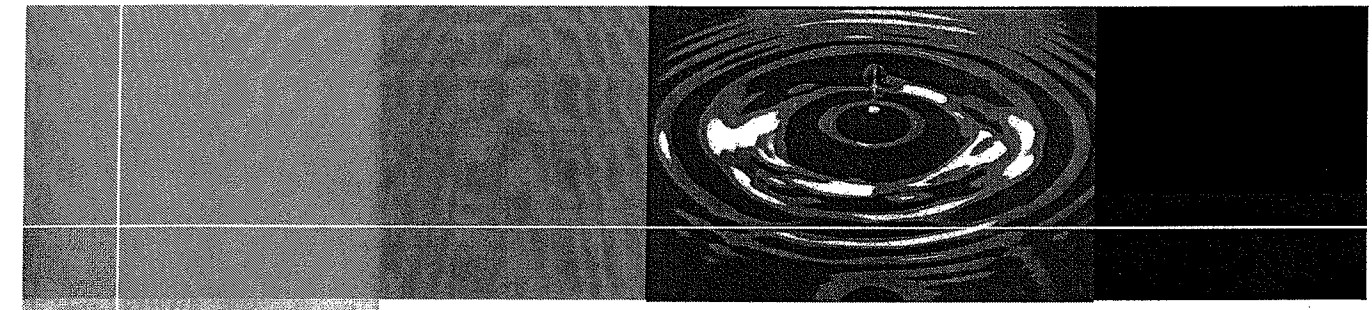


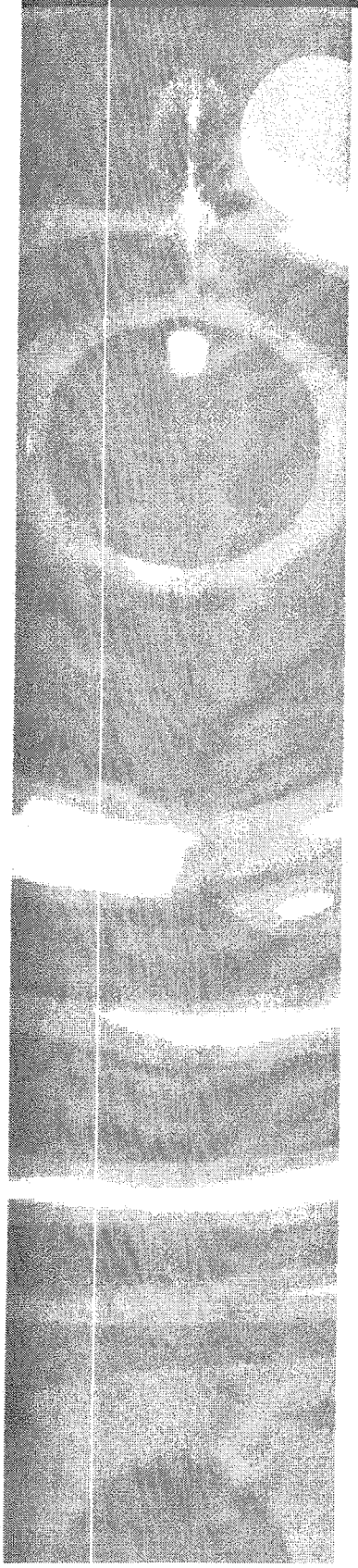
Proposal for:

ARRA Cement Water Main Replacement and Water Booster Pump Station at Rhode Island College

DIGREGORIO

23 Business Park Drive
Smithfield, Rhode Island 02917





Introduction

Introduction for:

ARRA Cement Water
Main Replacement
and Water Booster
Pump Station at
Rhode Island College

DIGREGORIO
23 Business Park Drive
Smithfield, Rhode Island 02917

DIGREGORIO
C O R P O R A T I O N
Site and Utility Contractor

23 Business Park Drive
Smithfield, RI 02917
Tel. (401) 232-1400
Fax. (401) 232-5848

January 24, 2011

State of Rhode Island
Department of Administration
Division of Purchases
One Capitol Hill
Providence, RI 02908-5855

We are pleased to submit the following proposal for the Construction of the ARRA Cement Water Line Replacement and Water Booster Pump Stations Project at Rhode Island College.

Our project team consists of PARE Engineering Corporation, acting as Design Engineers, and DiGregorio, Inc. as the General Contractor. Both companies have years of experience in their respective fields and have a reputation for excellence in the New England area.

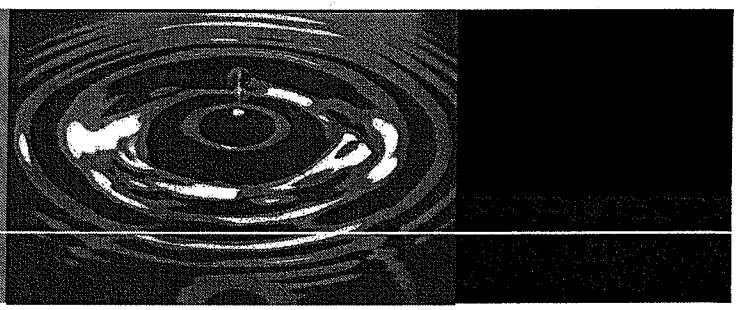
Our main goal for this Project is simply completing it on schedule and within the State's budget. Working together, we will successfully achieve this goal.

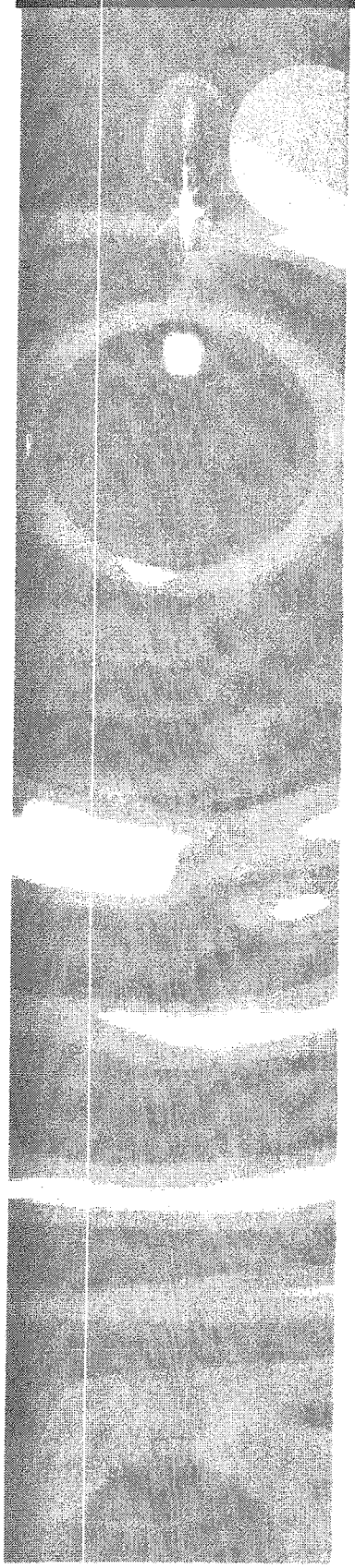
Since we are both Rhode Island based firms, we will be employing trained labor and subcontractors, putting many local people back to work in these hard and difficult economic times; keeping the money spent within the State. This is what the ARRA Program is meant to be about.

We trust that our proposal will meet with your acceptance, and we look forward to working with you to complete this ambitious project.

Respectfully yours,
DIGREGORIO, INC.

Enrico F. DiGregorio
President





Price Proposal

Price Proposal

Price Proposal for:

ARRA Cement Water Main Replacement and Water Booster Pump Station at Rhode Island College

DIGREGORIO

23 Business Park Drive
Smithfield, Rhode Island 02917

State of Rhode Island and Providence Plantations Contract Offer

RIVIP GENERATED BIDDER CERTIFICATION COVER FORM

SECTION 1 - VENDOR INFORMATION

Bid/RFP Number:	7448088A9
Bid/RFP Title:	RFP - ARRA - CEMENT WATER MAIN REPLACEMENTS & WATER BOOSTER PUMP STATI(
Opening Date & Time:	1/24/2011 3:00 PM
RIVIP Vendor ID #:	18733
Vendor Name:	Digregorio, Inc.
Address:	23 Business Park Drive Smithfield, RI 02917 USA
Telephone:	(401) 232-5550
Fax:	(401) 232-5848
E-Mail:	digregcorp@aol.com
Contact Person:	Enrico Digregorio
Title:	President
R.I. Foreign Corp #:	

NOTICE TO VENDORS

Effective January 1, 2011 all public works project related bids or proposals exceeding one million ($1,000,000) dollars are required to include a "public copy". All agency contract solicitations, requests for proposals, invitations for bids, etc. shall state that any bid or proposal that exceeds one million ($1,000,000) dollars must include a copy to be available for public inspection upon the opening of the bids. Any bid or proposal in excess of one million ($1,000,000) dollars which does not include a copy for public inspection shall be deemed to be non-responsive. For further information, please see R. I. Gen. Laws §37-2-18 (P.L. 221) http://www.rilin.state.ri.us/PublicLaws/law10/law10221.htm and Purchasing Rules & amendment at http://www.purchasing.ri.gov/Notices2.aspx.

In addition, the Division of Purchases has promulgated proposed regulations pursuant to R.I. Gen. Laws § 37-2-18 that implements the "public copy" requirement. Public hearing on the proposed regulations was held on Friday, December 17, 2010. The proposed regulations will become final on January 11, 2011. For further information please visit www.sos.ri.gov.

NOTE: AWARD OF CONTRACTS AND PURCHASE ORDERS SHALL BE SUBJECT, AT THE DISCRETION OF THE PURCHASING AGENT, TO THE OFFEROR COMPLETING AN ON-LINE RIVIP REGISTRATION at www.purchasing.ri.gov. It is THE RESPONSIBILITY OF THE VENDOR to make on-line corrections/updates using the Vendor maintenance program on the RI Division of Purchases Web Site.

SECTION 2 - REQUIREMENTS

ALL OFFERS ARE SUBJECT TO THE REQUIREMENTS, PROVISIONS AND PROCEDURES CONTAINED IN THIS THREE-PAGE CERTIFICATION FORM. Offerors are expected to READ, SIGN and COMPLY with all requirements. Failure to do so may be grounds for disqualification of the offer contained herein.

Section 2.1 - RULES FOR SUBMITTING OFFERS

2.1A. This CERTIFICATION FORM MUST BE ATTACHED IN ITS ENTIRETY TO THE FRONT OF THE OFFER and shall be considered an integral part of each offer made by a vendor to enter into a contract with the State of Rhode Island, Division of Purchases. As such, submittal of the entire Bidder Certification Cover Form, signed by a duly authorized representative of the offeror attesting that he/she (1) has read and agrees to comply with the requirements set forth herein and (2) to the accuracy of the information provided and the offer extended, is a mandatory part of any contract award.

To assure that offers are considered on time, each offer must be submitted with the specific Bid/RFP/LOI number (provided above), date and time of opening marked in the upper left hand corner of envelope. Each bid/offer must be submitted in separate sealed envelopes.

A complete, signed (in ink) offer package, must be delivered to the division of purchases (via any mail or messenger service) by the time and date specified for the opening of responses in a sealed envelope.

Bids must be submitted on the RI bid solicitation forms provided, indicating brand and part numbers of items offered, as appropriate. Bidders must submit detailed cuts and specs on items offered as equivalent to brands requested WITH THE OFFER. Bidders must be able to submit samples if requested.

Mail To: Division of Purchases, One Capitol Hill, Second Floor, Providence, RI 02908-5855

Documents misdirected to other State locations or which are not present in the Division of Purchases at the time of opening for whatever cause will be deemed to be late and will not be considered. For the purposes of this requirement, the official time and date shall be that of the time clocks in either the mail sorting or reception areas of the Division of Purchases. Postmarks shall not be considered proof of timely submission.

2.1B. RIVIP SOLICITATIONS. To assure maximum access opportunities for users, public bid/RFP solicitations shall be posted on the RIVIP for a minimum of seven days and no amendments shall be made within the last five days before the date an offer is due. When copies of plans and specifications are too large to make available on-line and are issued with a requirement for a refundable deposit, vendors on the known lists of depositors will receive direct notification of amendments. Except when access to the Web Site has been severely curtailed and it is determined by the State Purchasing Agent that special circumstances preclude extending a solicitation due date, requests to mail or fax hard copies of solicitations will not be honored. When the result of an Internet solicitation is unsuccessful, the State of Rhode Island will cancel the original solicitation and resolicit the original offer directly from vendors.

2.2. PRICING. Offers are irrevocable for sixty (60) days from the opening date (or such other extended period set forth in the solicitation) and may not be withdrawn, except with the express permission of the State Purchasing Agent. All pricing will be considered to be firm and fixed unless otherwise indicated. The State of Rhode Island is exempt from Federal excise taxes and State Sales and Use Taxes. Such taxes shall not be included in the bid price. PRICES QUOTED ARE FOB DESTINATION.

2.3. DELIVERY and PRODUCT QUALITY. All offers must define delivery dates for all items; if no delivery date is specified, it is assumed that immediate delivery from stock will be made. The contractor will be responsible for delivery of materials in first class condition. Rejected materials will be at vendor's expense.

2.4. PREVAILING WAGE, OSHA and APPRENTICESHIP.

2.4.1 Prevailing Wage and OSHA Safety Training Requirements. The provisions of the State labor laws and OSHA Safety Training, including but not limited to Rhode Island General Laws 37-13-1 et seq. and 28-20-1 et seq., shall apply for all public works contracts. Prevailing wage rates are posted in the information section of the RIVIP. The RI Department of Labor and Training should be contacted for regulatory requirements.

2.4.2 Apprenticeship. Rhode Island General Laws §37-13-3 1 requires all general contactors and subcontractors who perform work on any public works contract awarded by the state valued at one million dollars ($1,000,000) or more shall employ apprentices required for the performance of the awarded contract. The number of apprentices shall comply with the apprentice to journeyman ratio for each trade approved by the apprenticeship council of the department of labor and training.

2.5. PUBLIC RECORDS. Offerors are advised that all materials submitted to the State for consideration in response to this solicitation will be considered without exception to be Public Records pursuant to Title 38 Chapter 2 of the Rhode Island General Laws, and will be released for inspection immediately upon request once an award has been made. Offerors are encouraged to attend public bid/RFP openings to obtain information; however, bid/RFP response summaries may be reviewed after award(s) have been made by using the RIVIP at any time or appearing in person at the Division of Purchases Mondays through Fridays between 8:30 a.m. and 3:30 p.m. Telephone requests for results will not be honored. Written requests for results will only be honored if the information is not available on the RIVIP.

SECTION 3 - AWARD DETERMINATION

Award will be made to the responsive and responsible offeror quoting the lowest net price in accordance with specifications, for any individual item(s), for major groupings of items, or for all items listed, at the State's sole option.

3.1. BID SURETY. Where bid surety is required, bidder must furnish a bid bond or certified check for 5% of the bid total with the bid, or for such other amount as may be specified. Bids submitted without a required bid surety will not be considered.

3.2. SPECIFICATIONS. Unless specified "no substitute," product offerings equivalent in quality and performance will be considered (at the sole option of the State) on the condition that the offer is accompanied by detailed product specifications. Offers which fail to include alternate specifications may be deemed nonresponsive.

SECTION 4 – CONTRACT PROVISIONS.

4.1. VENDOR AUTHORIZATION TO PROCEED.

4.1A. When a purchase order, change order, contract/agreement or contract/agreement amendment is issued by the RI Division of Purchases, no claim for payment for services rendered or goods delivered contrary to or in excess of the contract terms and scope shall be considered valid unless the vendor has obtained a written change order or contract amendment issued by the Division of Purchases PRIOR TO delivery.

4.1B. Any offer, whether in response to a solicitation for proposals or bids, or made without a solicitation, which is accepted in the form of an order OR Pricing Agreement made in writing by the Purchasing Agent, or a state official with purchasing authority delegated by the Purchasing Agent, shall be considered a binding contract.

4.2. REGULATIONS, GENERAL TERMS AND CONDITIONS GOVERNING STATE CONTRACTS. This solicitation and any contract or purchase order arising from it are issued in accordance with the specific requirements described herein, and the State's Purchasing Laws and Regulations and other applicable State Laws. The Regulations, General Terms and Conditions are incorporated into all state contracts. These regulations and basic information on How To Do Business with the State of Rhode Island are posted on the Rhode Island Vendor Information Program Website (www.purchasing.ri.gov).

4.2A. ARRA SUPPLEMENTAL TERMS AND CONDITIONS. Contracts and sub-awards funded in whole or in part by the American Recovery and Reinvestment Act of 2009. Pub.L.No. 111-5 and any amendments thereto, such contracts and sub-awards, shall be subject to the Supplemental Terms and Conditions For Contracts and Sub-awards Funded in Whole or in Part by the American Recovery and Reinvestment Act of 2009. Pub.L.No. 111-5 and any amendments thereto located on the Division of Purchases website at www.purchasing.ri.gov.

4.3. EQUAL EMPLOYMENT OPPORTUNITY. Compliance certificate and agreement procedures will apply to all awards for supplies or services valued at $10,000 and more. Minority Business Enterprise policies and procedures, including subcontracting opportunities as described in Title 37 Chapter 14.1, of the Rhode Island General Laws, also apply.

4.4. PERFORMANCE BONDS. Where indicated, successful bidder must furnish a 100% performance bond and labor and payment bond for contracts subject to Title 37 Chapters 12 and 13 of the Rhode Island General Laws. All bonds must be furnished by a surety company authorized to conduct business in the State of Rhode Island. Performance bonds must be submitted within 21 calendar days of the issuance of a tentative notice of award.

4.5. DEFAULT and NON-COMPLIANCE. Default and/or non-compliance with the RIVIP requirements and any other aspects of the award may result in withholding of payment(s), contract termination, debarment, suspension, or any other remedy necessary that is in the best interest of the state.

4.6. COMPLIANCE. Vendor must comply with all applicable federal, state and local laws, regulations and ordinances.

4.7. SPRINKLER IMPAIRMENT AND HOT WORK. The Contractor agrees to comply with the practices of the State's insurance carrier for sprinkler impairment and hot work. Prior to performing any work, the Contractor shall obtain the necessary information for compliance from the Risk Management Office at the Department of Administration or the agency for which work will be performed.

SECTION 5 – CERTIFICATIONS AND DISCLOSURES
ALL CONTRACT AWARDS ARE SUBJECT TO THE FOLLOWING DISCLOSURES & CERTIFICATIONS
Offerors must respond to every disclosure statement.
A person authorized to enter into contracts must sign the offer and attest to the accuracy of all statements.

Indicate Yes (Y) or No (N):

N 1. Has your firm (or any principal) been subject to any of the following findings by the Federal Government, the State of Rhode Island or any other jurisdiction? Suspension, Debarment, Indictment, Criminal Conviction. CIRCLE APPROPRIATE ITEM(S).

N 2. Has your firm (or any principal) been fined more than $5000 for a single violation by the Rhode Island Department of Environmental Management for violation of Rhode Island Wetlands law?

Y 3. I/we certify that I/we will immediately disclose, in writing, to the Chief Purchasing Officer any potential conflict of interest, which may occur during the course of the engagement authorized pursuant to this contract.

Y 4. I/we acknowledge that, in accordance with Chapter 37-2-54(3) of the Rhode Island General Laws "no purchase or contract shall be binding on the state or any agency thereof unless approved by the Department [of Administration] or made under general regulations which the Chief Purchasing Officer may prescribe", including change orders and other types of contracts and under State Purchasing Regulation 8.2.1.1.2, "any alleged oral agreement or arrangements made by a bidder or contractor with any agency or an employee of the Office of Purchases may be disregarded and shall not be binding on the state".

Y 5. I/we certify that the above vendor information is correct and complete.

Y 6. I/we certify that I or my firm possesses all licenses required by Federal and State laws and regulations as they pertain to the requirements of the solicitation and offer made herein and shall maintain such required license(s) during the entire course of the contract resulting from the offer contained herein and should my/our license lapse or be suspended, I/we shall immediately inform the Rhode Island State Purchasing Agent in writing of such circumstance.

Y 7. I/we certify that I/we will maintain required insurance during the entire course of the contract resulting from the offer contained herein and should my/our insurance lapse or be suspended, I/we shall immediately inform the Rhode Island State Purchasing Agent in writing of such circumstance.

Y 8. I/we certify that I/we understand that falsification of any information herein or failure to notify the Rhode Island State Purchasing Agent as certified herein may be grounds for suspension, debarment and/or prosecution for fraud.

Y 9. I/we acknowledge that the provisions and procedures set forth in this three-page form apply to any contract arising from this offer.

Y 10. I/we acknowledge that I/we understand the State's Purchasing Laws (37-2 of the General Laws of Rhode Island) and Purchasing Regulations and General Terms and Conditions available at the Rhode Island Division of Purchases Website (www.purchasing.ri.gov) apply as the governing conditions for any contract or purchase order I/we may receive from the State of Rhode Island, including the offer contained herein.

Y 11. **I/we certify that I/we have registered to utilize the E-Verify program (www.dhs.gov/E-Verify) to ensure compliance with federal and state law. I understand and agree that I am required to continue to utilize the services of the E-Verify program for as long as I continue to do business with the State of Rhode Island. I further understand that my failure to continue to utilize the services of the E-Verify program will adversely affect my ability to continue to do business with the State of Rhode Island and my ability to do business with the State of Rhode Island in the future.**

IF YOU HAVE ANSWERED "YES" TO QUESTIONS #1 – 2 OR IF YOU ARE UNABLE TO CERTIFY YES TO ITEMS #3 – 11 OF THE FOREGOING, PROVIDE DETAILS/EXPLANATION BELOW AND/OR IN AN ATTACHED STATEMENT. INCOMPLETE CERTIFICATION FORMS SHALL BE GROUNDS FOR DISQUALIFICATION OF OFFER.

Signature below commits vendor to the attached offer and certifies (1) that the offer has taken into account all solicitation amendments, (2) that the above statements and information are accurate and that vendor understands and has complied with the requirements set forth herein. When delivering offers in person to One Capitol Hill, vendors are advised to allow at least one hour additional time for clearance through security checkpoints.

Date JAN. 24, 2011

Vendor's Signature (Person authorized to enter into contracts; signature must be in ink.)

ENRICO DIGREGORIO, PRESIDENT Print

Name and Title of company official signing offer

E-Verify Sub Form W-9 (Rev. 6/08)

State of Rhode Island
PAYER'S REQUEST FOR TAXPAYER IDENTIFICATION NUMBER AND CERTIFICATION

THE IRS REQUIRES THAT YOU FURNISH YOUR TAXPAYER IDENTIFICATION NUMBER TO US. FAILURE TO PROVIDE THIS INFORMATION CAN RESULT IN A $50 PENALTY BY THE IRS. IF YOU ARE AN INDIVIDUAL, PLEASE PROVIDE US WITH YOUR SOCIAL SECURITY NUMBER (SSN) IN THE SPACE INDICATED BELOW. IF YOU ARE A COMPANY OR A CORPORATION, PLEASE PROVIDE US WITH YOUR EMPLOYER IDENTIFICATION NUMBER (EIN) WHERE INDICATED.

Taxpayer Identification Number (T.I.N.)

Enter your taxpayer identification number in the appropriate box. For most individuals, this is your social security number.

Social Security No. (SSN) | | | |

Employer ID No. (EIN) | 06 | 1480073 |

NAME DiGregorio, Inc.

ADDRESS 23 Business Park Drive

(REMITTANCE ADDRESS, IF DIFFERENT) Same

CITY, STATE AND ZIP CODE Smithfield, RI 02917

CERTIFICATION: Under penalties of perjury, I certify that:

(1) The number shown on this form is my correct Taxpayer Identification Number (or I am waiting for a number to be issued to me), **and**
(2) I am not subject to backup withholding either because: (A) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (B) the IRS has notified me that I am no longer subject to backup withholding.
(3) As it relates to the "E-Verify" program, I/We certify that I/We have registered to utilize the e-verify program (www.dhs.gov/E-Verify) to ensure compliance with federal and state law. I understand and agree that I am required to continue to utilize the services of the E-Verify program for as long as I continue to do business with the State of Rhode Island. I further understand that my failure to continue to utilize the services of the E-Verify program will adversely affect my ability to continue to do business with the State of Rhode Island and my ability to do business with the State of Rhode Island in the future.

Certification Instructions -- You must cross out item (2) above if you have been notified by IRS that you are subject to backup withholding because of under-reporting interest or dividends on your tax return. However, if after being notified by IRS that you were subject to backup withholding you received another notification from IRS that you are no longer subject to backup withholding, do not cross out item (2).

PLEASE SIGN HERE

SIGNATURE Tracy D. Gregorio TITLE Corp. Sec. DATE 1-21-11 TEL NO. 232-1400

BUSINESS DESIGNATION:

Please Check One: Individual ☐ Medical Services Corporation ☐ Government/Nonprofit Corporation ☐
Partnership ☐ Corporation ☒ Trust/Estate ☐ Legal Services Corporation ☐

NAME: Be sure to enter your full and correct name as listed in the IRS file for you or your business.

ADDRESS, CITY, STATE AND ZIP CODE: Enter your primary business address and remittance address if different from your primary address). If you operate a business at more than one location, adhere to the following:

1) Same T.I.N. with more than one location -- attach a list of location addresses with remittance address for each location and indicate to which location the year-end tax information return should be mailed.
2) Different T.I.N. for each different location -- submit a completed W-9 form for each T.I.N. and location. (One year-end tax information return will be reported for each T.I.N. and remittance address.)

CERTIFICATION -- Sign the certification, enter your title, date, and your telephone number (including area code and extension).
BUSINESS TYPE CHECK-OFF -- Check the appropriate box for the type of business ownership.

Mail to: Supplier Coordinator, One Capitol Hill, Providence, RI 02908

PROPOSAL

Addendum Number 1 listed breakouts for pipe segments 1 thru 5, including approximate quantities. Based on our preliminary design, our limits for each segment (refer to "Preliminary Design Documents") may vary slightly from those of the State. Consequently, approximate quantities will also vary.

We have based our cost proposal on the quantities we have developed from our preliminary design. We have included your percentage assumptions for temporary water mains and asbestos pipe removal. The Contract Pipe will be adjusted by the proposal unit price based on the actual quantities installed and removed. We have listed these quantities in Attachment A.

Based on our Preliminary Design, we feel that the majority of asbestos pipe can be abandoned in place since it is 10 feet or more horizontally apart from the new mains. We have provided an approximate cost savings for same, which would become a **deduct** to our Base Bid Total Price.

Dependent upon Final Design, it also appears that the quantity of temporary by-pass piping may also be able to be significantly reduced. This will be determined by the allowable shut down periods to make main line and service connections, along with other field conditions which need to be explored further.

Request for Quote

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ONE CAPITOL HILL
PROVIDENCE RI 02908

CREATION DATE : 03-DEC-10
BID NUMBER: 7448088
TITLE: CEMENT WATER MAIN REPLACEMENTS AND WATER BOOSTER PUMP STATIONS AT RIC

BID CLOSING DATE AND TIME:29-DEC-2010 11:00:00

BUYER: Moynihan, Jerome D
PHONE #: 401-574-8119

BILL TO
RIC-PURCHASING
600 MOUNT PLEASANT AVENUE
PROVIDENCE, RI 02908
US

SHIP TO
RIC SPECIAL INSTRUCTIONS
SEE BELOW
SEE BELOW, RI N/A
US

Requistion Number: 1201642

Line	Description	Quantity	Unit	Unit Price	Total
	THERE WILL BE A PRE-BID CONFERENCE ON 12/14/10 AT 10:00 AM AT RI COLLEGE, PHYSICAL PLANT (2ND FLOOR), 600 MOUNT PLEASANT AVENUE PROVIDENCE, RI BIDDER IS REQUIRED TO PROVIDE A BID SURETY IN THE FORM OF A BID BOND, OR A CERTIFIED CHECK PAYABLE TO THE STATE OF RHODE ISLAND, IN THE AMOUNT OF A SUM NOT LESS THAN FIVE PERCENT (5%) OF THE BID PRICE. BID SURETY MUST BE ATTACHED TO THE BID FORM. THE SUCCESSFUL BIDDER WILL ALSO BE REQUIRED TO FURNISH PERFORMANCE AND LABOR AND PAYMENT BONDS AT TIME OF TENTATIVE CONTRACT AWARD ***				
1	TOTAL PRICE TO DESIGN / BUILD ASBESTOS CEMENT WATER MAIN REPLACEMENTS AND WATER BOOSTER PUMP STATIONS - ARRA FUNDED - RIC	1.00	Each		$3,969,350.00

Delivery: _____

Terms of Payment: _____

It is the Vendor's responsibility to check and download any and all addenda from the RIVIP. This offer may not be considered unless a signed RIVIP generated Bidder Certification Cover Form is attached and the Unit Price column is completed The signed Certification Cover Form must be attached to the front of the offer

RHODE ISLAND COLLEGE
Asbestos Cement Water Main Replacement
RFP # 7448088
Clarification on Pump Station Requirements
Revised Fee Form
January 19, 2011

Fee Form

Lump Sum Fee - Segment 1	$	580,000.00	Five Hundred Eighty Thousand Dollars and zero cents
Contingency Segment 1 - (10%)	$	58,000.00	Fifty-eight Thousand Dollars and zero cents
Lump Sum Fee - Segment 2	$	630,000.00	Six Hundred Thirty Thousand Dollars and zero cents
Contingency Segment 2- (10%)	$	63,000.00	Sixty-three Thousand Dollars and zero cents
Lump Sum Fee - Segment 3	$	470,000.00	Four Hundred Seventy Thousand Dollars and zero cents
Contingency Segment 3 - (10%)	$	47,000.00	Forty-seven Thousand Dollars and zero cents
Lump Sum Fee - Segment 4	$	560,000.00	Five Hundred Sixty Thousand Dollars and zero cents
Contingency Segment 4 - (10%)	$	56,000.00	Fifty-six Thousand Dollars and zero cents
Lump Sum Fee - Segment 5	$	257,000.00	Two Hundred Fifty-seven Thousand Dollars and zero cents
Contingency Segment 5 - (10%)	$	25,700.00	Twenty-five Thousand Seven Hundred Dollars and zero cents
Lump Sum Fee - Two Pump Stations and Emergency Generator - Base Bid	$	1,111,500.00	One Million One Hundred ElevenThousand Five Hundred Dollars and zero cents
Contingency Pump Stations and Emergency Generator - Base bid (10%)	$	111,150.00	One Hundred Eleven Thousand One Hundred Fifty Dollars and zero cents
Lump Sum Fee - Two Pump Stations and Emergency Generator - Add Alternate 1	$	231,000.00	Two Hundred Thirty-one Thousand Dollars and zero cents
Contingency Pump Stations and Emergency Generator - Add Alternate 1 - (10%)	$	23,100.00	Twenty-three Thousand One Hundred Dollars and zero cents
Rock Removal (ledge)	$375.00 per cubic yard		Three Hundred Seventy-five dollars and zero cents
Rock Removal (boulders)	$50.00 per cubic yard		Fifty Dollars and zero cents

RHODE ISLAND COLLEGE
Asbestos Cement Water Main Replacement
RFP # 7448088
Clarification on Pump Station Requirements
Revised Fee Form
January 19, 2011

Processed Gravel	$36.00 per cubic yard	Thirty-six Dollars and zero cents
Remove and dispose of AC water main - 8-inch diameter	$11.00 per linear foot	Eleven Dollars and zero cents
Remove and dispose of AC water main 10-inch diameter	$11.00 per linear foot	Eleven Dollars and zero cents
Remove and dispose of AC water main - 12-inch diameter	$11.00 per linear foot	Eleven Dollars and zero cents
Temporary water main - 6-inch diameter	$11.50 per linear foot	Eleven Dollars and Fifty Cents
Temporary water main - 8-inch diameter	$15.00 per linear foot	Fifteen Dollars and zero cents
Temporary water main - 10-inch diameter	$22.25 per linear foot	Twenty-two Dollars and twenty-five cents
Temporary water main - 12-inch diameter	$28.00 per linear foot	Twenty-eight Dollars and zero cents
Test Pits	$250.00 each	Two Hundred Fifty Dollars and zero cents

TOTAL AMOUNT	**$ 3,969,350.00**	**Three Million Nine Hundred Sixty-nine Thousand Three Hundred Fifty Dollars and zero cents**

Note: Fees should be provided in numbers (i.e. $100.00) and writing (i.e. one hundred dollars and zero cents).

Listing of Proposed Subcontractors

Company	Type of Work To Be Completed (i.e. role on project)	Approximate % of Total Fee
* SEE SUBCONTRACTOR SECTION *		

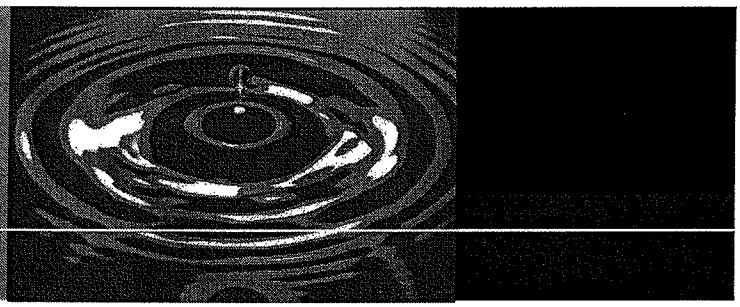
ATTACHMENT A

Temporary Water Piping

Segment 1	2,144 LF
Segment 2	1,815 LF
Segment 3	470 LF
Segment 4	600 LF
Segment 5	110 LF

Remove Existing Asbestos Cement Piping

	Assumed Percentage	DiGregorio Approx. Quantity	Approximate Savings
Segment 1	2,094 LF	90 LF	$ 22,044.00
Segment 2	1,750 LF	125 LF	$ 17,875.00
Segment 3	520 LF	100 LF	$ 4,620.00
Segment 4	570 LF	570 LF	$ -
Segment 5	64 LF	20 LF	$ 484.00
		Approx. Total Savings	**$ 45,023.00**



Proposal Security

Proposal Security

Proposal Security for:

ARRA Cement Water Main Replacement and Water Booster Pump Station at Rhode Island College

DIGREGORIO

23 Business Park Drive
Smithfield, Rhode Island 02917

THE AMERICAN INSTITUTE OF ARCHITECTS

AIA Document A310

Bid Bond

KNOW ALL MEN BY THESE PRESENTS, that we **DiGregorio, Inc., 23 Business Park Drive, Smithfield, RI 02917**

as Principal, hereinafter called the Principal, and **Berkley Regional Insurance Company, 11201 Douglas Avenue, Urbandale, IA 50322**

a corporation duly organized under the laws of the State of **Delaware** as Surety, hereinafter called the Surety, are held and firmly bound unto the

State of Rhode Island
One Capitol Hill
Providence, RI 02903

as Obligee, hereinafter called the Obligee, in the sum of **Five Percent (5%) of the Attached Bid Dollars ($----------)**, for the payment of which sum well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for

Cement Water Main Replacements and
Water Booster Pump Stations at RIC
Providence, RI
Bid 7448088

NOW, THEREFORE, if the Obligee shall accept the bid of the Principal and the Principal shall enter into a Contract with the Obligee in accordance with the terms of such bid, and give such bond or bonds as may be specified in the bidding or Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter such Contract and give such bond or bonds, if the Principal shall pay to the Obligee the difference not to exceed the penalty hereof between the amount specified in said bid and such larger amount for which the Obligee may in good faith contract with another party to perform the Work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect.

Signed and sealed this **20th** day of **January, 2011**.

(Witness)

DiGregorio, Inc.
(Principal) (Seal)

Enrico DiGregorio, President

(Witness)

Berkley Regional Insurance Company
(Surety) (Seal)

Brian M. Rossi, Attorney-in-Fact

No. 7966

POWER OF ATTORNEY
BERKLEY REGIONAL INSURANCE COMPANY
WILMINGTON, DELAWARE

NOTICE: The warning found elsewhere in this Power of Attorney affects the validity thereof. Please review carefully.

KNOW ALL MEN BY THESE PRESENTS, that BERKLEY REGIONAL INSURANCE COMPANY (the "Company"), a corporation duly organized and existing under the laws of the State of Delaware, having its principal office in Urbandale, Iowa, has made, constituted and appointed, and does by these presents make, constitute and appoint: ***Brian M. Rossi, Robert G. Padula, Christopher A. Iannotti, Richard A. Padula, Joseph J. Padula, Christopher A. Plympton, or Judith A. Briggs of Gencorp Insurance Group, Inc. of E. Greenwich, RI*** its true and lawful Attorney-in-Fact, to sign its name as surety only as delineated below and to execute, seal, acknowledge and deliver any and all bonds and undertakings, with the exception of Financial Guaranty Insurance, providing that no single obligation shall exceed **Fifty Million and 00/100 Dollars ($50,000,000.00),** to the same extent as if such bonds had been duly executed and acknowledged by the regularly elected officers of the Company at its principal office in their own proper persons.

This Power of Attorney shall be construed and enforced in accordance with, and governed by, the laws of the State of Delaware, without giving effect to the principles of conflicts of laws thereof. This Power of Attorney is granted pursuant to the following resolutions which were duly and validly adopted at a meeting of the Board of Directors of the Company held on August 21, 2000:

"**RESOLVED**, that the proper officers of the Company are hereby authorized to execute powers of attorney authorizing and qualifying the attorney-in-fact named therein to execute bonds, undertakings, recognizances, or other suretyship obligations on behalf of the Company, and to affix the corporate seal of the Company to powers of attorney executed pursuant hereto; and further

RESOLVED, that such power of attorney limits the acts of those named therein to the bonds, undertakings, recognizances, or other suretyship obligations specifically named therein, and they have no authority to bind the Company except in the manner and to the extent therein stated; and further

RESOLVED, that such power of attorney revokes all previous powers issued on behalf of the attorney-in-fact named; and further

RESOLVED, that the signature of any authorized officer and the seal of the Company may be affixed by facsimile to any power of attorney or certification thereof authorizing the execution and delivery of any bond, undertaking, recognizance, or other suretyship obligation of the Company; and such signature and seal when so used shall have the same force and effect as though manually affixed. The Company may continue to use for the purposes herein stated the facsimile signature of any person or persons who shall have been such officer or officers of the Company, notwithstanding the fact that they may have ceased to be such at the time when such instruments shall be issued."

IN WITNESS WHEREOF, the Company has caused these presents to be signed and attested by its appropriate officers and its corporate seal hereunto affixed this 25 day of January, 2010.

Attest: Berkley Regional Insurance Company

(Seal) By _____ By _____

Ira S. Lederman
Senior Vice President & Secretary

Robert P. Cole
Senior Vice President

WARNING: THIS POWER INVALID IF NOT PRINTED ON BLUE "BERKLEY" SECURITY PAPER.

STATE OF CONNECTICUT)
) ss:
COUNTY OF FAIRFIELD)

Sworn to before me, a Notary Public in the State of Connecticut, this 25 day of January, 2010, by Robert P. Cole and Ira S. Lederman who are sworn to me to be the Senior Vice President, and the Senior Vice President and Secretary, respectively, of Berkley Regional Insurance Company.

EILEEN KILLEEN
NOTARY PUBLIC
MY COMMISSION EXPIRES JUNE 30, 2012

Notary Public, State of Connecticut

CERTIFICATE

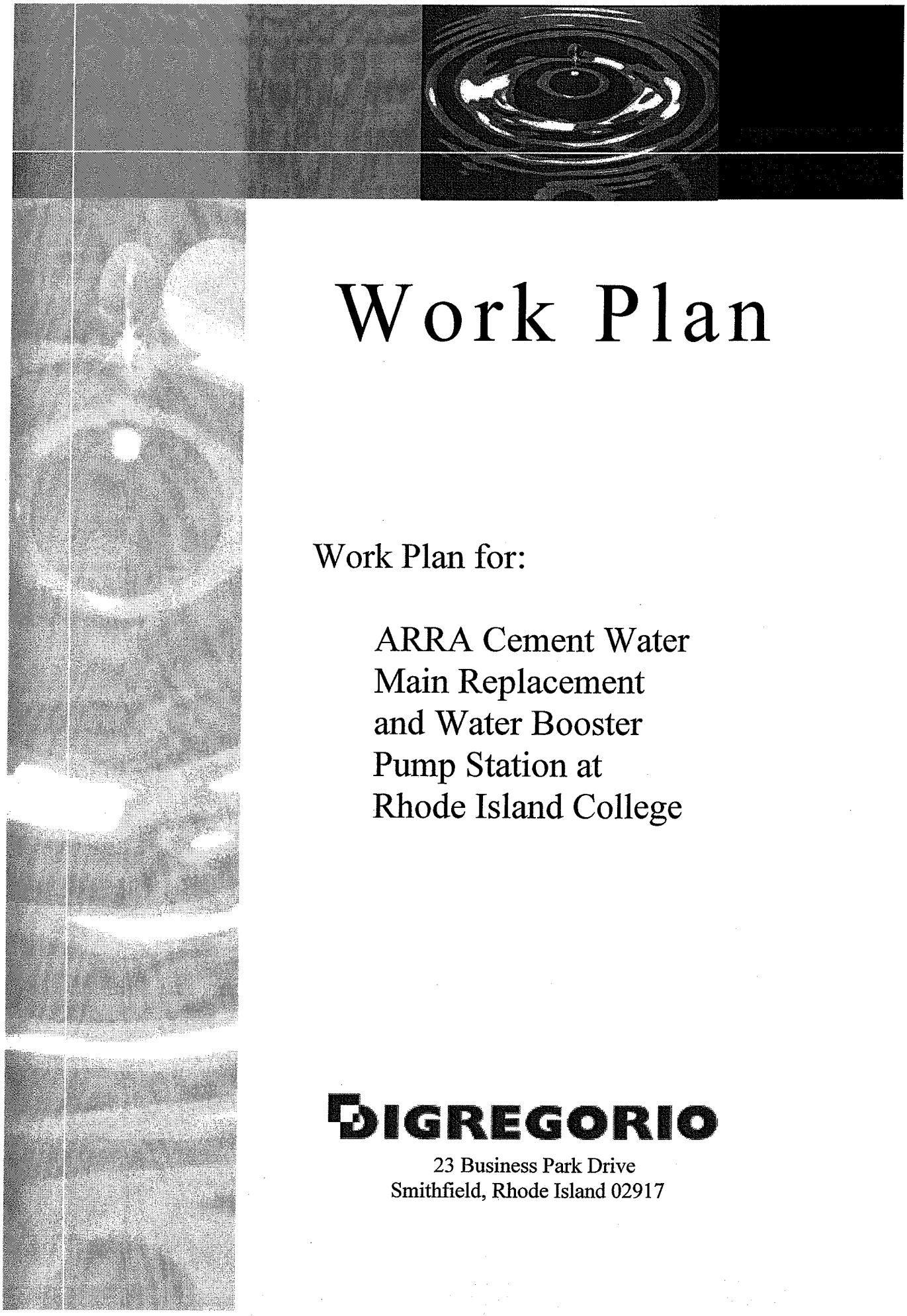
I, the undersigned, Assistant Secretary of BERKLEY REGIONAL INSURANCE COMPANY, DO HEREBY CERTIFY that the foregoing is a true, correct and complete copy of the original Power of Attorney; that said Power of Attorney has not been revoked or rescinded and that the authority of the Attorney-in-Fact set forth therein, who executed the bond or undertaking to which this Power of Attorney is attached, is in full force and effect as of this date.

Given under my hand and seal of the Company, this 20th day of January, 2011.

(Seal)

Steven Coward

WARNING – Any unauthorized reproduction or alteration of this document is prohibited. This power of attorney is void unless seals are readable and the certification seal at the bottom is embossed. The background imprint, warning and confirmation (on reverse) must be in blue ink.



Work Plan

Work Plan for:

ARRA Cement Water
Main Replacement
and Water Booster
Pump Station at
Rhode Island College

DIGREGORIO
23 Business Park Drive
Smithfield, Rhode Island 02917

Work Plan

DiGregorio, Inc. acknowledges the project completion date of September 30, 2011 at which time the ARRA funding for this specific project expires. To meet this date, the construction schedule is aggressive and ambitious, yet can be attained with the State's and Rhode Island College's assistance.

We are anticipating construction to actually start in the field on or about April 15, 2011. One obstacle to overcome is the long lead time for fabrication and delivery of the ESI Water Booster Pump Stations. In order to meet the project completion date, pre and post construction activities need to progress in a timely and sequenced manner.

Firstly, we anticipate that Contract Award will be made within six (6) weeks of the Bid Opening Date. This will allow sufficient time to develop design drawings and documents for an April, 2011 construction start.

Secondly, design and approval of the water booster pump stations is a top priority. Upon Contract Award, we will immediately issue a Purchase Order to ESI authorizing them to proceed with the work. It will take ESI approximately four (4) weeks to prepare and submit shop drawings. We anticipate that the State can turn these shop drawings around within two (2) weeks. Following approval of shop drawings, it will take ESI 14 to 16 weeks to fabricate the water booster pump stations. That results in a delivery date of Mid August, 2011. It may be prudent to consider the pump stations as a separate design entity, approving their design prior to approving the design of the overall project.

Thirdly, we would anticipate a two (2) week turn around on all shop drawings. As all material is Providence Water Supply Board Standard Specifications, this should be easy to accomplish.

Once final design is completed, the extent of temporary water by-pass piping can be determined. Water service throughout the campus must be maintained at all times. Preliminary design would indicate that there is a minimal amount of temporary by-pass piping required since the new piping is located in a separate trench from the existing water main. Our proposal contains the assumed lengths and temporary by-pass piping as stated in the specifications. The Contract Price will be adjusted based on actual quantities of temporary by-pass piping installed.

It is our plan to construct two segments of the proposed water system simultaneously. We will utilize two (2) main line pipe crews consisting of a Superintendent, foreperson, two (2) laborers, CAT 322 rubber tire backhoe, CAT 950 Loader, plate compactor, trench boxes, and ten wheel dump trucks. We will also employ a service crew to install fire and domestic services, hydrants, and provide for general daily clean-up. It is likely that a third main line pipe crew will be required in June, following the Spring Semester and graduation, for a short period of time to start construction within Segment 3. We will make every effort to limit our work to specific areas so as not to disrupt too much of the campus area at one time and cause chaos.

Preceding the pipeline installation, we will excavate test pits in advance to accurately locate existing utilities and their depths to assure that no conflicts occur with the proposed water mains.

We have assumed that an 8-inch fire service and 4-inch domestic service exists to each building. These must be maintained in service at all times, except for short periods of shut downs for new tie-in connections.

Weekly, preferably on Fridays, we will place a 2-inch temporary asphalt patch on all excavated trenches. Following a 30 day settlement period, a 4-inch permanent asphalt patch will be installed. All trenches will be neatly saw cut and squared off.

In College Road, a 4-inch temporary/permanent asphalt patch will be installed weekly. Following the 30 day settlement period, College Road will be cold planed full width and overlayed with 2-inches of asphalt. This method will insure that existing grades and curb reveal are maintained.

Based on our preliminary design, it appears that the majority of existing AC water mains can be abandoned in place. This will be confirmed during final design. If true, this would result in a significant savings to the State. Our proposal includes the assumed lengths of remove and dispose AC water piping as stated in the specification. The Contract Price will be adjusted based on actual quantities of AC pipe removed and disposed of.

We will furnish and install two (2) water booster pump stations, one (1) at Mt. Pleasant Avenue and one (1) at Oakton Street. The pump station will be manufactured by Engineered Fluid, Inc. and will be shipped as prefabricated units. The pump station at Mt. Pleasant Avenue will include an above ground emergency generator. Electrical connections are included; however, National Grid Power Company charges, if any, are excluded. As the Owner applies for the Application, these are to be paid for by the State to National Grid directly. Per specifications, we have provided for a SCADA system from each pump station back to the Physical Plant.

All landscaped areas and concrete walkways disturbed during construction shall be replaced in-kind. We have also included a quantity of twenty (20) arborvitae to be planted around the Mt. Pleasant Avenue Pump Station.

Erosion controls (baled hay, silt fence, etc.) will be installed, maintained and removed at all low gradient areas. Silt sacks will be installed at all catch basins within the disturbed construction areas. Any dewatering will be discharged through sediment traps.

In addition to our company QA/QC program, we will employ an independent soils engineering firm to perform sieve analysis, moisture density tests, and nuclear density tests of backfilled material at 200 foot intervals.

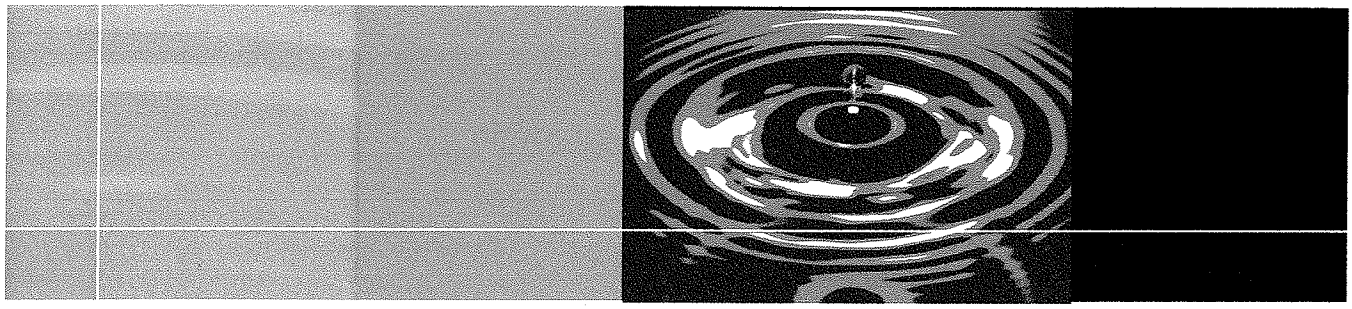
If ledge is encountered, it will be removed by mechanical means at the unit prices listed in addition to our Base Bid Proposal. No blasting will be performed.

Per the Rhode Island Standard Specifications for Road and Bridge Construction, Latest Revision, an asphalt escalator shall apply to this project due to the volatility in crude oil. The Base Price for liquid asphalt shall be $470.00 per ton, the current market price of liquid asphalt.

Work Plan

Safety of the students, faculty, and visitors is of top priority and of the utmost importance. We will provide temporary construction and directional signs, barricades, and temporary construction fencing as necessary. Trenches will be backfilled or plated daily. No open trenches will be allowed. When required, flag persons will be employed to direct traffic. Calcium chloride will be used to suppress dust. All roads will be swept and kept clean. We have previously worked on college campuses, and understand their intricacies.

This is a brief description of our proposed work plan, and we reserve the right to alter this plan, with the approval of the Owner, based on actual site conditions.



Design Approach

Design Approach for:

ARRA Cement Water
Main Replacement
and Water Booster
Pump Station at
Rhode Island College

DIGREGORIO
23 Business Park Drive
Smithfield, Rhode Island 02917

DESIGN APPROACH / SCOPE OF SERVICES / SCHEDULE

DESIGN APPROACH

Pare Corporation (PARE) has carefully reviewed the project's Request for Proposal (RFP) and subsequent addenda and we believe our design approach is consistent with the needs of Rhode Island College (RIC). Our design approach includes the investigation, engineering, and design necessary to prepare drawings and specifications for size-on-size water main replacement and two (2) new water booster pump stations. Each station will be provided with low flow and high flow pumps adequate to provide domestic demand and fire flow. In addition, each station will be sized to increase system pressure approximately 20 to25 psi. Specific tasks to be undertaken by PARE are described in the Scope of Services, provided below.

While we believe that our design approach is generally consistent with the needs and desires of RIC, we have made some minor modifications to the scope outlined in the RFP and addenda. We feel these modifications may enhance system operability and/or reduce the overall project costs. These modifications are shown on the Preliminary Design drawings included in this proposal package. They include:

- Water Main Relocation – At two locations, PARE proposes that the new water main be relocated away from the existing water main to avoid significant utility congestion. These two locations include the corridor between the Art Center and Craig Lee Hall (Water Main Segment 4) and the north side of Craig Lee Hall (Water Main Segment 5). Both locations have significant utilities present, including gas, steam, cable, electric, etc. These two locations will be reviewed and confirmed with RIC personnel during the design phase prior to final design and implementation. PARE's preliminary design drawings show revised water main locations that will provide similar system hydraulics without compromising the service to any building.

- Gate Valves – The project RFP provides the number of gate valves to be included with each Water Main Segment. PARE's preliminary design plans show more gate valves than proposed in the RFP. From our experience at RIC during the hydrant flow testing in December of 2009, it is our opinion that the existing number of gate valves within the system is less than adequate and that the added gate valves shown on the preliminary design drawings will provide enhanced system operability.

- Pumps in Each Station – Addendum No.9 suggest that the Base Bid include a minimum of two low flow pumps and two high flow pumps. PARE suggests including a third high flow pump at the Mt. Pleasant pump station. This will allow each high service pump to be smaller than 1,500 gpm (as suggested in the RFP) – with two high flow pumps meeting the fire flow and maximum day demand and an extra pump for complete redundancy. This approach can be discussed with RIC at the outset of the project.

SCOPE OF SERVICES

PARE's scope of services for this project is provided in two phases, 1) Design Phase, and 2) Construction Phase.

Design Phase

The services provided by PARE during the Design Phase of this project include the following:

1. Kickoff Meeting – PARE, in conjunction with the Contractor, shall conduct a kickoff meeting to outline and detail the design and construction phases. The overall project schedule will be outlined and time sensitive materials and submittals will be reviewed. Required meetings (i.e. RIC, State Fire Marshall, FM Global, etc.) will be coordinated with appropriate personnel and potential meeting dates will be set.

   It will be critical at the kickoff meeting to determine if the RIC will proceed with the Base Bid (i.e., two high flow pumps) or the Bid Alternate (i.e., a UL/FM approved fire pump system), as described in Addendum No. 9. It is our opinion that the Base Bid will meet the fire protection requirements at RIC while providing a less expensive and less complex pump station package. PARE suggests that the State Fire Marshall and a representative from EFI be present at the kickoff meeting to discuss the pump station design and obtain concurrence from the Fire Marshall for the Base Bid design.

2. Field Investigation – PARE will conduct a limited field investigation to identify building service sizes. Our investigation will be limited to visiting each building and identifying the size service in the buildings' basement or mechanical room. PARE will document the service size and use (i.e., domestic or fire protection) and the approximate location within the building to verify what is shown on the plans. In buildings with fire pumps, PARE will document the pump size, make, model, and serial number (if available) for use during our hydraulic design and modeling. It is assumed that RIC staff would be available to accompany PARE during our visit to each building.

   PARE's design basis is predicated on the assumption that the proposed booster pump stations will increase system pressure by 20-25 psi. This proposal does not include any field investigation or study relative to system pressure throughout the campus or the adequacy of the proposed pressure increase. In the event that RIC desires a campus-wide pressure study, PARE could conduct such as study as *Additional Services*, as described below.

   PARE is not including a comprehensive subsurface investigation as part of the design phase. However, should the Contractor chose to conduct test pits or other investigative measures prior to construction, PARE will make an engineer available to observe and document subsurface conditions. It is assumed that the Contractor will conduct at least one test pit at each proposed pump station location to investigate the presence of ledge and/or shallow groundwater. In addition, information will be collected relative to soil

types and the presence of unsuitable material (e.g., peat), from which PARE will generate a conservative estimate of soil bearing capacity for use in the pump stations' foundation design. PARE's scope of services does not include the investigation, reporting, or remediation of any subsurface contamination, in the event that such a condition is encountered. If subsurface contamination is encountered and PARE is requested to investigate, remediate, or report to the Rhode Island Department of Environmental Management (RI DEM), those services would be considered *Additional Services*, as described below.

3. Hydraulic Analysis and Modeling – PARE has extensive knowledge of the RIC water distribution system and has developed a hydraulic model as part of the *Infrastructure Study Project*, Draft submitted November 2010 with the Final submission still under development. PARE will utilize the hydraulic model we constructed as part of that project to size the proposed pumps in the booster pump station(s) and to evaluate by-pass piping.

   The model will be utilized to evaluate the proposed domestic booster pumps under Average Day, Maximum Day, and Peak Hour demand scenarios. In addition, the model will be utilized to size the proposed fire pumps, with specific consideration given to the new dormitory building and the Recreation Center, as described PARE's April 19, 2010 *Draft Utility Conditions Evaluation.* During this part of the project, PARE will coordinate with the Providence Fire Department to verify some of the assumptions made in the *Draft Utility Conditions Evaluation* relative to the number of hydrants and flow rate from each hydrant required by the Fire Department during a fire event. PARE will also review water supply demands for up to two future buildings, as detailed within the *RIC 2010-2020 Master Plan Final Report,* dated November 2010. This review will be based on estimated demand information provided by RIC.

   The project RFP requests size-on-size temporary piping. PARE will utilize the hydraulic model to identify if smaller size by-pass piping would provide adequate flow and pressure during construction. Special consideration will be given to those buildings that have fire pumps so that adequate flow at suitable pressure is provided to those pumps during the construction phase.

4. Water Main Design Development – PARE has developed preliminary design plans as part of this proposal package. These plans will be further developed along with technical specifications for review and approval by RIC staff. PARE's preliminary design is predicated on the assumption that all five water main segments, as outlined in the RFP, would be completed under this contract. PARE will provide 24"x36" drawing sheets at a scale of 1" = 40' that show the proposed water main layout, new hydrants and valves, and new connections to existing buildings. The drawings will also include information collected during the field investigation phase relative to subsurface conditions identified by the Contractor during their subsurface investigation program, should they choose to complete one. The drawings will also include details on site restoration and by-pass piping.

The project RFP states that all water main and appurtenances are to be installed in accordance with Providence Water Supply Board (PWSB) standards. As such, it is anticipated that the specifications will be limited to work items not covered under PWSB standards, such as site restoration and paving.

It is anticipated that one set of draft submission plans and specifications will be made to RIC. Following review and comment of the draft submission, PARE will incorporate any comments or make any needed edits and submit one final set of construction plans and specifications to the Contractor and RIC.

5. Booster Pump Station Design Development – PARE will develop plans and technical specifications for two (2) booster pump stations, one at the Mount Pleasant Street meter connection and one at the Oakton meter connection.

   The booster pump station plans will be submitted to the State Fire Marshall for review and approval. PARE will work with RIC to set a meeting with the State Fire Marshall prior to or at the time of the submittal to review the proposed designs and to stress the importance of the review schedule. It is PARE's understanding that RIC will directly interface with the State Fire Marshall to coordinate meetings, reviews, and review schedules. We anticipate a three-week review period. Upon their review, PARE will revise the drawings and resubmit for final approval.

   The booster pump station plans will be submitted to RIC's insurance carrier, FM Global, for review and approval. PARE will work with RIC to set a meeting with FM Global prior to or at the time of the submittal to review the proposed designs and stress the importance of the review schedule. It is PARE's understanding that RIC will directly interface with FM Global to coordinate meetings, reviews, and review schedules. We anticipate a two-week review period. Upon their review, PARE will revise the drawings and resubmit for final approval. Given the tight timeframe in which we have to complete the design phase of this project, PARE anticipates that the State Fire Marshall's and FM Global's review will occur concurrently. We will make their respective modifications to the plans and specifications and resubmit to both entities. We will make each entity aware of the others comments and subsequent modifications.

   PARE will design and develop foundation plans and specifications for each pump station. PARE will work directly with Engineered Fluid Incorporated (EFI) to understand the station loads and foundation requirements of each station. PARE will utilize the test pit information collected during the data collection phase to estimate the allowable bearing pressure of the existing soil.

6. Coordination with Electrical Engineer – PARE will coordinate with our sub-consultant, Van Zelm Heywood & Shadford, Inc., the project electrical engineer. It is anticipated that the project electrical engineer will size the proposed generator and automatic transfer switch at the Mount Pleasant Street pump station, and evaluate and design a new electrical service at both pump stations. PARE will incorporate their design plans

and specifications sheets in our drawing and specification package, although it is anticipated that they will provide their engineering stamp on the applicable plan sheet and specification sections.

7. Coordination with SCADA Engineer – PARE will coordinate with the Contractor's SCADA engineer and RIC to understand what process control logic and remote read capabilities RIC desires for each station. It is assumed that the Contractor will hire and pay for directly the services of the SCADA engineer. It is anticipated that the project SCADA engineer will provide process logic control equipment for each station as well as equipment at a remote read site to be determined by RIC. PARE will incorporate their design plans and specification sheets in our drawing and specification package.

8. Permitting – Per the RFP, that Rhode Island Department of Health (RIDOH) review and approval of the project is not required, and therefore PARE has not included any RI DOH coordination in our scope of services. PARE anticipates that the proposed work will not impact any RI DEM jurisdictional freshwater wetlands and that RI DEM review and approval is not required. Furthermore, it is PARE's understanding that the Rhode Island State Building Code Commission review and approval will not be required.

9. Site Restoration – It is assumed that all site restoration will be based on in-kind replacement of surface features in disturbed areas. PARE will assist the Contractor with site restoration by providing sketches or details of restored surface conditions that match existing surface conditions, such as pavement patches, sidewalk repair, etc. This proposal does not include provisions for design of new or improved surface features in areas where the existing surface condition is deemed to be inadequate for its current use or possibly in violation of an applicable code or standard (e.g. Americans with Disabilities Act, etc.). This proposal does not contain provisions for the design of other utilities (gas, electric, steam, etc.) relative to utility conflicts and/or relocations, which shall be handled by others (i.e. National Grid, RIC, etc.). To the degree possible, PARE will address utility conflicts by relocating or revising the water main design.

10. Design Review Meetings – PARE will attend bi-weekly design meetings with RIC staff (up to 5 meetings). As part of each meeting, PARE will prepare and distribute a meeting agenda and meeting minutes.

Construction Phase

1. Shop Drawing Coordination – PARE will provide review, comment, and/or clarification of shop drawings prior to submission for approval by RIC. PARE will coordinate with EFI regarding the pump station submittals in order that they meet the proposed design requirements and needs of RIC. PARE will provide coordination on the submission of electrical and SCADA shop drawings; however, review, comments, and/or clarifications shall be handled directly by the electrical and the Contractor's SCADA engineers.

2. Construction Phase Engineering Services (Water Mains) – PARE will provide construction phase engineering services for the installation of new water mains. PARE is providing up to 10 days of field review services along with associated project management. The intent of the field review services is to provide field consultation and clarification on design changes, field changes, utility conflicts, restoration issues, and design clarifications.

3. Construction Phase Engineering Services (Pump Stations) – PARE will provide construction phase engineering services for the installation of the pump stations. PARE is providing up to 4 days of field review services with associated project management. The intent of the field review services is to provide field consultation and clarification on design changes, field changes, utility conflicts, restoration issues, design clarifications, and coordination with the electrical and SCADA engineer's designs.

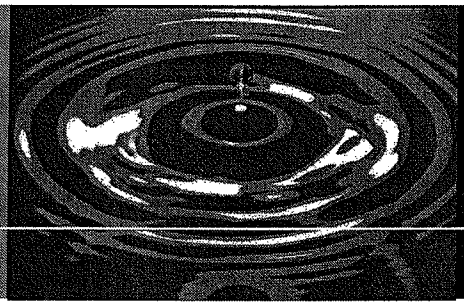
4. Construction Phase Meetings – PARE will attend up to 15 meetings during the construction phase at the direction of the Contractor. It is assumed that PARE will not be present, nor needed, at every construction meeting, and therefore PARE assumes that the Contractor will prepare and develop and distribute meeting agenda and minutes.

5. Pump Stations Start Up – PARE is providing up to 2 days of coordination and field review services for the start up of each pump station. Coordination shall be made with EFI and the electrical and SCADA engineers regarding the start-up, testing, and certification of the pump stations. PARE will prepare a station Operation and Maintenance (O&M) Manual for each station, based on the O&M information provided by EFI, the SCADA engineer, and the project electrician.

6. Project Close-out/Punch List – PARE will coordinate with both the Contractor and RIC regarding remaining construction and close-out issues. PARE will develop a final punch list in concert with the Contractor with direct input from RIC. PARE will issue the final punch list to RIC and coordinate with the Contractor on resolution of final punch list items.

ADDITIONAL SERVICES

Other services required by RIC or the Contractor that are not part of the Scope of Services, as described above, shall be considered Additional Services. Additional Services shall be furnished by PARE, or obtained from others by PARE if requested in writing by the Contractor. Prior to performing any additional services, PARE shall prepare a scope and estimated fee to complete those services and submit it to the Contractor. It is assumed that the Contractor will obtain written approval from RIC prior to the performance of any additional services. The Contractor shall pay PARE for Additional Services in accordance with rates and charges agreed to in writing prior to authorization by RIC.



Prel. Const. Schedule

Prel. Const. Schedule for:

ARRA Cement Water Main Replacement and Water Booster Pump Station at Rhode Island College

DIGREGORIO
23 Business Park Drive
Smithfield, Rhode Island 02917

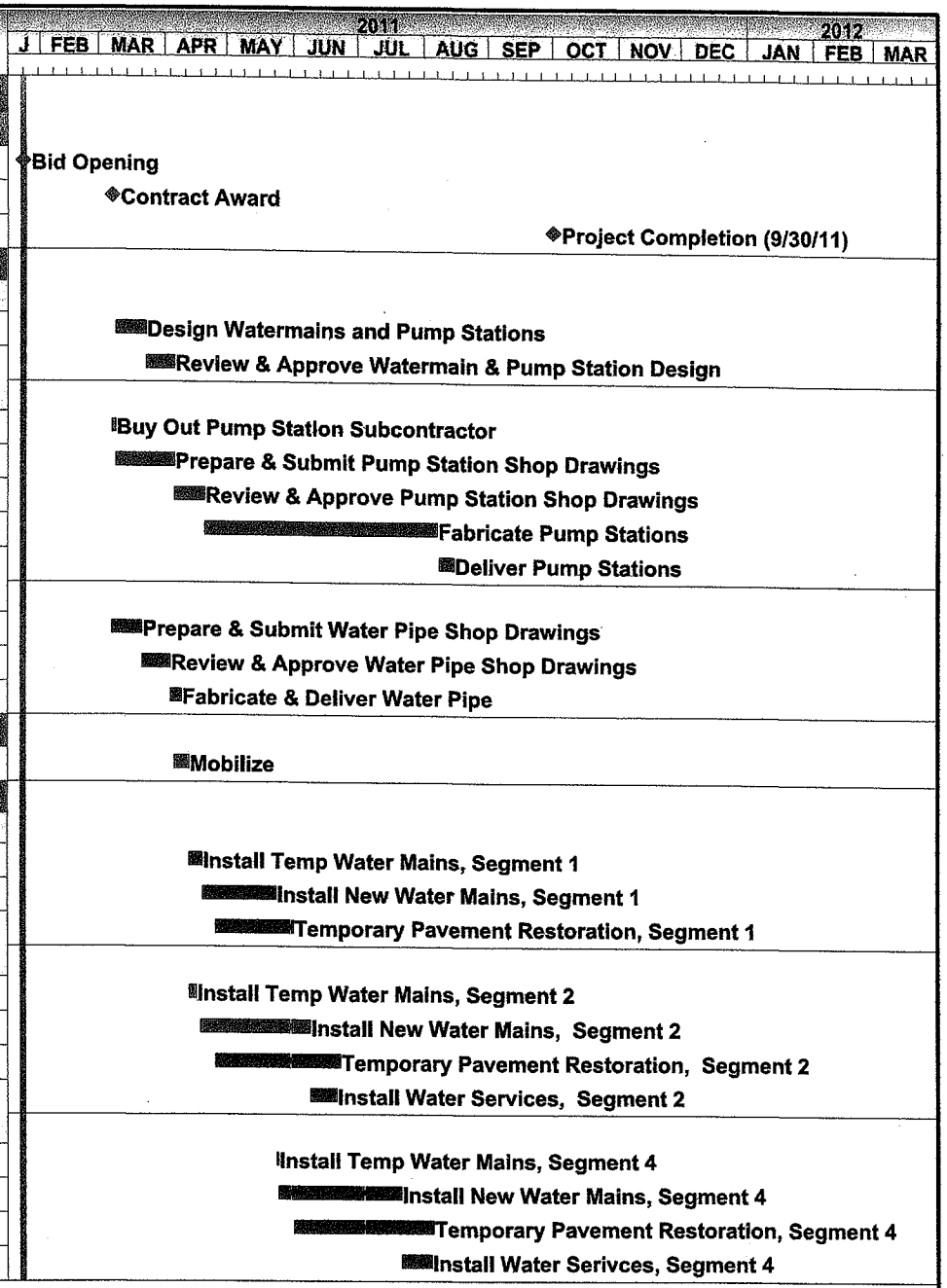
Preliminary Construction Schedule

Attached is our Preliminary Construction Schedule.

This schedule is based on the award of the Contract within six (6) weeks of the Bid Opening Date. This is critical for the delivery of the Water Booster Pump Stations.

If awarded the project, we will develop a more detailed construction schedule. This schedule will be updated on a bi-weekly basis to reflect the actual construction progress. This information will be used to manage the project and determine manpower needs to insure completion by **September 30, 2011**.

Activity ID	Activity Description	Cal ID	Orig Dur	Early Start	Early Finish
C	RI College Water Main Replacement				
C.10	Milestones				
100	Bid Opening	2	0	24JAN11	
105	Contract Award	2	0	07MAR11	
110	Project Completion (9/30/11)	2	0		30SEP11
C.30	Submittals				
C.30.05	Watermains and Pump Stations				
200	Design Watermains and Pump Stations	2	14	09MAR11	22MAR11
205	Review & Approve Watermain & Pump Station Design	2	14	23MAR11	05APR11
C.30.10	Pump Station Submittal				
215	Buy Out Pump Station Subcontractor	2	2	07MAR11	08MAR11
225	Prepare & Submit Pump Station Shop Drawings	2	28	09MAR11	05APR11
230	Review & Approve Pump Station Shop Drawings	2	14	06APR11	19APR11
235	Fabricate Pump Stations	2	110	20APR11	07AUG11
240	Deliver Pump Stations	5	5	09AUG11	15AUG11
C.30.15	Water Pipe Submittal				
220	Prepare & Submit Water Pipe Shop Drawings	2	14	07MAR11	20MAR11
245	Review & Approve Water Pipe Shop Drawings	2	14	21MAR11	03APR11
250	Fabricate & Deliver Water Pipe	5	5	04APR11	08APR11
C.50	Construction Start Up				
275	Mobilize	5	5	06APR11	12APR11
C.60	Construction				
C.60.10	Segment 1				
300	Install Temp Water Mains, Segment 1	5	4	13APR11	18APR11
305	Install New Water Mains, Segment 1	5	25	19APR11	23MAY11
310	Temporary Pavement Restoration, Segment 1	5	26	25APR11	31MAY11
C.60.20	Segment 2				
315	Install Temp Water Mains, Segment 2	5	3	13APR11	15APR11
320	Install New Water Mains, Segment 2	5	37	18APR11	08JUN11
330	Temporary Pavement Restoration, Segment 2	5	42	25APR11	22JUN11
325	Install Water Services, Segment 2	5	8	09JUN11	20JUN11
C.60.25	Segment 4				
335	Install Temp Water Mains, Segment 4	5	1	24MAY11	24MAY11
340	Install New Water Mains, Segment 4	5	40	25MAY11	21JUL11
350	Temporary Pavement Restoration, Segment 4	5	47	01JUN11	05AUG11
345	Install Water Serivces, Segment 4	5	10	22JUL11	04AUG11



rt Date	08JUL09
sh Date	30SEP11
a Date	24JAN11
ı Date	20JAN11 10:31

© Primavera Systems, Inc.

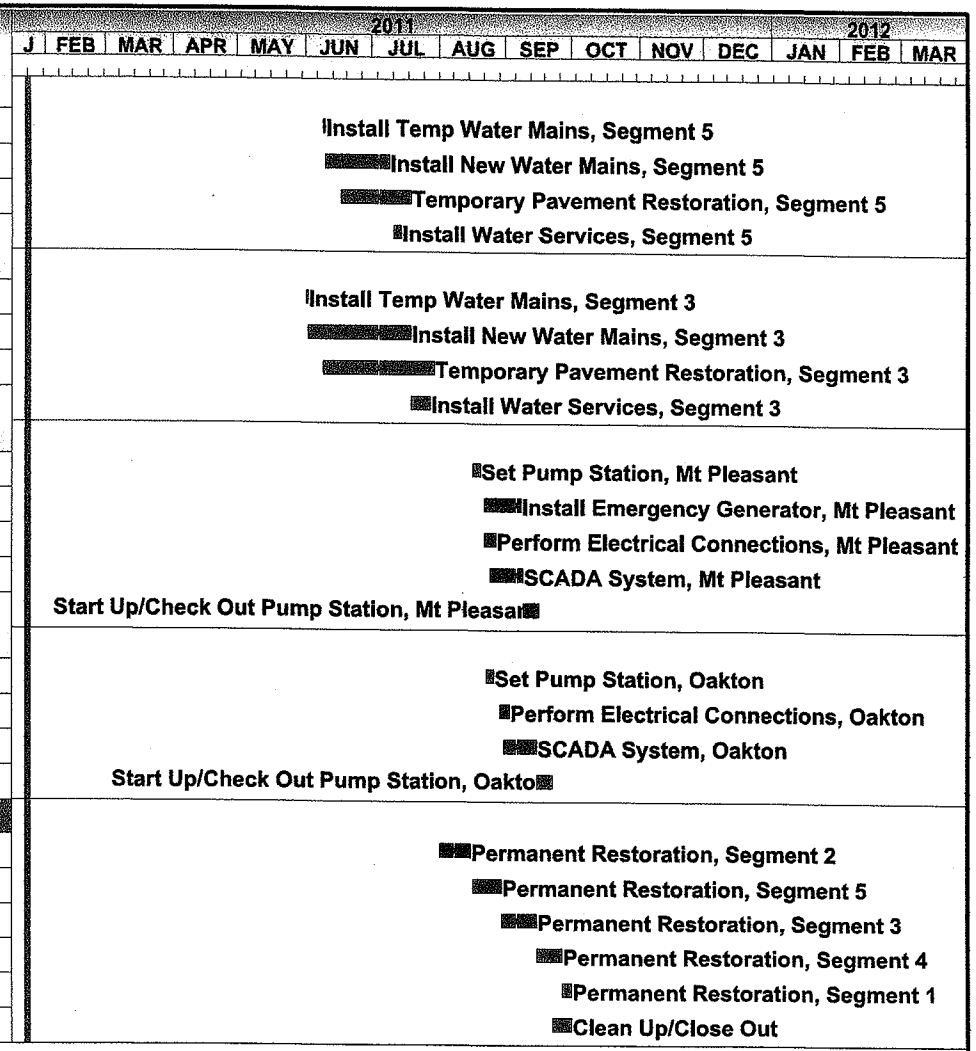
Early Bar
Progress Bar
Critical Activity

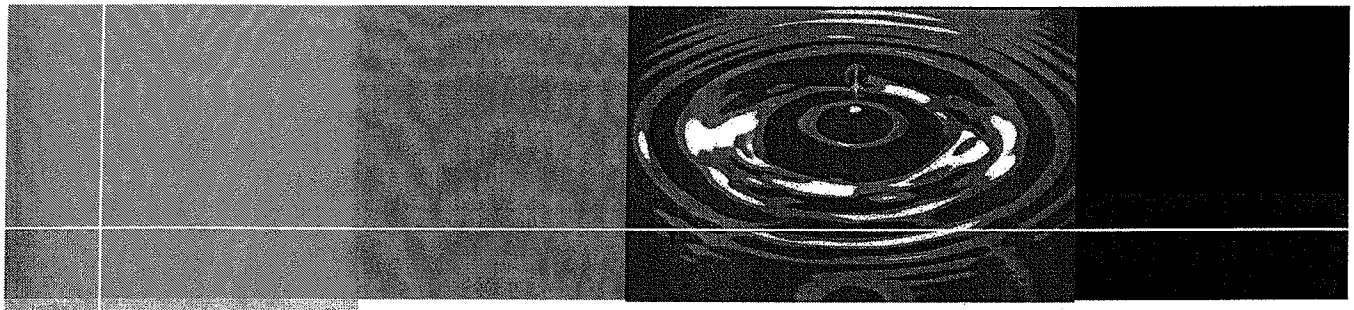
BL00

DiGregorio Corporation
Rhode Island College
ARRA Cement Water Main Replacement
Water Booster Pump Stations
PRELIMINARY SCHEDULE

Date	Revision	Checke	pprove

Activity ID	Activity Description	Cal ID	Orig Dur	Early Start	Early Finish
C.60.30	Segment 5				
355	Install Temp Water Mains, Segment 5	5	1	09JUN11	09JUN11
360	Install New Water Mains, Segment 5	5	20	10JUN11	08JUL11
370	Temporary Pavement Restoration, Segment 5	5	21	17JUN11	18JUL11
365	Install Water Services, Segment 5	5	4	11JUL11	14JUL11
C.60.35	Segment 3				
375	Install Temp Water Mains, Segment 3	5	1	01JUN11*	01JUN11
380	Install New Water Mains, Segment 3	5	32	02JUN11	18JUL11
390	Temporary Pavement Restoration, Segment 3	5	36	09JUN11	29JUL11
385	Install Water Services, Segment 3	5	7	19JUL11	27JUL11
C.60.40	Mount Pleaseant Ave Pump Station				
395	Set Pump Station, Mt Pleasant	5	3	17AUG11	19AUG11
400	Install Emergency Generator, Mt Pleasant	5	12	22AUG11	07SEP11
405	Perform Electrical Connections, Mt Pleasant	5	5	22AUG11	26AUG11
410	SCADA System, Mt Pleasant	5	10	25AUG11	08SEP11
415	Start Up/Check Out Pump Station, Mt Pleasant	5	5	09SEP11	15SEP11
C.60.45	Oakton Street Pump Station				
420	Set Pump Station, Oakton	5	3	23AUG11	25AUG11
425	Perform Electrical Connections, Oakton	5	5	29AUG11	02SEP11
430	SCADA System, Oakton	5	10	31AUG11	14SEP11
435	Start Up/Check Out Pump Station, Oakton	5	5	15SEP11	21SEP11
C.70	Closeout/Finishes				
445	Permanent Restoration, Segment 2	5	10	01AUG11	15AUG11
460	Permanent Restoration, Segment 5	5	9	17AUG11	29AUG11
450	Permanent Restoration, Segment 3	5	11	30AUG11	14SEP11
455	Permanent Restoration, Segment 4	5	8	15SEP11	26SEP11
440	Permanent Restoration, Segment 1	5	4	27SEP11	30SEP11
465	Clean Up/Close Out	5	7	22SEP11	30SEP11





Proposed Subcontractors

Proposed Subcontractors for:

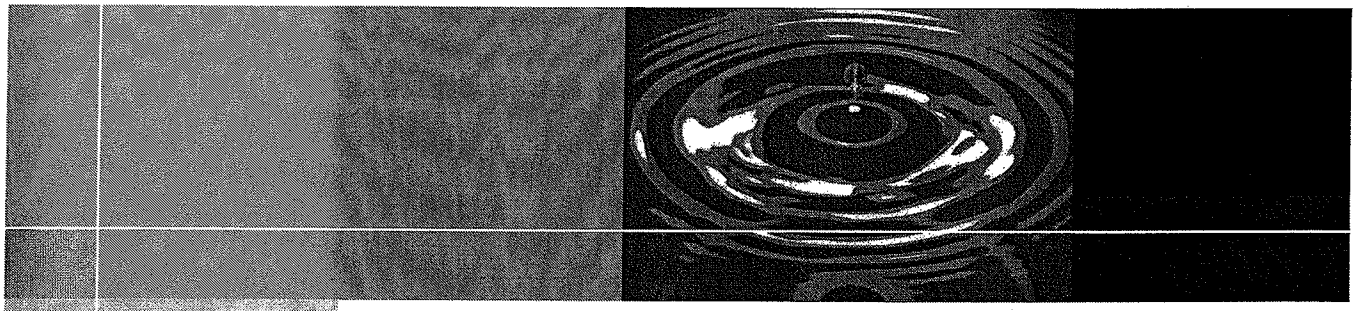
ARRA Cement Water Main Replacement and Water Booster Pump Station at Rhode Island College

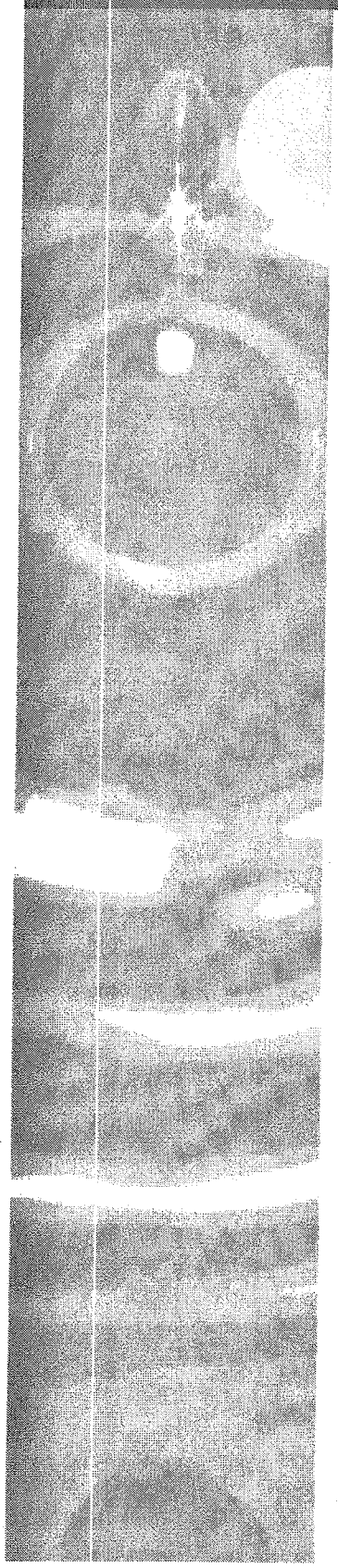
DIGREGORIO
23 Business Park Drive
Smithfield, Rhode Island 02917

Proposed Subcontractors

PROPOSED SUBCONTRACTORS

Name	Description	Percent of Contract
Suburban Sales & Service P.O. Box 458 North Scituate, RI 02857	Saw cut pavement	1%
Garrity Asphalt Reclaiming 22 Pepors Road Bloomfield, CT 06002	Cold Planing	0.1%
M.O.N. Landscaping P.O. Box 70220 North Dartmouth, MA 02747	Landscaping	0.5%
Rossi Electric Company 65 Western Industrial Drive Cranston, RI 02921	Electrical	2%
T. Miozzi, Inc. 75 Airport Road Coventry, RI 02816	Paving	2%
R.E. Erickson Co. 595 Providence Highway Walpole, MA 02081	SCADA System	2%





Designer's Qualifications/ Experience

Designer's Qualifications/Experience for:

ARRA Cement Water Main Replacement and Water Booster Pump Station at Rhode Island College

DIGREGORIO

23 Business Park Drive
Smithfield, Rhode Island 02917

ENGINEERS
SCIENTISTS
PLANNERS

www.parecorp.com

PARE CORPORATION

January 20, 2011

Mr. Nicholas J. Piampiano, P.E.
DiGregorio Corporation
23 Business Park Drive
Smithfield, RI 02917

Re: **Request for Proposals**
ARRA Cement Water Main Replacements and Water Booster Pump Station
Rhode Island College
(PARE Proposal No. EP360.10)

Dear Mr. Piampiano:

Pare Corporation (PARE) is pleased to submit this qualification and fee package to provide Professional Engineering Services associated with the Water Main Replacement and Booster Pump Station project at Rhode Island College (RIC). **Without question, PARE is one of the most experienced engineering firms in Rhode Island in the area of water system engineering.** We have 40 years of experience providing innovative and cost-effective engineering services to water suppliers throughout New England.

Some of our recent projects at RIC include an Infrastructure Study, Campus Master Planning (sub to Saratoga Associates), rehabilitation of the Recreation Center (sub to Design Partnership), and the recently-awarded Art Center rehabilitation (sub to Design Partnership). PARE's recent project experience at RIC gives us an unparalleled understanding of RIC's water distribution system and their goals for this project. It should be noted that many of the requirements outlined in RIC's project RFP are predicated on the findings of PARE's initial Infrastructure Study. PARE will be able to build on our existing knowledge of the campus, in addition to our extensive experience in water distribution system engineering, pump station design, hydraulic modeling, and the requirements of the American Recovery and Re-investment Act (ARRA), to help to make this project a success.

Enclosed for inclusion in your bid package are the following documents:

1. PARE's Company Profile;
2. Resume's for Professional Staff that will be assigned to this Project;
3. Sample project sheets that demonstrate some of our experience on similar projects; and
4. PARE's Design Approach, Scope of Services, and Schedule.

If you have any questions or comments regarding the enclosed information, please do not hesitate to contact me at your earliest convenience.

Very truly yours,

George G. Palmisciano, P.E.
Senior Vice President

GGP/pt

Attachments

8 BLACKSTONE VALLEY PLACE, LINCOLN, RI 02865 T401-334-4100 F401-334-4108
10 LINCOLN ROAD, SUITE 103, FOXBORO, MA 02035 T508-543-1755 F508-543-1881

PARE CORPORATION ▪ COMPANY PROFILE

Celebrating 40 years of service in New England

BACKGROUND

Established in 1970, Pare Corporation (PARE) is a multi-disciplinary firm comprised of planners, scientists, and engineers specializing in the areas of civil, environmental, structural, geotechnical, waterfront/marine, transportation, and municipal projects. The firm serves all of New England and the Northeastern United States from offices in Lincoln, RI, and Foxboro, MA. With four decades of cost-conscious planning and innovative design solutions—from project conception through post-construction services—we have established long-term relationships with a wide range of public- and private-sector clients throughout the region. Our commitment to practical, client-driven design has resulted in repeat business from more than 90% of our clients.

STAFFING CAPABILITIES

PARE employs approximately 60 professional, technical, and support personnel. 60% of the engineering staff are registered professionals, and 15 individuals have received graduate degrees. Division Managers possess at least 20 years of experience within their fields of specialization, and Project Managers have at least 10 years of applicable experience. In-house planners, wetland specialists, and environmental scientists support the firm's planning and design efforts, specializing in the coordination and monitoring of all permitting requirements. Through in-house training and the firm's policies for continuing education, PARE personnel have remained current with emerging engineering technologies.

SERVICE AREAS

- **Water Supply/Waterworks Engineering**
- **Wastewater/Sanitary Engineering**
- **Structural Engineering**
- **Geotechnical Engineering**
- **Site Planning and Land Development**
- **Roadway and Bridge Engineering**
- **Traffic and Transportation Engineering**
- **Dam Engineering**
- **Wetlands Delineation/Mitigation**
- **Environmental Studies and Permitting**
- **Hazardous Waste Remediation**
- **Stormwater Management and Drainage**
- **Parks and Recreational Development**
- **Marine/Waterfront Engineering**
- **Condition Surveys/Facilities Engineering**
- **Pre- and Post-Construction Monitoring**
- **Construction-Phase Services**

CLIENTS

- **Colleges and Universities**
- **Water Suppliers and Authorities**
- **State and Municipal Agencies**
- **Medical and Healthcare Facilities**
- **Developers and Contractors**
- **Manufacturing Clients**
- **Power and Utility Companies**
- **Port Operators and Authorities**
- **Financial Institutions**
- **US Department of Transportation**
- **US Department of Defense**

OFFICES

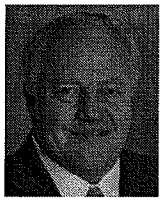
- **8 Blackstone Valley Place**
  Lincoln, RI 02865
  (401) 334-4100 FAX (401) 334-4108

- **10 Lincoln Rd., Suite 103**
  Foxboro, MA 02035
  (508) 543-1755 FAX (508) 543-1881

www.parecorp.com

George G. Palmisciano, P.E.
Principal-in-Charge

PARE CORPORATION



REGISTRATIONS AND CERTIFICATIONS

Professional Engineer – Rhode Island, Massachusetts, Connecticut

MA Department of Environmental Protection Licensed Soil Evaluator

Individual Sewage Disposal Systems, Class III Designer, Rhode Island

OSHA Hazardous Waste Operations 40-Hour Health and Safety Training

OSHA Construction Safety 10-Hour Training

PROFESSIONAL AFFILIATIONS

Rhode Island Society of Environmental Professionals, Founder & Honorary Director

American Water Works Association

New England Water Works Association

Water Environment Federation

New England Water Environment Association

Rhode Island Consulting Engineers, Member of Rhode Island Resource Recovery Corporation Liaison Committee

EDUCATION

University of Connecticut: M.S., Civil & Environmental Engineering, 1981

University of Rhode Island: B.S., Civil & Environmental Engineering, 1974

RELEVANT EXPERIENCE

Mr. Palmisciano has been responsible for numerous water supply, storage and transmission improvement projects including the development of water supply management and capital improvement plans, computerized hydraulic modeling, design and construction of water transmission mains, well testing programs, the design of water storage facilities and water system operations consultation. Representative projects include:

- **Rhode Island College Infrastructure Master Plan:** Principal-in-Charge of a comprehensive review of all on-campus utilities at RIC's 180-acre campus including utility systems for electric, steam & condensate, water, sanitary sewer, natural gas, drainage systems, and communications/IT. Recommended improvements will be outlined, compiled, ranked, and then prioritized over a 5-year period. Providence, RI.

- **United Water Rhode Island Underground Booster Pump Station – Design Build:** Principal-in-Charge of the design, permitting, and construction related services associated with the construction of a new underground booster pump station. South Kingstown, RI.

- **South Kingstown/United Water RI Interconnection:** Principal-in-Charge of design, permitting, bidding, and construction-related services for an emergency water interconnection between the existing UWRI Wakefield water system and the South Kingstown South Shore water district. South Kingstown, RI.

- **Town of North Kingstown Well No. 11 Pump Station:** Principal-in-Charge of the design, permitting, bidding, and construction-related services associated with the construction of a new well pump station. North Kingstown, RI.

- **Providence Water Supply Board – Dean Estates & Garden Hills Pumping Stations:** Principal-in-Charge of the design of improvements and modifications to two potable water pumping stations. Cranston, RI.

- **Main Street Water Main Replacement:** Principal-in-Charge of design, permitting, bidding, and construction-related services for 5,300 linear feet of 12-inch water main. Upton, MA.

- **State Street South Office Park:** Principal-in-Charge of the design of upgrades to the utility infrastructure at this corporate office park. Investigated evaluation of the entire utility network for the site including water, sanitary sewer, storm drainage, site lighting, and telecommunications. Provided full-time construction observation. Quincy, MA.

- **Woonsocket Water Storage Tanks:** Principal-in-Charge of this distribution storage capacity augmentation project which included five tanks: a new 750,000-gallon steel elevated tank in the Rhodes Avenue high-service district, new 3-MG and 1.5-MG pre-stressed concrete reservoirs and a 750,000-gallon elevated steel tank in an existing "tank farm," and a 1-MG pre-stressed concrete ground storage tank at Cobble Hill. Woonsocket, RI.

- **Pascoag Utility District Well Activation:** Principal-in-Charge of engineering services for the activation of Well 3A, including design of new pumping station, design of a new 35' x 18' concrete block wellhouse

structure, permitting, construction observation, and an O&M Manual. Burrillville, RI.

- **Carr Pond Satellite Wells:** Principal-in-Charge of the design of two new precast well stations with a combined capacity of 1.0 MGD. North Kingstown, RI.

- **Town of Westerly Water System Hydraulic Model:** Principal-in-Charge of development of a hydraulic model of the Town's water distribution system which includes seven pumping stations with eleven wells, six water storage facilities, and 190 miles of water mains. Westerly, RI.

- **Pastore Complex Hydraulic Model and Elevated Tank Rehabilitation:** Principal-in-Charge for the evaluation of the existing water system and production of a water system map and hydraulic model of this state-owned 1,000-acre facility with ten miles of pipeline, three booster pumps, and one elevated storage tank which serve various state departments located in over 100 buildings. Cranston, RI.

- **Greenville Water District Hydraulic Model and Water System Consulting:** Principal-in-Charge for the development of a Cybernet-based computerized hydraulic model of the District's water system, the preparation of a long-range planning study for the system, numerous hydraulic evaluations of proposed land development projects within the District, and construction observation services for numerous watermain installations and facility upgrades. Smithfield, RI.

- **Capital Improvement Program (CIP 4 and 6), Kent County Water Authority:** Project Manager for the design of approximately 30,000 linear feet of 12- and 16-inch water transmission main. These projects included 3 bridge attachments and a subaqueous river crossing and all associated permitting activities. Kent County, RI.

- **Rhodes Avenue Potable Water Booster Pump Station:** Project Manager responsible for the evaluation and design of the upgrade of the Pump Station for the City of Woonsocket Water System. The preferred rehabilitation option was brought through full design including electrical, mechanical, and architectural improvements. Woonsocket, RI.

- **East Smithfield Water System:** Principal-in-Charge of the development of Cybernet-based hydraulic model. This system serves a population of over 20,000 people. The model included full system evaluations and recommendation for capital improvements for optimized system operations. Smithfield, RI.

- **Richmond Hydraulic Model:** Principal-in-Charge of the development of a computerized hydraulic model for the Town's water system. The model was developed utilizing Cybernet modeling software. Richmond, RI.

- **Providence Water Supply Board Water Treatment Plant:** Principal-in-Charge of on-site structural inspection for facilities needs assessment. Structures included influent control chamber, influent aerator, 150 MG coagulation basins, filter wing, underground 40,000-gallon backwash tank, elevated 40,000-gallon service water tank, 80 MGD (100% Backup) raw water pump station, and associated facilities. Scituate, RI.

Armando J. Ricci, P.E.
Managing Engineer

PARE CORPORATION

REGISTRATIONS AND CERTIFICATIONS

Professional Engineer – Rhode Island

Individual Sewage Disposal Systems, Class III Designer, Rhode Island

Conventional Septic System Inspector – Rhode Island

OSHA Hazardous Waste Operations 40-Hour Health and Safety Training

OSHA Construction Safety 10-Hour Training

PROFESSIONAL AFFILIATIONS

American Society of Civil Engineers

Providence Engineering Society

EDUCATION

Worcester Polytechnic Institute:
M.S., Environmental Engineering, 2004

Brown University:
B.S., Civil Engineering, 1994

RELEVANT EXPERIENCE

Mr. Ricci has participated in the evaluation, design, cost estimating, construction, project management and observation of a variety of improvements for potable water, wastewater, stormwater collection/distribution, and solid waste management. In addition to more than 14 years of engineering experience, he previously worked for a construction firm for eight years, allowing him to acquire a unique appreciation of the development of projects from the initial design to the final outcome of construction. Representative project experience includes:

- **Kent County Water Authority Clinton Avenue Booster Pumping Facility Evaluation:** Project Engineer for the evaluation of the existing 12 MGD water supply pumping station, including assessing pump station capacity for future 20 year system requirements, hydraulics of existing station, pump tests on three 4 MGD vertical turbine pumps, drainage options to alleviate station ground water flooding, automation of pump station controls, management of architectural, electrical and structural consultants, and preparation of construction cost estimates. Scituate, RI.

- **Former Ladd Center Water System Evaluation:** Project Engineer of a complete evaluation of all water system components and an assessment of the capabilities of the aquifer system serving the 450-acre facility. The final elements of the project included the development of various water system management plans to ensure continued regulatory compliance: Wellhead Protection Plan, Watershed Protection Plan, Corrosion Control Study, and Surface Water Treatment Rule Compliance Plan. Exeter, RI.

- **Mashantucket Pequot Tribal Nation Hydraulic Model:** Project Manager for computerized hydraulic model of private water system to determine its ability to service a planned housing development. Mashantucket, CT.

- **Prudence Island Water System Master Plan and Improvements:** Senior Project Engineer for a comprehensive evaluation and Master Plan of this island water system. Provided construction administration for new water tank designed by PARE. Portsmouth, RI.

- **Canonchet Cliffs Assisted Living Community:** Project Manager for the design of a fire booster pump station to provide fire protection to seven buildings throughout the Canonchet Cliffs Assisted Living Community. The design of the new pump station included the design off on-site fire cisterns, a new pump station building and wet well, and the incorporation of an existing vertical turbine fire pump and engine set. Hopkinton, RI.

- **Town of Westerly Water System Hydraulic Model:** Project Engineer responsible for producing a hydraulic model of the Town's water distribution system. This project consisted of modeling seven pumping stations with eleven wells, six water storage facilities, and 190 miles of water main by creating over 1,700 pipelines with approximately 1,400 junction nodes. Westerly, RI.

- **Westerly Clean Water Infrastructure Plan:** Project Engineer for development of a Clean Water Infrastructure Plan (CWIP), encompassing all water system components and a cost and schedule breakdown for improvements and/or replacements. The CWIP was developed to span a 20-year period, broken into 5-year intervals. Westerly, RI.

- **North Kingstown - New Well Pump Station:** Project Manager for the design of a new pump station to enable activation of a recently-installed source water well for the Town's water system. North Kingstown, RI.

- **Town of North Kingstown Hydraulic Model:** Engineer for the creation of a hydraulic model of the Town's Water Distribution System. Specific tasks included the insertion of nodes and pipelines, and development of hydraulic data for the average day, maximum day, peak hour, and maximum summer day anticipated demands. North Kingstown, RI.

- **State of Rhode Island Pastore Complex Hydraulic Model:** Engineer for the evaluation of the existing water system and production of a water system map and hydraulic model of this 1,000-acre facility with ten miles of pipeline, three booster pumps and one elevated storage tank which serve various state departments located in over 100 buildings. Cranston, RI.

- **Greenville Water District Hydraulic Model:** Engineer for the development of a computerized hydraulic model of the District's water system. This system is supplied by one interconnection to the Providence Water Supply Board and consists of three booster pump stations and a storage tank. Smithfield, RI.

- **East Smithfield Water System Hydraulic Model:** Engineer responsible for producing a hydraulic model for the water distribution system which included developing nodes and pipelines, hydraulic data, and research of historical hydraulic patterns. Evaluated the effects which future residential and industrial developments would have on the system including possible connections to other sources of supply. Smithfield, RI.

- **Utility Extensions and Reconstruction of Stilson Road:** Construction Resident Observer for various construction activities, as well as review of submittals and progress payments, associated with major improvements to approximately 2,200 feet of roadway which included the extension of 12" ductile iron water main complete with fire hydrants, sprinkler and service connections, precast concrete catch basins, manholes and galleys, and the construction of a retention pond. Richmond, RI.

- **Kent County Water Authority, Hope Road Booster Pump Station:** Project Engineer responsible for the design and contract documents of a new water booster pumping station to replace an existing antiquated station, which serves potable water to 18 residences. Cranston, RI.

- **Kent County Water Authority Capital Improvement Plans 4 and 6:** Engineer responsible for the design, preparation of construction documents, and construction administration for the replacement and installation of six miles of 12- and 16-inch water main and appurtenances. Coventry, East Greenwich, North Kingstown, and West Warwick, RI.

- **Town of Smithfield Hydraulic Model:** Engineer for the development of a Cybernet-based hydraulic model to evaluate the Town's water system which is supplied by one interconnection from the Providence Water Supply Board and consists of three booster pumps, three storage tanks and distribution piping to serve 1,100 residential, commercial and industrial accounts which consume over 270 million gallons per year. Smithfield, RI.

Brendan F. Ennis, P.E.
Senior Project Engineer

PARE CORPORATION

REGISTRATIONS AND CERTIFICATIONS

Professional Engineer – Rhode Island

OSHA Hazardous Waste Operations 40-Hour Health and Safety Training

OSHA Hazardous Waste Operations 8-Hour Refresher Training

OSHA Construction Safety 10-Hour Training

PROFESSIONAL AFFILIATIONS

American Society of Civil Engineers

New England Water Environment Association

Providence Engineering Society

EDUCATION

Worcester Polytechnic Institute:
M.S. Civil Engineering, 2006

University of Rhode Island:
B.S., Civil Engineering, 1995

RELEVANT EXPERIENCE

Mr. Ennis has extensive experience with municipal water systems, including the preparation of water supply system management plans and their updates, clean water infrastructure replacement plans and updates, and master plans. He has also been responsible for the design of stormwater, wastewater, and clean water pipe networks which include development of all phases of plans and specifications, hydraulic analyses and reports, estimating, subcontractor agreements, scheduling, and project research. Representative projects include:

- **Rhode Island College Infrastructure Master Plan:** Project Manager for a comprehensive review of all on-campus utilities at RIC's 180-acre campus including utility systems for electric, steam & condensate, water, sanitary sewer, natural gas, drainage systems, and communications/IT, as well as transportation infrastructure such roadways, parking lots and walkways. Recommended improvements will be outlined, compiled, ranked, and then prioritized over a 5-year period. Providence, RI.

- **Providence Water Supply Board – Dean Estates & Garden Hills Pumping Stations:** Project Engineer for the design of improvements and modifications to two potable water pumping stations. Cranston, RI.

- **United Water Rhode Island Underground Booster Pump Station – Design Build:** Project Manager for the design, permitting, and construction related services associated with the construction of a new underground booster pump station. South Kingstown, RI.

- **South Kingstown/United Water RI Interconnection:** Senior Project Engineer responsible for design, permitting, bidding, and construction-related services for an emergency water interconnection between the existing UWRI Wakefield water system and the South Kingstown South Shore water district. PARE designed a new 12", 10,000-lf ductile iron main located within the right-of-way of Commodore Perry Memorial Highway (U.S. Route 1). South Kingstown, RI.

- **Town of North Kingstown Well No. 11 Pump Station:** Senior Project Engineer for the design, permitting, bidding, and construction-related services associated with the construction of a new well pump station. North Kingstown, RI.

- **Kent County Water Authority – 1.5 MG Water Storage Tank:** Project Manage for the design, permitting, and bidding services associated with the construction of a new 1.5 MG water storage tank. Coventry, RI

- **Water Storage Tank Design:** Project Manager involved in the design and construction of five new water storage facilities: a 3-million-gallon ground storage reservoir of prestressed concrete, two 750,000-gallon elevated steel tanks with a fluted-column design, a 1,500,000-gallon ground storage reservoir, and a 1-million-gallon ground storage tank, to augment the distribution storage capacity of a municipal water system. Woonsocket, RI.

- **Town of Smithfield Water Supply System Management Plan 5-Year Update:** Project Manager for the five-year update of the Town's WSSMP, including the emergency management component and source water assessment update. Smithfield, RI.

- **Woonsocket Water Supply System Management Plan Update 5-Year Update:** Project Manager for the update of the Water Supply System Management Plan, including the emergency management component and source water assessment update. Woonsocket, RI.

- **Providence Water Supply Board Water Supply System Management Plan 5-Year Update:** Project Manager for the update of the Water Supply System Management Plan, including the emergency management component and source water assessment update. Providence, RI.

- **East Smithfield Water District Water - Water Supply System Management Plan 5-Year Update:** Project Manager for the update of the Water Supply System Management Plan, including the emergency management component and source water assessment update. Smithfield, RI.

- **Pawtucket Water Supply Board Water Supply System Management Plan 5-Year Update:** Project Manager for the update of the Water Supply System Management Plan, including the emergency management component and source water assessment update. Pawtucket, RI.

- **Burlingame State Park Water Distribution Project – Rhode Island Department of Environmental Management:** Project Engineer for design of replacement facilities for most of the water system serving 700 acres of this state-owned camping area, including a new water supply well, pump stations, and a new storage tank. Charlestown, RI.

- **Cove Bridge Waterline Design:** Project Engineer for design of 4,800 linear feet of 10-inch ductile iron water line to replace an existing 6-inch and 8-inch waterline along two state-owned roadways, including 360 feet of a 10-inch exposed waterline attachment to a bridge, which will replace an existing subaqueous pipeline. Portsmouth, RI.

- **State Street South Office Park:** Senior Project Engineer for upgrades to the utility infrastructure at this corporate office park. Investigated evaluation of the entire utility network for the site including water, sanitary sewer, storm drainage, site lighting, and telecommunications. Made recommendations for and provided design of improvements. Quincy, MA.

- **Kent County Water Authority – Water Storage Tank Evaluation and Feasibility:** Project Engineer for evaluation of the feasibility of a new water storage tank in the 1.5 - 2.0 MG range. Project included determination of tank style, evaluation of tank site locations, constructability, opinions of probable costs, and recommendations. Coventry. RI.

- **Greenville Terrace Subdivision - Greenville Water District:** Responsible for construction observation of watermain installation within the Greenville Terrace Subdivision. Smithfield, RI.

- **Reactivation of Pump Station:** Project Engineer for design of a replacement pumping system and associated process equipment as part of the upgrade to an existing, inactive pump station, which is presently owned by the Kent County Water Authority (KCWA), to serve the needs of the Amgen industrial development. West Warwick, RI.

Timothy P. Thies, P.E.
Senior Project Engineer

PARE CORPORATION

REGISTRATIONS AND CERTIFICATIONS

Professional Engineer – Rhode Island, Massachusetts

OSHA Construction Safety 10-Hour Training

OSHA Hazardous Waste Operations and Emergency Response 40-Hour Training

PROFESSIONAL AFFILIATIONS

Providence Engineering Society

American Public Works Association

Massachusetts Water Works Association

EDUCATION

Worcester Polytechnic Institute:
M.S., Environmental Engineering, 2002
B.S., Civil Engineering, 2000

RELEVANT EXPERIENCE

Mr. Thies has worked on a wide variety of environmentally related projects, ranging from hydraulic studies and the design of improvements for potable water, wastewater, drainage and solid waste facilities to field investigations and sampling programs for hazardous waste studies and remediation. Representative projects include:

- **East Providence Cleaning and Lining:** Project Manager responsible for the direct oversight of PARE's construction administration for Phase I of the City's water main cleaning and lining project. The project included full-time construction observation, review of shop drawings, contractor RFIs, contractor quantities and payment requests, and the collection of as-built information. This project was partially funded through the American Recovery and Reinvestment Act of 2009 (ARRA). PARE assisted the City with their ARRA reporting requirements. East Providence, RI

- **Bristol County Water Authority Hydraulic Model Development:** Project Manager for the development of a hydraulic model of a water system serving approximately 16,000 customers in three towns. Project included identifying system deficiencies and recommending capital improvements, as well as developing a full-system operations map. Bristol, Warren & Barrington, RI.

- **Canonchet Cliffs Assisted Living Community:** Engineer responsible for the design of a fire booster pump station to provide fire protection to seven buildings throughout the complex. Included the design off on-site fire cisterns, a new pump station building and wet well, and the incorporation of an existing vertical turbine fire pump and engine set. Hopkinton, RI.

- **State Street South Office Park:** Project Engineer for upgrades to the utility infrastructure at this corporate office park. Investigated evaluation of the entire utility network for the site including water, sanitary sewer, storm drainage, site lighting, and telecommunications. Made recommendations for and provided design of improvements. Quincy, MA.

- **Groton Schools Hydraulic Evaluation:** Engineer responsible for the evaluation of the existing water supply and distribution system in Groton, CT to provide water to three new schools. The evaluation included the development of a hydraulic model for each school, as well as performing hydrant flow tests and providing recommendations for major system improvements to provide adequate fire flow to each facility. Groton, CT.

- **Pastore Complex Hydraulic Model:** Engineer responsible for updating the existing RI Department of Behavioral Healthcare, Developmental Disabilities and Hospitals hydraulic model, including the incorporation of a new pump station as well as the evaluation of several new facilities within the hospital complex. Cranston, RI.

- **Burlingame State Park Water Distribution Project:** Engineer responsible for several tasks related to the evaluation and design of water system improvements. Tasks included the evaluation of the existing water distribution system using WaterCAD v.6.5, the design of a new VFD pump station, the replacement of 9,000 feet of asbestos cement water line, the design of 18,000 feet of new PVC water line, and the design of several new well control buildings. Charlestown, RI.

- **South Kingstown/United Water RI Interconnection:** Engineer responsible for hydraulic evaluation of the South Kingstown/United Water Interconnection along Post Road. The evaluation was performed by constructing a computerized hydraulic model of the South Kingstown and United Water RI water distribution system using WaterCAD v.6.5. South Kingstown, RI.

- **Mashantucket Pequot Tribal Nation Phase 7A Housing Development:** Engineer responsible for the evaluation of the existing water distribution system and gravity sewer collection system. Assisted in the design of approximately 13,000 LF of new water mains and gravity sewer, as well as the design of a new water booster pump station. Ledyard, CT.

- **Town of North Kingstown Hydraulic Model:** Project Engineer for 2008 update of the Town's hydraulic model. Engineer for the maintenance of the hydraulic model including the insertion of nodes and pipelines, and development of hydraulic data for the average day, maximum day, peak hour, and maximum summer day anticipated demands, and simulating capacity of system to serve proposed subdivisions and developments within the Town. North Kingstown, RI.

- **Greenville Water District Hydraulic Model:** Engineer for the maintenance of a computerized hydraulic model of the District's water system. This system is supplied by one interconnection to the Providence Water Supply Board and consists of three booster pump stations and a storage tank. Smithfield, RI.

- **Town of Smithfield Hydraulic Model:** Engineer for the maintenance of a WaterCAD hydraulic model to evaluate the Town's water system which is supplied by one interconnection from the Providence Water Supply Board and consists of three booster pumps, three storage tanks and distribution piping to serve 1,100 residential, commercial and industrial accounts which consume over 270 million gallons per year. Smithfield, RI.

- **Southborough Water System Master Plan:** Project Engineer responsible for the preparation of System Master Plan. The plan includes an evaluation and identification of system deficiencies in supply, piping, and storage, as well as an evaluation of the existing operational controls and flushing program. Southborough, MA.

- **Town-Wide SCADA:** Project Engineer for design of a new Supervisory Control and Data Acquisition system for the Town's water system. The project included a conversion to radio frequency for data transmittal, connection of the data to a central location (DPW garage) and the inclusion of remote transmitting station at the three water tanks, the two pumping station and the four pressure reducing valves connecting the high and low service areas. Southborough, MA.

- **Hydraulic Model Development:** Project Engineer for the calibration and development of a hydraulic model for the Town of Southborough's water system. The project included meetings with the Town to accurately represent the system, meeting with the Town Planner to accurately depict future conditions and a review of water system pumping and use records. Hydrant flow tests were also performed throughout the system to calibrate the information in the model. Southborough, MA.

Brandon M. Blanchard, P.E.
Project Engineer

PARE CORPORATION

REGISTRATIONS AND CERTIFICATIONS

Professional Engineer: Rhode Island

Onsite Wastewater Treatment Systems, Class III Designer, Rhode Island

MADEP Title V System Inspector

OSHA Hazardous Waste Operations 40-Hour Health and Safety Training

OSHA Construction Safety 10-Hour Training

PROFESSIONAL AFFILIATIONS

American Society of Civil Engineers

US Green Building Council – Rhode Island Chapter

EDUCATION

Worcester Polytechnic Institute, Worcester, MA - M.S., Environmental Engineering, 2010

Lehigh University, Bethlehem, PA - B.S., Civil Engineering, 2003

RELEVANT EXPERIENCE

Mr. Blanchard has an impressive background in various aspects of civil and environmental engineering. He is especially proficient in the areas of solid waste engineering and on-site wastewater treatment and disposal. Mr. Blanchard's additional experience includes development of plans and specifications, surveying, soil and groundwater sampling and hydrant flow testing. Construction observation experience includes observation of installation of utility structures, ISDS components and other site development work. Mr. Blanchard also has a working knowledge of AutoCAD, WaterCAD, SewerCAD, MODFLOW, and other technical computer programs. Relevant engineering experience includes:

- **Lakeside Commerce Center Water Supply Evaluation**: Staff Engineer for an evaluation performed for the Rhode Island Resource Recovery Corporation to estimate the available fire flow water supply at the Lakeside Commerce Center. The evaluation included pressure monitoring, hydrant flow testing, hydraulic modeling in WaterCAD, and preparation of a report of our findings. Johnston, RI.

- **Inskip Motors Site Redevelopment:** Staff Engineer for permitting and design of improvements to existing water and wastewater services for the redevelopment of two Inskip facilities in Warwick and West Warwick, Rhode Island. Tasks responsible for include preparation of water and wastewater demand calculations, hydraulic modeling using WaterCAD, and permitting with the Kent County Water Authority. Warwick and West Warwick, RI.

- **Main Street Water Main Replacement:** Staff Engineer for the design of approximately one mile of new 12" ductile iron water main to replace an existing water main in Main Street. Upton, MA.

- **Cumberland Hydraulic Model Development:** Staff Engineer performing several hydrant fire flow and "C" value tests and continuous pressure monitoring to assist in development and calibration of a computerized hydraulic model for the Cumberland Water Department. Cumberland, RI.

- **Pressure Reducing Valve Upgrade:** Staff Engineer for the design of updated pressure reducing valves connecting the high and low service areas in the Town of Southborough. The original valves did not function properly due to the slight pressure differential. The new valves were designed to include overrides from the SCADA system to allow for transfer of water during peak demand periods despite the existing differential. An analysis of tank charts assisted in the development of operational protocol. Southborough, MA.

- **Mishnock Water Treatment Plant Site Design:** Staff Engineer for the design of the civil site drawings for a 3 mgd water treatment plant for the Kent County Water Authority. Wetland delineation was performed for the site as well as permitting through RIDEM, RIDOH and the Coventry Planning Board. Unique site design features included the presence of a Rare and Endangered species, high groundwater, an infiltration lagoon and a tight-tank for building wastewater. Coventry, RI.

- **Peach Blossom Lane Sewer Extension:** Staff Engineer for the design of a roughly 400-foot sewer extension to serve three existing homes on Peach Blossom Lane. Project included preparation of design drawings and

calculations, coordination and oversight of borings, and construction phase services. Smithfield, RI.

- **Boy Scouts of America, Narragansett Council – Yawgoog Scout Reservation Water Supply System Upgrades:** Project Engineer for improvements to the water treatment plant and distribution system serving the 1,800-acre Yawgoog Scout Reservation. Hopkinton, RI.

- **Credit Union Central Falls:** Staff Engineer for the development of a roughly 6-acre parcel into a corporate headquarters and branch bank for the Credit Union. The project included site design, development of construction documents, permitting with State and Local regulatory agencies, and construction phase services. Smithfield, RI.

- **Westerly Tank Investigations and Evaluations:** Staff Engineer for analysis of soils contaminated with lead and PAHs associated with a water storage tank. Site remediation aspect included soil sampling and analysis, development of remedial action strategies, RIDEM permitting, public notification, and attendance at meetings with impacted parties. Westerly, RI

- **Woonsocket Water Supply System Upgrades and Site Remediation:** Staff Engineer for analysis of lead contaminated soils at four water storage tank sites in conjunction with the design and construction of replacement tanks. Site remediation aspect included sampling and analysis of soil, development of remedial action strategies, RIDEM permitting, public notification, and construction administration to bring each site into compliance with the RIDEM Remediation Regulations. Woonsocket, RI.

- **Wyatt Detention Center:** Staff Engineer for the sampling and analysis of approximately 10,000 cubic yards of urban fill material associated with the design and construction of a building expansion and new parking facilities for the existing prison facility. Central Falls, RI.

- **East Providence Wastewater Improvements:** Project Engineer for the design of upgrades to the existing gravity sewer collection system at several locations in the Riverside area of East Providence. This project will also include the design of sewer force mains from an existing pump station and two proposed pump stations. East Providence, RI.

- **Rhode Island Resource Recovery Corporation (RIRRC) Cedar Swamp Brook I:** Staff Engineer for improvements to a 1,200 lineal-foot section of Cedar Swamp Brook near the Phase IV Landfill cell. The project included improvements to grading and drainage structures in and along the channel and establishment of plantings within the riparian zone. Johnston, RI.

- **Phase I & II Environmental Site Assessments – 362 Plains Road:** Project Engineer performing a Phase I ESA and limited Phase II ESA for the University of Rhode Island. The site was a residential property that URI acquired following the results of this ESA. South Kingstown, RI.

- **RIDOT - Pocasset Bridge Replacement:** Project Engineer for the investigation, characterization, dewatering, and disposal of contaminated sediment in the Pocasset River beneath Bridge No. 23. Approximately 400 tons of sediment is slated for excavation and disposal by this project. Cranston, RI.

Peter D. DiLorenzo
Engineer

PARE CORPORATION

REGISTRATIONS AND CERTIFICATIONS

OSHA Hazardous Waste Operations 40-Hour Health and Safety Training

OSHA Construction Safety 10-Hour Training

OSHA Hazardous Waste Operations 8-Hour Refresher Training

EDUCATION

University of Rhode Island - B.S., Civil Engineering, 2007

RELEVANT EXPERIENCE

Mr. DiLorenzo has experience on a wide range of wastewater projects for municipal and private clients including development of plans and specifications, surveying, soil and groundwater sampling hydrant flow testing, and erosion and sedimentation control inspections. Construction observation experience includes observation of installation of utility structures, ISDS components, installation of erosion and sedimentation control products, and other site development work. Mr. DiLorenzo also has a working knowledge of AutoCAD, WaterCAD, SewerCAD, StormCAD, and other technical computer programs. Relevant engineering experience includes:

- **Central Avenue Booster Pump Station Relocation:** Staff Engineer for the design of a new water pump station to replace an existing pump station located to the north of the Central Landfill. Project included creating a small-scale hydraulic model of the Town of Johnston's water system, performing hydrant flow tests to calibrate the model, and design of the new pump station based upon the results of the hydrant flow tests and model. Johnston, RI

- **Smithfield Water Supply Board Hydraulic Model and Master Plan Update:** Staff Engineer for an update to the Smithfield Water Supply Board's hydraulic model, including updating of system wide water demand, performed hydrant flow tests to determine C-values throughout the system, model calibration, and build-out analysis for future demands in the system. Tasks also included determining potential upgrades to the system to accommodate future population in 20 years. Smithfield, RI.

- **East Smithfield Water Hydraulic Model Update:** Staff Engineer for an update to East Smithfield Water's hydraulic model, including updating of system wide water demand, performed hydrant flow tests to determine C-values throughout the system, model calibration and created a system map for East Smithfield Water. Smithfield, RI.

- **East Providence Water Main Cleaning and Lining:** Resident Construction Observer for the cleaning, lining and replacement of approximately 30,000 feet of water main in East Providence. The project includes providing support to the Water Department for the construction administration of a $4 million dollar rehabilitation project. East Providence, RI.

- **Main Street Water Main Replacement Project:** Resident Construction Observer for the replacement of approximately 5,200 feet of 10-inch asbestos cement water main with new 12-inch ductile iron pipe. Responsibilities included direct interface with the contractor, preparation of payment requests and overseeing the day-to-day construction activity. Upton, MA.

- **State Street Bank Office Park Utilities - Hydrant Flow Testing:** Staff Engineer performing hydrant flow tests on the Quincy campus of State Street Bank. As part of the utility and parking area upgrades, PARE performed hydrant flow tests to determine the available fire flow on the campus and also evaluated any upgrades necessary to meet fire flow needs. Quincy, MA.

- **Lakeside Commerce Center Water System Evaluation:** Staff Engineer for a study of the water supply system for Lakeside Commerce Center in response to inadequate fire flow for future development of the site. Project

included installation of pressure recording devices throughout the study area, hydrant flow testing and creation of a computerized hydraulic model to examine possible upgrades to the system to obtain necessary fire flow for the site. Johnston, RI.

- **Chandler Pond Waste Water Evaluation:** Staff Engineer performing sewer evaluation in response to failure of a wastewater pumping station, including evaluation of installing a new pumping station or possible repair of the existing pumping station, along with new 4" sewer force main. Brighton, MA.

- **Upton Station Street Pump Station Evaluation:** Staff Engineer for evaluation of wastewater pumping station in response to the station being oversized. Project included on-site evaluation, development of plans, and research and analysis of potential solutions to reduce the size of the current wastewater pumping station and upgrades to the station. Upton, MA.

- **Infiltration & Inflow Program:** Staff Engineer for development of Infiltration & Inflow (I&I) guidelines for the Department of Public Works. The guidelines are to be used by the sewer department and the Planning Board to develop a plan for elimination of I&I in the wastewater collection system. As part of the project three (3) critical lines were metered for the presence of I&I. Reporting to MADEP was also performed. Upton, MA.

- **Boy Scouts of America, Narragansett Council – Yawgoog Scout Reservation ISDS Repairs and Water Supply System Upgrades:** Staff Engineer for survey, design, and permitting of repairs to existing Individual Sewage Disposal Systems (ISDS) throughout the 1,800-acre Boy Scout Reservation. Hopkinton, RI.

- **Carpenter's Beach Meadows ISDS Repairs:** Staff Engineer for a geohydrological study and design of an Individual Sewage Disposal System (ISDS) repair for ISDSs at a site located in the vicinity of Matunuck Beach on the Atlantic Ocean containing approximately 280 two and three bedroom homes that are used seasonally from Memorial Day to Labor Day. Once constructed, the ISDS will include multiple large septic tanks and pump stations, a large leach field, and possibly nitrogen reducing technology. South Kingstown, RI.

- **NBC - Johnston Sewer Evaluation and Facilities Plan:** Staff Engineer for mapping the Town of Johnston's and the Narragansett Bay Commission's sewer system using Global Positioning System equipment to record the location of more then 1,500 manholes and inspect various manholes for pipe sizes and materials. Created mapping of drain basins for the Narragansett Bay Commission's interceptors for current and future development of the Town of Johnston. Johnston, RI.

- **Rhode Island Resource Recovery Corporation (RIRRC) General Landfill Consulting:** Staff Engineer for the on-call, resident contract to provide general engineering consulting for all operating improvements and facility expansions at the RIRRC Central Landfill. Johnston, RI.

- **Rhode Island Resource Recovery Corporation (RIRRC) Erosion and Sedimentation Control Consulting:** Staff Engineer for the on-call, resident contract to provide erosion and sedimentation control consulting for all of the RIRRC facilities. Johnston, RI.

Mark L. Dowdell
Engineer

PARE CORPORATION

PROFESSIONAL AFFILIATIONS

American Society of Civil Engineers

EDUCATION

University of Rhode Island, B.S., Civil Engineering, 2009

RELEVANT EXPERIENCE

Mr. Dowdell has been involved in a number of water and wastewater projects since joining PARE in the summer of 2009. He has been responsible for hydraulic model entry and calibrations, groundwater monitoring, sewer and stormwater system design, report writing and preparation, and construction observation. Mr. Dowdell has a working knowledge of AutoCAD, WaterGems, InfoWater, STAAD Pro, and other technical computer programs. Relevant experience includes:

- **Southborough Hydraulic Model:** Staff Engineer responsible for the calibration and development of a computerized hydraulic model for the Town of Southborough's water system. The hydraulic model was utilized during the evaluation and design of upgrades to the Boland Booster Pump Station. Southborough, MA.

- **Bristol County Water Authority Hydraulic Model:** Staff Engineer involved in the development of a computerized hydraulic model for a water system serving approximately 16,000 customers. The system consists of four surface water reservoirs, two water treatment plants, an interconnection with the Providence Water Supply Board, four water storage tanks, two pump stations, and approximately 231 miles of pipe ranging in size from 1-inch to 30-inches in diameter. Barrington, Warren, and Bristol, RI.

- **East Smithfield Water District Hydraulic Model**: Staff Engineer responsible for the calibration and on-going maintenance of a computerized hydraulic model for ESWD. Task associated with this project include period hydrant flow testing, system map updating, and period development modeling and review. Smithfield, RI.

- **Greenville Water District Hydraulic Model:** Staff Engineer responsible for the maintenance of a computerized hydraulic model of the District's water system. This system is supplied by one interconnection to the Providence Water Supply Board and consists of three booster pump stations and a storage tank. Tasks associated with this role include an update of system demand, review and evaluation of the existing pump station on Mapleville Road, and the evaluation and sizing of pump station improvements. Smithfield, RI.

- **Town of North Kingstown Hydraulic Model:** Staff Engineer for the maintenance of the hydraulic model including the insertion of nodes and pipelines, and development of hydraulic data for the average day, maximum day, peak hour, and maximum summer day anticipated demands, and simulating capacity of system to serve proposed subdivisions and developments within the Town. North Kingstown, RI.

- **Greenville Water District Hydrant and Valve Mapping:** Staff Engineer responsible for the survey of the Greenville Water District and updates to the Greenville System Map. The survey included locating hydrants and water valves throughout the system utilizing a GPS unit. Smithfield, RI.

- **Rhode Island College Hydraulic Model:** Staff Engineer responsible for the development, calibration, and maintenance of a computerized hydraulic model for the Rhode Island College campus. Development of the model was based on survey data, hydrant flow tests performed on-site, and water use data. North Providence, RI.

- **Zambarano Hospital Elevated Storage Tank Rehabilitation:** Staff Engineer for the soil sampling, analysis, and remedial activities associated with contaminated soil beneath and around the 250,000-gallon elliptical elevated storage tank per RI Department of Environmental Management Remediation Regulations. Burrillville, RI.

- **East Providence Wastewater Design/Build/Operate Project:** Staff Engineer for the monitoring and analysis of groundwater along the East Bay Bike Path and Watchemoket Cove Pump Station. East Providence, RI.

- **United Water Rhode Island Underground Booster Pump Station – Design Build:** Staff Engineer for the design, permitting, and construction related services associated with the construction of a new underground booster pump station. South Kingstown, RI.

- **Water Storage Tank Construction Observation:** Staff Engineer involved in construction observation during construction of a 750,000-gallon elevated steel tank at the Mt. St. Charles Tank Farm. Woonsocket, RI.

- **Carpenter's Beach Meadows ISDS Repairs:** Staff Engineer for the design of an Onsite Wastewater Treatment System (OWTS) repair at an 18-acre site located in the vicinity of Matunuck Beach on the Atlantic Ocean which contains approximately 280 two and three bedroom homes that are used seasonally from Memorial Day to Labor Day. Once constructed, the OWTS will include multiple large septic tanks and pump stations, a large leach field, and possibly nitrogen reducing technology. South Kingstown, RI.

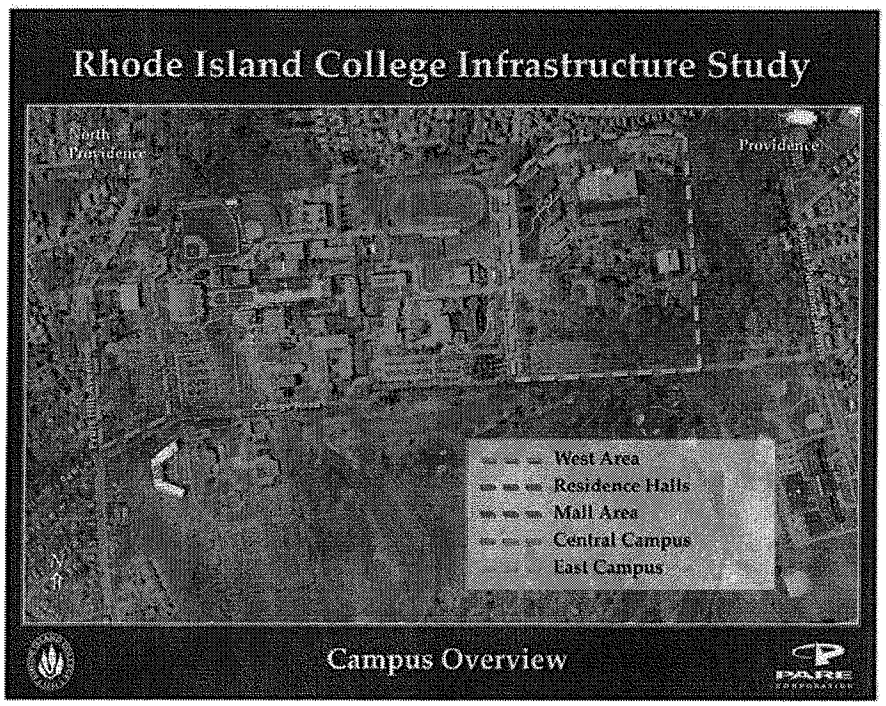
- **Groundwater Monitoring – Tiverton Landfill:** Staff Engineer for quarterly groundwater monitoring program, including detection and assessment monitoring per RI Department of Environmental Management Solid Waste Regulations. The monitoring program also includes surface water sampling and analysis, which is performed concurrently with the groundwater sampling. Tiverton, RI.

- **Rhode Island Resource Recovery Corporation (RIRRC) Phase VI Landfill:** Staff Engineer for the preparation of a permitting application for RIDEM review and approval for a proposed 103-acre lateral landfill expansion at the Central Landfill facility. Johnston, RI.

- **Alternate Cover Material Characterization and Acceptance:** Staff Engineer for the development of soil management plan to characterize and approve contaminated soil for use at the RIRRC as alternate daily cover material. Soil characterization includes soil sampling for physical and chemical properties. Approval included applying to the RIDEM for acceptance at the Landfill. Burrillville, RI.

- **Niantic Sportsman's Club – Surface Water Monitoring:** Staff Engineer for quarterly surface water monitoring program, including water sampling and analysis performed on lead impacted water. Niantic, CT.

PARE CORPORATION



Rhode Island College Infrastructure Master Plan

Providence, Rhode Island

Project Owner: Rhode Island College

Pare Corporation (PARE) was recently contracted by Rhode Island College (RIC) to perform a comprehensive review of all on-campus utilities and infrastructure and prepare an Infrastructure Master Plan. Infrastructure at RIC's 180-acre campus includes utility systems for electric, steam & condensate, water, sanitary sewer, natural gas, drainage systems, and communications/IT. Transportation infrastructure is also being evaluated, including roadways, parking lots and walkways.

PARE is addressing water and sanitary sewer systems, stormwater drainage, all transportation infrastructure, and is providing overall project management. A utilities subconsultant is providing expertise in the areas of electric, steam & condensate, natural gas, and communications/IT. The Project Team is developing a master map for each utility/ infrastructure system, as well as an overall campus infrastructure map.

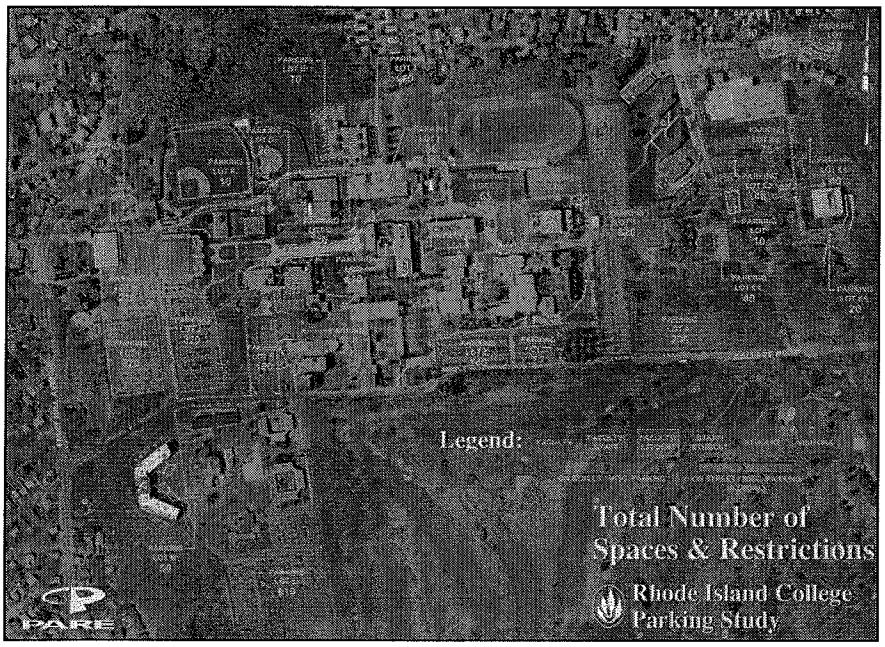
An hydraulic model was developed to evaluate the water system with respect to system pressures, water quality, and fire supply. A theoretical wastewater loading and capacity analysis is being performed for the sanitary sewer systems.

The project will culminate with the development of an Improvement Plan for each utility system. Each utility system will be evaluated for a future usage period of 25 years. Recommended improvements will be outlined, compiled, ranked, and then prioritized over a 5-year period based on providing RIC with a schedule of improvements that yield the greatest return on investment from the standpoints of constructability and day-to-day operations.

Relevant Project Features:

- *Complete utility and infrastructure investigation, survey, and mapping.*
- *Water system hydraulic modeling.*
- *Sewer evaluation.*
- *Stormwater evaluation.*
- *Electric, steam & condensate, natural gas, and communications/IT evaluation.*
- *Preparation of Infrastructure Master Plan with 25-year Improvement Plan for each individual infrastructure system.*

PARE CORPORATION



Rhode Island College – Master Plan Update

Providence, Rhode Island

Project Owner: Rhode Island College

Rhode Island College engaged Saratoga Associates to conduct its second campus-wide master plan. The first RIC master plan was completed in 1999. An update every decade is needed to identify and resolve competing contemporary needs for land and buildings as well as to receive recommendations for the highest and best use of limited space. PARE was a member of the Project Team selected in 2009 to update the Campus Master Plan. As a member of the team led by Saratoga, PARE provided civil, structural, and traffic/ transportation engineering services.

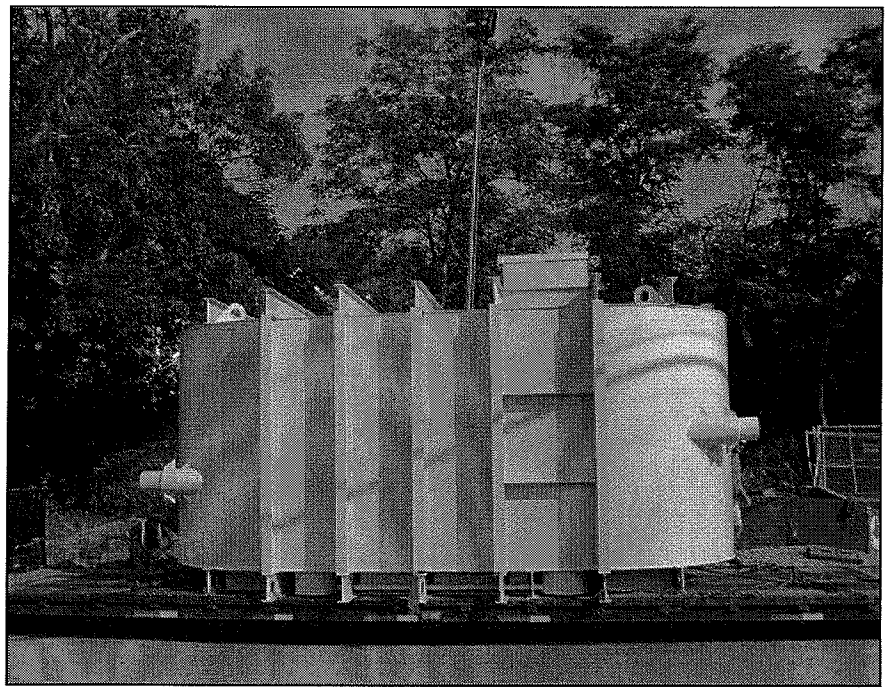
Structural engineers from PARE performed cursory evaluations of 32 buildings on the campus and provided brief descriptions and prioritized recommendations for each.

PARE catalogued and mapped all parking spaces on the campus as well as circulation patterns and pavement conditions. PARE also performed traffic counts and speed studies in order to assist with preliminary recommendations for improvements.

Relevant Project Features:

- *Campus Master Plan Update.*
- *Structural building evaluations.*
- *Pavement condition evaluations.*
- *Parking and circulation studies.*

PARE CORPORATION



Pump station before in-ground installation.

Rt. 1 Booster Pump Station

South Kingstown, Rhode Island

Project Owner: United Water Rhode Island

PARE, as a subconsultant to A.E. Bragger Construction Co., Inc., was retained by United Water Rhode Island, an independent water supply company providing potable water to the communities of Narragansett and South Kingstown, RI, as part of a Design/Build Project Team, to design and construct an underground booster pump station.

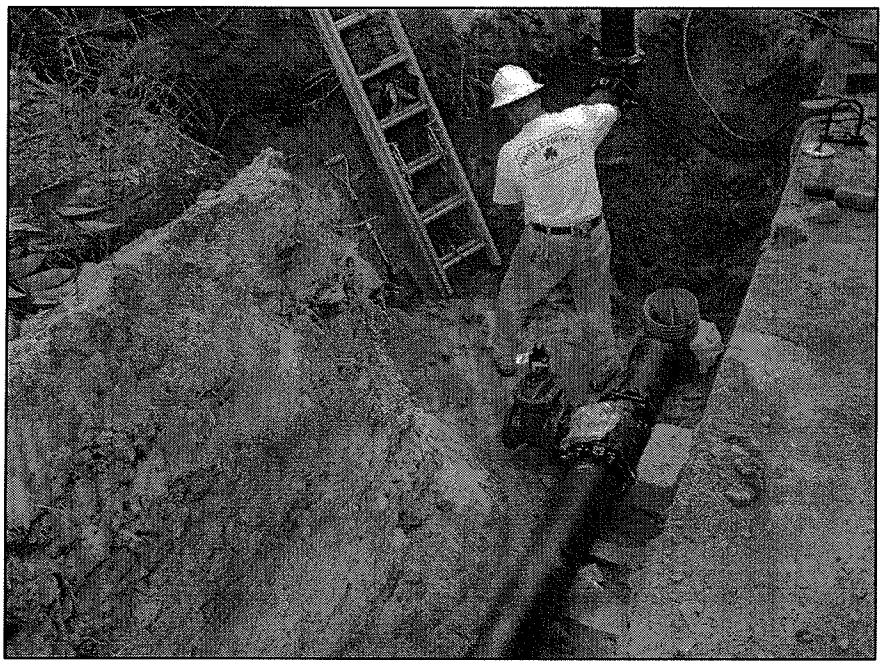
PARE performed a hydraulic analysis of the system, using United Water's hydraulic model, in order to determine the sizing for the booster pump station. PARE then prepared construction documents for an underground packaged booster pump station with three 500-GPM 7.5 hp pumps, a sump pump, an above-ground sample station, site improvements, and the required electrical, SCADA, and HVAC appurtenances. PARE also prepared the necessary permits to the Rhode Island Department of Transportation and Rhode Island Department of Health.

PARE provided construction services in the form of project management, review and approval of shop drawings, and construction observation during the installation of the underground booster station.

Relevant Project Features:

- *Hydraulic analysis and modeling of alternative scenarios.*
- *Design of booster pump station.*
- *Local and state permitting.*
- *Construction observation.*

PARE CORPORATION



Higgins Street Water Main Replacement Project

Smithfield, Rhode Island

Project Owner: East Smithfield Water District

On behalf of the East Smithfield Water District, Pare Corporation evaluated and designed 1,700 feet of new 8-inch ductile iron water main in Smithfield, Rhode Island. The impetus behind the project was poor fire flow and the occurrence of discolored water in one area of the East Smithfield Water District. Through PARE's hydraulic analysis of the system, the root cause of the poor fire flow and discolored water was identified to be old and undersized piping in the Higgins Street neighborhood. In addition, the lack of system looping in this area was contributing to system problems.

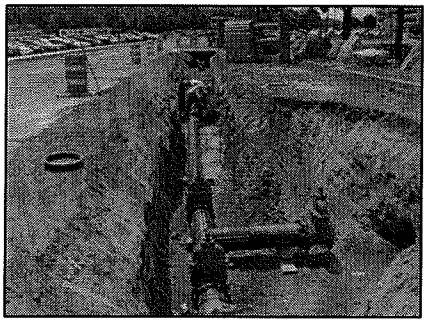
PARE conducted a cost benefit analysis to identify an appropriate pipe size for fire protection and domestic service in the area. The obvious choice initially appeared to be 12-inch diameter ductile iron pipe. However, upon PARE's review of the pipe network in this area, it was determined that an 8-inch pipe would provide adequate fire flow while providing a less expensive installation than 12-inch. In addition, a new 12-inch pipe would likely be oversized relative to water turnover and water age, which could further exacerbate the aesthetic issues with water in this area.

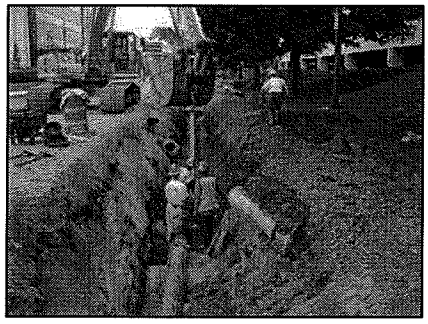
PARE prepared design plans for the installation of the new 8-inch water main, coordinated with the Rhode Island Department of Transportation for areas within the RIDOT right-of-way, assisted the ESWD with bid administration, and conducted construction administration through the duration of the project.

Relevant Project Features:

- *1,700 LF of 8-inch water main installation.*
- *Provided new system loop.*
- *Improved fire flow to customers in the Higgins Street neighborhood.*
- *Project funded jointly by the ESWD and the RI Clean Water Finance Agency State Revolving Loan Fund.*

PARE CORPORATION





State Street Corporate Office Park Utility Improvements

Quincy, Massachusetts

Project Owner: State Street Bank

Pare Corporation (PARE) was retained to review the entire utility layout for the State Street South Office Park in Quincy, MA. Built on land filled in the 1970's, the utility infrastructure was beginning to show signs of settlement and failure. The project included the evaluation of the entire utility network for the site including water, sanitary sewer, storm drainage, site lighting, and telecommunications.

The water system exhibited a greater than normal break history and the evaluation resulted in a recommendation for replacement of the system. The design of the replacement included an alternatives analysis for pipe and backfill material to reduce settlements and accommodate anticipated future movement, as well as a study of future capacity and fire flow needs.

The investigation of the sewer system resulted in replacement and realignment to address existing slope concerns which had resulted in grease and sediment accumulation.

The stormwater drainage system frequently backed up, resulting in flooded lots. A drainage evaluation resulted in design modifications to prevent storm damage for up to a 25-year storm event.

The electrical system for the site lighting was not encased in a conduit so new electrical feed lines were designed.

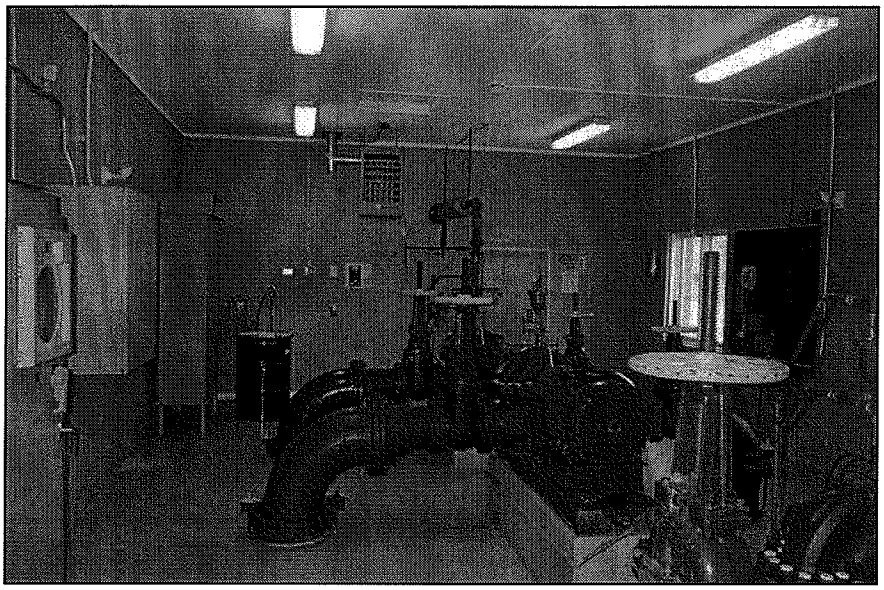
Special project consideration was given to the impact of the tidal influence at the site, the observed and anticipated settlements due to the observed subsurface conditions, differential settlement across the site due to various foundation types, the high volumes of peak traffic, and the high value placed on uninterrupted utility service, especially high-speed telecommunications.

To facilitate the many complexities of allowable disturbances, the project is being phased over two construction seasons. The total project cost is expected to be approximately $5 million.

Relevant Project Features:

- *Evaluation of current and future flows.*
- *Review of video inspection of existing sewers.*
- *Traffic studies to facilitate construction during high peak traffic events.*
- *Geotechnical evaluation of subsurface conditions causing the observed settlements.*
- *Civil engineering of an innovative stormwater management system design.*
- *Geotechnical engineering to evaluate lightweight fill and other mitigation for compressible soils.*
- *Coordination meetings with municipal agencies.*

PARE CORPORATION



Dean Estates & Garden Hills Pump Stations

Cranston, Rhode Island

Project Owner: Providence Water Supply Board

The Dean Estates and Garden Hills Pump Stations supply water from the Providence Water Supply Board to two separate service areas in Cranston. Both pump stations have a shortage in pumping capacity and redundancy, as well as have various structural and site deficiencies.

Originally the project called for upgrades to be performed to both pump stations. However, PARE identified that because both service areas were on the same hydraulic grade line and were separated only by a short section of missing water main, that it would be more economical to combine the two service areas and use one pump station. PARE performed a feasibility study and hydraulic evaluation, resulting in a preferred alternative of installing 600' of new water main to connect the two systems, including a section crossing Route 37 on the Glen Hills Road bridge.

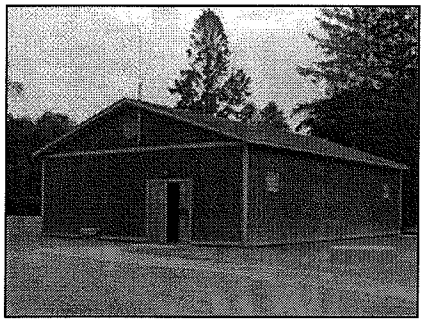
Other relevant features of the project included evaluation of pump vendors and pump skid alternatives, selection and design of a new pump skid using variable frequency drives (VFDs), electrical upgrades, structural upgrades, and site improvements to address occasional flooding at the Dean Estates Pump Station. The project also includes design and implementation of a temporary pumping system to be used during construction, as well as a demolition plan for the Garden Hills Pump Station. PARE also prepared contract documents, assisted the PWSB in bidding, and will provide resident construction observation.

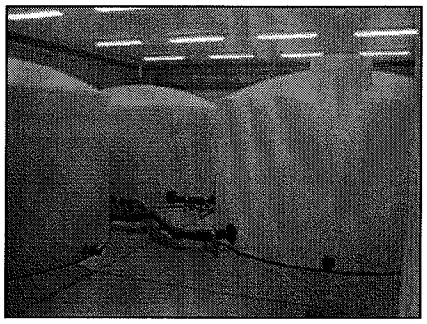
Construction is anticipated to begin in Fall 2010 and be completed in 2011.

Relevant Project Features:

- *Existing condition surveys of both pump stations*
- *Feasibility study for combining two separate service areas including hydraulic evaluation of PWSB system*
- *Evaluation and selection of a preferred pump skid*
- *Design of structural, civil, electrical, mechanical, and SCADA upgrades*
- *Design of water main extension including bridge crossing over RI Route 37*
- *Preparation of contract documents and assistance during bidding*
- *Resident observation during construction*

PARE CORPORATION





Exterior and interior of Legiontown Pump Station.

Burlingame State Park Water Supply Distribution System Improvements

Charlestown, Rhode Island

Project Owner: Rhode Island Department of Environmental Management

Pare Corporation (PARE) was retained by the Rhode Island Department of Environmental Management (RIDEM) to design the replacement of the majority of the Burlingame State Park water distribution system. The system services about 700 acres of the existing camping sections of the park. One new water supply well is being developed to augment the existing wells, which will be renovated and cleaned. A new water storage facility was constructed at a centralized location to receive water from both the existing and new supply wells.

PARE's services included determining the best location for the new well and storage facility; design of a new gravel packed well and new pumping station with a duplex pumping design arrangement for back-up pumping; complete rehabilitation of existing pumping facilities including new pump installations and all associated mechanical equipment; water and electric utilities for camping sites within the Mills Camp area; auxiliary power for the pumping stations; drain facilities to dewater the system during the winter season; new transmission piping from the existing and new water supply wells to the water storage tank; replacement of all existing transmission mains; water spigot installations spaced every 15 to 20 campsites; and new fire hydrant installations at both the Entrance Station and the new water storage tank.

PARE coordinated early on with the applicable state regulatory agencies to review in advance the overall procedures and requirements for this project. PARE's environmental scientists flagged the wetlands in the proposed investigation and construction areas and prepared the necessary regulatory submissions. PARE also coordinated the efforts of a team including a surveyor, an archaeological expert, a hydrogeologist, electrical and mechanical engineering subcontractors, and a well drilling subcontractor.

Relevant Project Features:

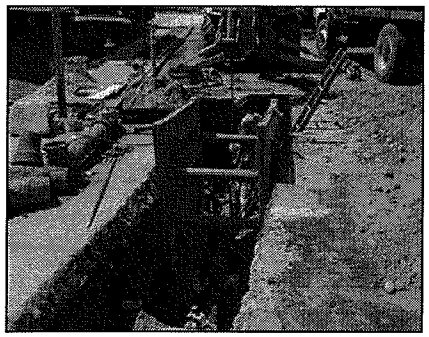
- *Development of new potable well and pumping station.*
- *Renovations of three existing well.*
- *Siting and design of new water storage tank.*
- *Replacement of more than10,000 linear feet of transmission mains.*
- *Wetlands, geotechnical, archaeological, and hydrogeological investigations.*
- *Regulatory permitting.*
- *Construction-phase services.*

PARE CORPORATION

Water Main Cleaning and Lining Construction Observation

East Providence, Rhode Island

Project Owner: City of East Providence



Pare Corporation (PARE) was retained by the City of East Providence to assist them with their cleaning and lining program. While the City did the project design themselves, they relied on PARE to provide construction administration and observation services. PARE has been on-site full-time since September 2009 conducting construction observation. During that time, PARE has been responsible for documenting construction progress, coordinating between the owner and the contractor, field verifying existing conditions, documenting discrepancies in system mapping and field conditions, and providing technical input and engineering services as needed.

Some of the construction administration services provided by PARE include shop drawing review, contractor payment requisition review and approval, and field documentation. PARE also provided quality control review through field measurements of pipe lining, oversight of temporary bypass piping, and review of disinfection and pressure testing results.

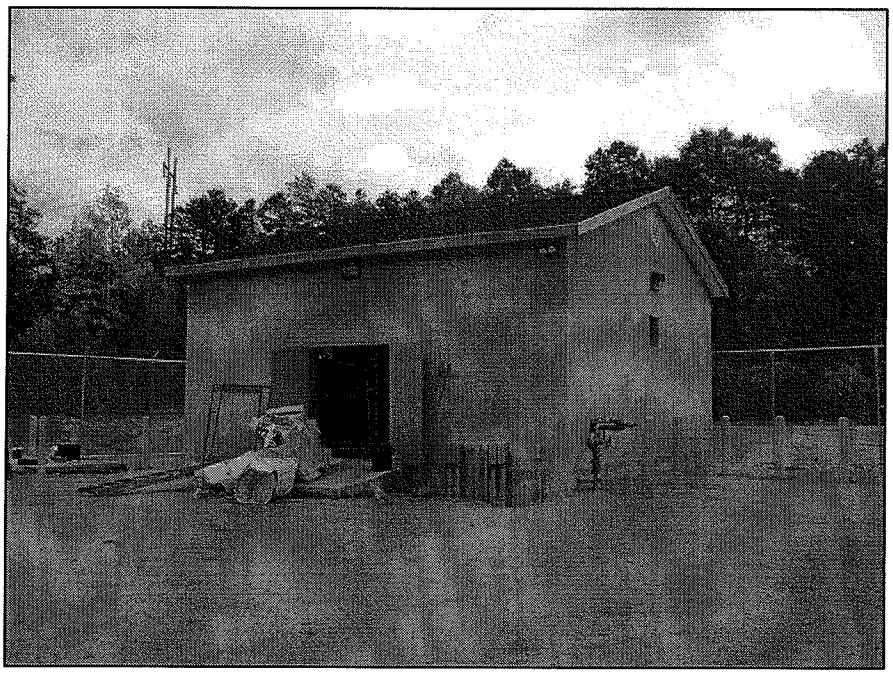
As part of the contract, PARE provided engineering services to address certain unforeseen field conditions. Given the density of the City streets, some streets have a significant number of utilities beneath them. This made thrust restraint on existing and new piping difficult. PARE was able to provide innovative and unique thrust restraint designs that provided adequate protection to the water system while fitting into some relatively tight locations. PARE was also able to provide evaluation and design services for maintaining adequate clearance around sanitary sewer lines, and where necessary, encasement advice for water and sewer.

Much of this project was funded through the American Recovery and Reinvestment Act (ARRA) of 2009. As such, PARE assisted the City with the paperwork and compliance requirements established through the ARRA program, particularly the certified payroll requirements and the Buy American provision of the act.

Relevant Project Features:

- *Conducted full-time construction observation*
- *Reviewed shop drawings and contractor request for information*
- *Provided engineering support during construction*
- *Reviewed and processed contractor payment requests*

PARE CORPORATION



New Well Pump Station # 11

North Kingstown, Rhode Island

Project Owner: Town of North Kingstown

The Town of North Kingstown Division of Water Supply selected Pare Corporation to design a new well pump station. The pump station was required in order to allow the connection of a newly-installed potable water well to the Town's water distribution system.

PARE coordinated with a surveyor for existing conditions drawing and elevations, reviewed the Well Development Report for the new well, and performed hydraulic modeling in order to determine sizing and selection for the new well pump.

PARE was responsible for site design (road access, parking, security lighting, fencing, etc.), building structure (foundation, electrical service, HVAC system), mechanical process equipment (pumping equipment, control valves), connection to the distribution system, SCADA instrumentation and control system, and potable water treatment system.

PARE also prepared all permitting applications including RI Department of Health Division of Drinking Water Quality, Ten State Standards, RI Building Code, RI Fire Safety Code, and all applicable Town codes and regulations.

PARE prepared construction documents, assisted the Town in the bidding process, and provided construction observation.

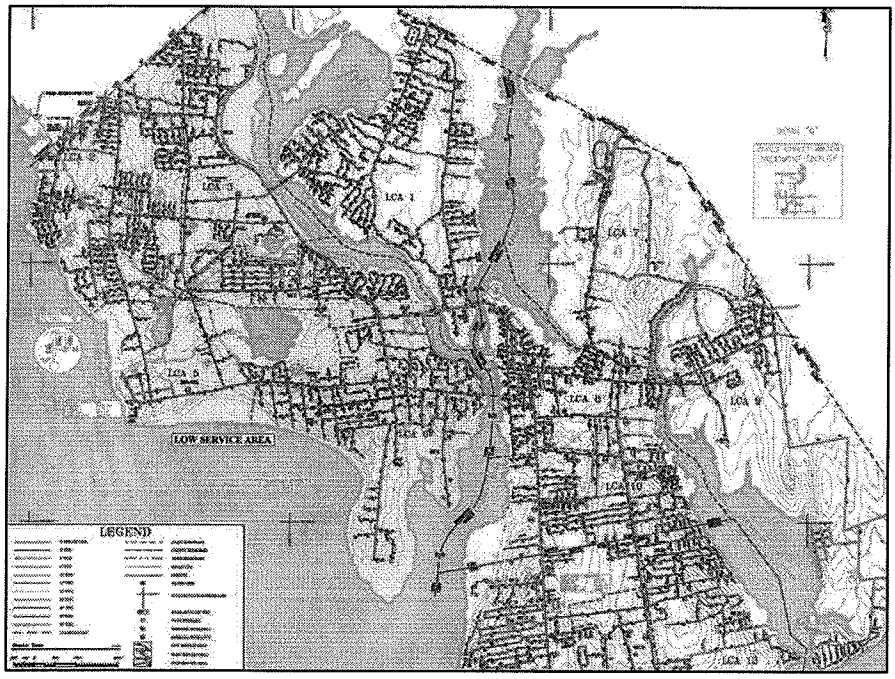
Relevant Project Features:

- *Design of new well pump station.*
- *Access and site design.*
- *Regulatory permitting.*
- *Construction-phase services.*

PARE CORPORATION

Bristol County Water Authority - Hydraulic Model Development

Bristol, Warren & Barrington, Rhode Island



GIS-based system map of the northern half of the BCWA's water system.

Project Owner: Bristol County Water Authority

Relevant Project Features:

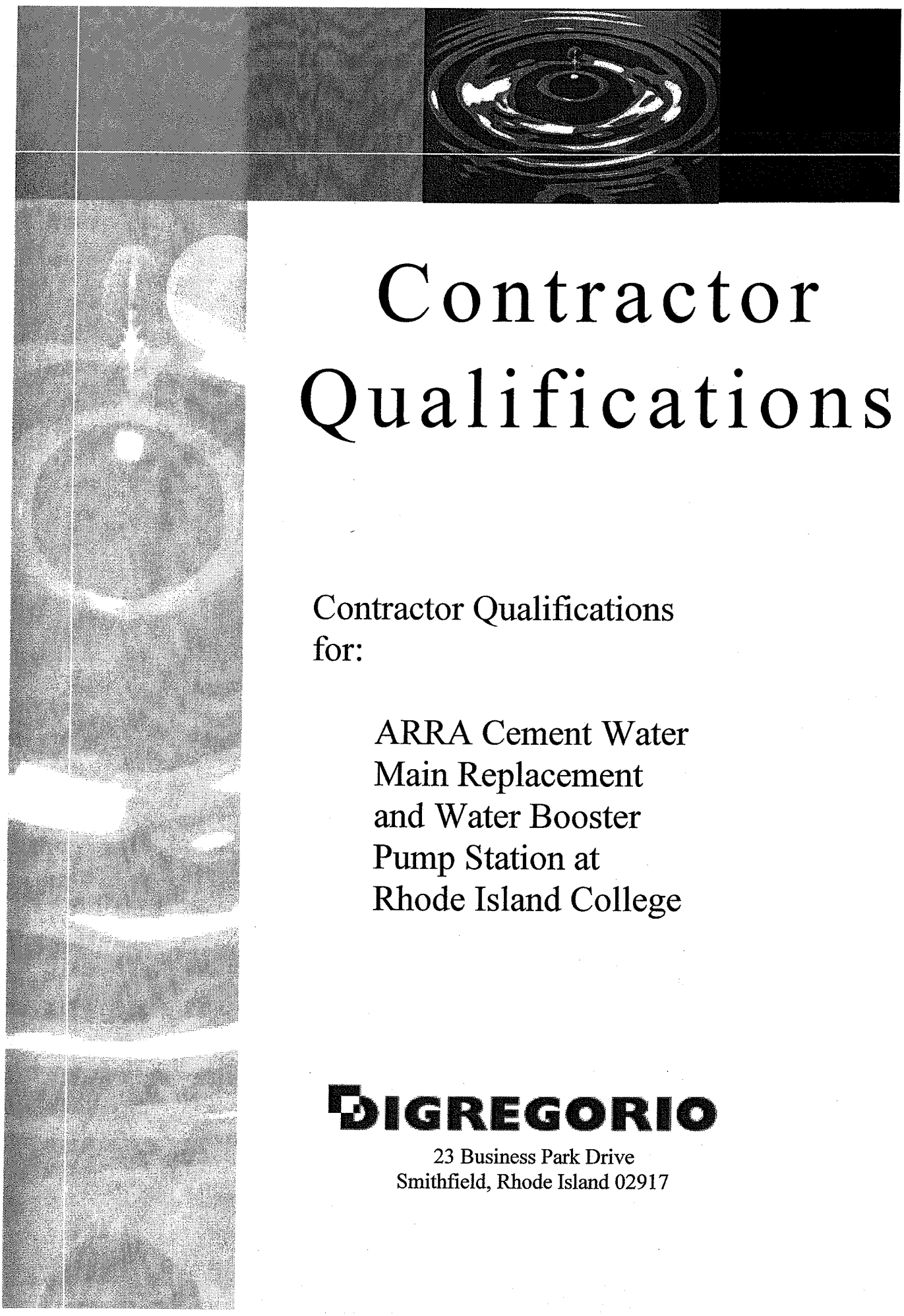
- *Developed hydraulic model of water system.*
- *Identified system deficiencies and recommended capital improvements.*
- *Developed full-system operations map for Authority's on-going use in water system operations.*

The Bristol County Water Authority (BCWA) engaged PARE to develop a computerized hydraulic model of its distribution system in order to have a tool that BCWA can use to provide an overview of their water system's performance, identify system deficiencies, and provide an evaluation of potential system improvements.

The BCWA provides water to approximately 16,000 customers in the towns of Barrington, Warren, and Bristol. The system is comprised of four surface water reservoirs, two water treatment plants, an inter-connection with the Providence Water Supply Board, four water storage tanks with a combined capacity of 3.6 million gallons, two pump stations, and approximately 231 miles of pipe ranging in size from 1-inch to 30-inches in diameter.

PARE developed the BCWA hydraulic model using MWH Soft's Info Water software, which is a GIS-based modeling software. Portions of the model were developed using existing AutoCAD-based information provided by the BCWA, which was then converted into GIS-based files and imported into the hydraulic model.

As part of the modeling study, PARE conducted a detailed system analysis resulting in recommend-dations for proposed improvements and operational optimization for the existing system. PARE used the hydraulic model to evaluate typical system pressures and the net change in system storage for various scenarios, as well as to evaluate the supply and storage capacities, piping adequacy, and fire flow adequacy of the system. This culminated in the identification of potential capital improvements that will help to establish long-term infrastructure redundancy and also increase system storage to better serve the existing demands of the system.



Contractor Qualifications

Contractor Qualifications for:

ARRA Cement Water Main Replacement and Water Booster Pump Station at Rhode Island College

DIGREGORIO
23 Business Park Drive
Smithfield, Rhode Island 02917

DIGREGORIO
C O R P O R A T I O N
Site and Utility Contractor

23 Business Park Drive
Smithfield, RI 02917
Tel. (401) 232-1400
Fax. (401) 232-5848

January 24, 2011

State of Rhode Island
Department of Administration
Division of Purchases
One Capitol Hill
Providence, Rhode Island 02908-5855

As President of DiGregorio, Inc., I would like to take this time to personally thank you for giving our company the opportunity to submit a proposal for the **ARRA Cement Water Main Replacement and Water Booster Pump Stations at Rhode Island College.**

Our company was established in the early nineties and became incorporated in the State of Rhode Island in June of 1996. DiGregorio, Inc. operates primarily as a site and utility contractor for commercial, industrial, and municipality projects. We are considered a signatory contractor with all of the major unions in our area. Our work is typically performed under fixed priced and/or time and material contracts as either a general contractor or a subcontractor. We take great pride in the positive reputation that we have built throughout the years with the state, cities, towns, colleges, universities and private contractors that we have worked with.

We have successfully completed utility projects at the University of Rhode Island, Brown University, Providence College, Roger Williams University and Johnson & Wales University. We pride ourselves in completing these projects on schedule and within budget while still maintaining the needs, safety, and complexities of an active, thriving campus community.

DiGregorio, Inc. operates out of a six acre site located in an industrial zoned area in Smithfield, Rhode Island. This property consists of a 5000 SF office building with a 19,000 SF six-bay service garage attached. We are also affiliated with our own materials company called Bella Sand LLC and concrete company called DiGregorio Concrete (formerly PRM Concrete). Bella Sand, our materials company operates out of a 55-acre parcel in Chepachet, Rhode Island where raw materials such as loam, sand, stone, and gravel are processed and stock piled for use on our projects. DiGregorio Concrete operates out of Cranston, Rhode Island and is one of the major suppliers of concrete in the State of Rhode Island.

Upon review of the attached documentation, please feel free to contact me directly should you have any questions. Thank you for your time and consideration.

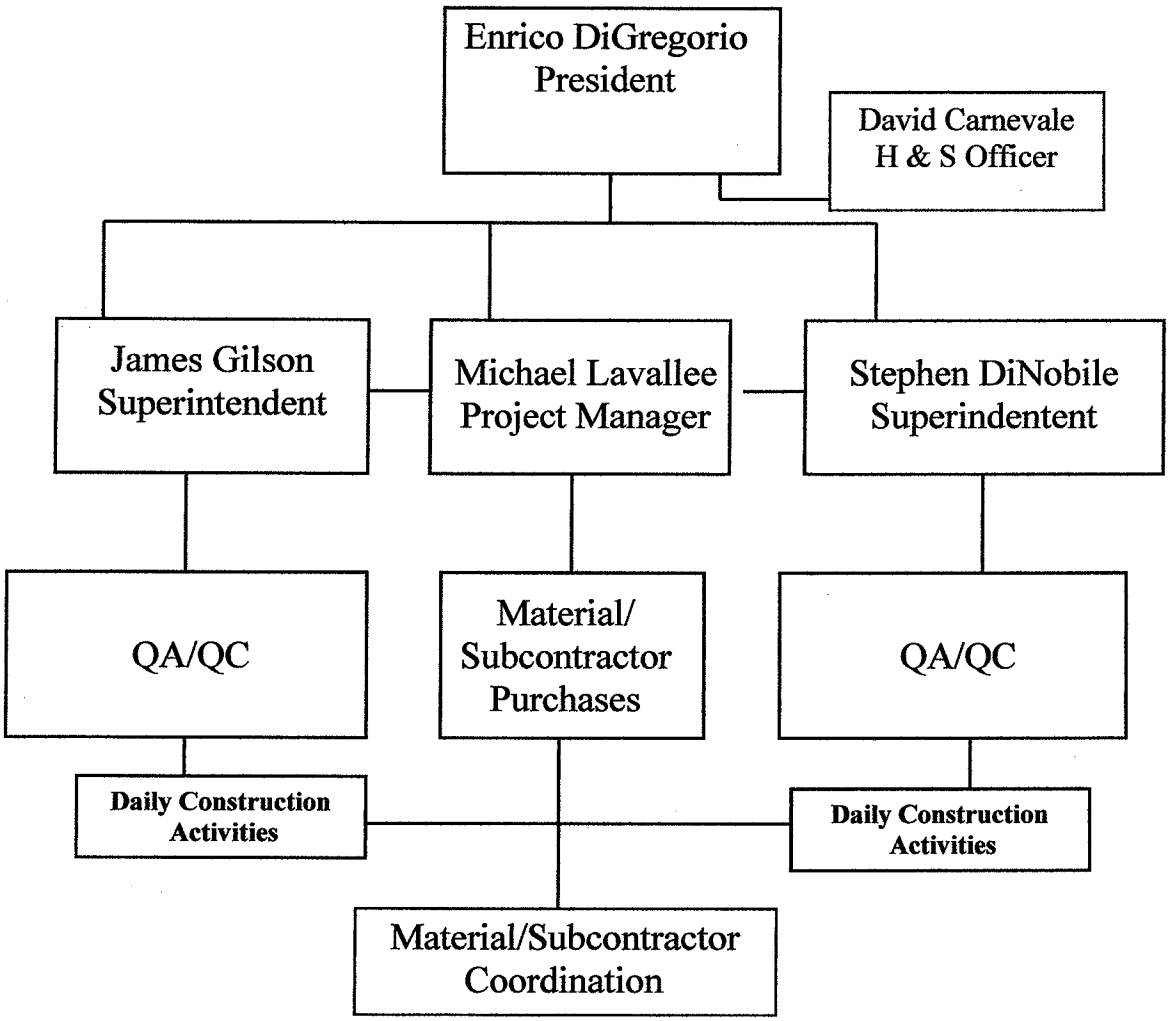
Very truly yours,
DIGREGORIO, INC.

Enrico F. DiGregorio
President

DiGregorio, Inc.
23 Business Park Drive
Smithfield, Rhode Island 02917

ARRA Cement Water Main
Replacement and Water Booster
Pump Station at RI College

FLOW CHART OF PROJECT ORGANIZATION



STAFF

Project Superintendents	6
Estimators/Engineers	2
Project Managers	3
Health & Safety Officer	1
Clerical	4
Survey/Layout (In-house)	1
Outside Work Force (Average)	65
Garage/Maintenance	3

KEY PERSONNEL

23 Fair Oaks Drive Lincoln, RI 401-722-1373

Enrico DiGregorio

Title

President of DiGregorio, Inc.
Vice President of DiGregorio Concrete d/b/a PRM Concrete
Managing Member of Bella Sand, LLC

Experience

1990–Present DiGregorio, Inc. Smithfield, RI

President

- Oversees entire operation – Office and Field Staff.
- Responsible for negotiating with Local Unions.
- Hiring all personnel – office and field.
- Purchasing of any and all company assets.
- Coordinates and Schedules Personnel.

General Superintendent

- Company liaison between office and field personnel.
- Runs weekly project meetings.
- Responsible for seeking out and reviewing all bids.
- Meets with Engineers, City/Town Officials, Owner's regarding work.
- Negotiates with potential suppliers and subcontractors.
- Reviews Accounts Payable
- Prepares Monthly Requisitions for Payment on all Projects.
- Coordinates site activities with Project Managers.
- Develops and/or Reviews Construction schedules.

Licenses

RI CDL Class A
OSHA 40 hour

RI Contractor's License
17344

References and Listing of Projects Completed Attached

Peter Dziubaniuk

Chief Estimator

Education:

Bachelor of Science Degree in Civil Engineering, June 1974, Northeastern University

My education included courses in the structures, concrete, hydraulics, foundations, transportation, construction, soils, materials, geology, civil engineering systems and surveying.

Experience:

6/74 – 12/76 City of Woonsocket

As a Civil Engineer within the Engineering Division, my work included studies and record keeping of the City's reservoirs and water supply system; operational costs studies; design and specifications for sanitary sewer and storm drain systems; design of new roadway layouts, design and specifications for the reconstruction of existing roadways; and various other miscellaneous engineering activities.

During 1975 and 1976, I was the Resident Engineer on a sewer lateral project and overlooked the construction of two sewage-pumping stations.

12/76 – 9/78 Halliwell Associates, Inc.
East Providence, RI

I was employed as a Highway and Sanitary Design Engineer. My work included the design and specifications for sewer and water extensions, sewage pumping stations; street reconstruction projects, storm drainage installations, population and ultimate demand studies, contract negotiations for the wholesale purchase of water, mass design for future sewer and water extensions, and infiltration and inflow analysis studies.

In a supervisory position, I was Project Engineer on several projects, including those that were Federally and State Funded.

9/78 – 5/92 Forte Brothers, Inc.
Berkeley, RI

I was employed as an Estimator/Project Engineer specifically oriented to the fields of site work, utilities and heavy construction following through on projects from their beginning to their closeout.

Experience: (Continued)

My duties included quantity take-offs, preparing bid cost estimates, and project management while working under a very team oriented organization.

I worked on projects up to $20,000,000.00, the following being a few of my major successful bids:

- Rte. 4 Extension
- Civic Center Interchange
- Rte. 138 Improvements
- Rte. 95 Improvements
- Warwick Sewers
- Dartmouth Mall
- J.F.K. Highway

5/92 – 4/02 C. Pezza & Son, Inc.
Johnston, RI

I held the position of Chief Estimator and Senior Office Manager. I was responsible for overseeing our construction office staff while being actively involved at the same time. I was responsible for taking a project from its conception to its completion including quantity take-offs, preparing bid cost estimates, purchasing materials and subcontractors, scheduling and work force coordination. I have vast experience in the areas of site work, highway and utility construction.

I have worked on projects up to $10,000,000.00, the following being a few of my major successful bids:

- Ocean State Water Storage Pond (Design / Build)
- Newington, N.H., Power Plant
- Cedar Swamp Brook Relocation
- Galilee Salt Marsh Restoration
- Amica Insurance
- Butler Hospital Sewer Project
- Johnston Drainage Project
- Burrillville Landfill Closure

Experience: (Continued)

4/02 – 5/03 R.P. Iannuccillo & Sons
Providence, RI

I served as Chief Estimator responsible for all phases of construction proposals. My responsibilities included preparing costs estimates, purchasing materials, subcontract agreements, scheduling, and project coordination.

I have estimated projects up to $11,000,000.00 for the R.I.D.O.T., Freight Line Improvement Program, municipalities, and the private sector. These projects involved site work, utility installations, bridges, concrete, sheeting, and piling. I played a major roll in placing the Company back into a productive and profitable position.

The following is a list of the major jobs I secured:

- I-195 Relocation – Contract 5
- I-195 Relocation – Electric Conduits
- Middle Bridge Road Bridge Replacement
- J.O. Pastore Federal Building Structural Repairs
- Field Street Substation
- Mattapoisett Dam Repairs

5/03 – Present DiGregorio, Inc.
Smithfield, RI

I serve as Chief Estimator responsible for preparing all aspects of bid proposals, including quantity take-offs, construction analysis, cost pricing, and material/subcontractor solicitations. Oversee our office estimating staff and work closely with our project managers.

Nicholas J Piampiano P.E.
7 Countryside Lane
Scituate, R.I. 02857
(401) 934-3768

Education

University of Rhode Island
Kingston R.I.
B.S. in Civil Engineering. (1990)

Public Office

Scituate Planning Commission, Scituate, RI 1997-present

Experience

DiGregorio Inc.
Smithfield, RI October 2008- Present
Senior Civil Engineer. Prepare bid estimates for public and private site work and utility projects. Responsible for project management, design build, environmental coordination, including scheduling and oversight for various construction projects in the greater Southern New England area.

Thalmann Engineering Co., Inc.
Smithfield, RI July 2007- October 2008
Senior Project Manager. Responsible for state and local permitting, including local Zoning and Planning approvals as well as State permits for various land development and highway projects in Rhode Island. Also perform oversight for daily office activities including proposal preparation.

Garofalo & Associates
Providence, RI April 2003 – July 2007
Senior Project Manager Civil Site Department. Responsible for state and local permitting, including local Zoning and Planning approvals as well as State permits for various land development and highway projects in Rhode Island and Massachusetts.

Advanced Civil Design, Inc.
North Scituate, RI August 2001 - Present
President and owner of a small Civil Engineering firm specializing in site development and advanced septic system design and technology.

Cataldo Associates
Johnston, RI November, 1998-August 2001
Vice President in charge of project design, office management, administration and daily office operations. Responsible for state and local permitting, including local Zoning and Planning Board approvals for various land development projects in Rhode Island, Massachusetts and South Carolina.

David Gardner & Assoc.
Warwick, R.I. January 1996 – November 1998
Perform hydrology / drainage analysis, sewer and roadway design for subdivisions and site plans. Also prepare Site Constraints and Feasibility Studies, as well as Environmental Impact Studies. Responsible for state and local permitting and local Zoning Board approvals for various land development projects.

Glenn Construction

Manchester, Conn. June 1, 1995-January 1996
Project Superintendent. Prepared bid estimates for public and private site work and utility projects. Responsible for project management, including scheduling and oversight for various construction projects in the greater Hartford area.

CALTRANS

Construction Department, **Union City, Ca.**
July 15, 1991 - December 30, 1991 & August 1, 1993 - June 1, 1995
Made field changes and reconciled conflicts between project plans and actual field conditions on the job site by generating and implementing contract change orders. Experience includes work with C.I.D.H. piles, roadway sections, retaining walls, drainage facilities and sound walls.

Survey Department, **Martinez, Ca.**
February 1, 1993- January 29, 1993
Performed all survey tasks including construction staking for roadways, sound walls and bridge sections. Responsible for preliminary site investigation and data collection for As-built plans.

Project Development, **Oakland, Ca.**
January 1, 1992 - January 29, 1993
Prepared contract plans, specifications, quantities, and cost estimates for a pavement rehabilitation project. Geometrically designed and analyzed freeway ramp alternatives for an urban highway in San Francisco.

R.I.D.O.T.

Construction and Materials Department, **Providence, R.I.**
May 15, 1988 - August 30, 1988 & May 15, 1989 - August 30, 1989
Responsible for on-site design changes, record keeping and progress payments. Performed material testing for various highway projects.

Certification
Connecticut Registered Professional Engineer,
Rhode Island Registered Professional Engineer,
Massachusetts Registered Professional Engineer,
RIDEM Class II & III Septic designer
RIDEM Class IV Soil Evaluator
OSHA 10 hour Occupational Safety and Health Training Course
Approved South Kingstown and Johnston, RI septic system inspector
Title V certified septic system designer
Concrete Test Methods 533,539,540

Computers Autocad 2009, Versacad, I.G.R.D.S., Apollo Workstation, Hydrocad, Hydroflow

References Available upon request.

MICHAEL LAVALLEE

SENIOR PROJECT MANAGER

EXPERIENCE

1995-2001 DiGregorio, Inc. Smithfield, RI
2006-Present

Project Manager/ Superintendent

Managed and Supervised Heavy Civil commercial and public construction projects
Material buy-out per project specifications
Hired and Oversee Subcontractors
Coordinated with Owners, Engineers, and construction trades
Scheduled material deliveries
Prepared submittals, maintained schedules and budgets
Prepared change orders and payment requisitions
Prepared As-Built Drawings
Projects:

Phase V Area 2 Baseliner – RIRRC
Brown University Steam Lines
A. Duie Pyle – Johnston, RI
Colonial Toyota – Smithfield, RI
Cranston Police Station – Cranston, RI
CVS Lot 3 – Woonsocket, RI
Dean Street Improvements – Providence, RI
FM Global – Johnston, RI
Glenbrook Cables – Darien, CT
Restivo Sewer Line – Johnston, RI
Johnson & Wales Dormitory – Providence, RI
Lakeside Commerce Parkway – Johnston, RI
Lincoln Ridge Business Park – Lincoln, RI
RI State Police Barracks – Scituate, RI

2001-2005 G. Lopes Construction Taunton, MA

Estimator/ Project Manager

- Estimated and Managed Heavy Civil commercial and residential construction projects for a 300 employee construction company
- Reviewed construction documents for bid preparation
- Digital earthwork take-offs
- Developed 3D models from AGTEK 3D software for estimates and GPS system
- Developed cost estimates for all phases of site and utility work
- Defined scope of work with Owners and General Contractors
- Reviewed and Executed contracts

Negotiated and Buy-Out projects
Secured Permits
Prepared submittals, prepare change orders

Managed Supervisors, Construction progress, and coordinate with trades
Prepared Schedule of Values and Payment Requisitions
Processed Time and Material work
Developed final As-Built plans and Project Close-out requirements

1987-1995 Rhode Island Resource Recovery Corp. Johnston, RI

Project Engineer

Developed plans and specifications relating to landfill expansion and closure projects
Procured contractors and materials for various construction projects
Oversaw construction activities assuring contractors performed according to plans and specifications
Reviewed payment requisitions and certified payroll
Maintained schedules and budgets

1985-1987 Waterman Engineering Company East Providence, RI

Civil Technician

Worked with civil engineers and land surveyors on various stages of construction projects
Designed and drafted construction documents
Land surveying and construction layout
Deed and title research

1983-1985 Ronald M. Ash & AssocWest Palm Beach, FL/Prov.RI

Civil Technician

Worked with project architects and engineers as related to commercial, municipal and residential construction projects
Civil and Architectural Drafting
Scheduling
Construction layout and various office duties

EDUCATION

1981-1983 Wentworth Institute of Technology

Civil Construction Technology

56 Paris Irons Road
North Scituate, RI 02857

James Gilson

Project Superintendent

Experience

- Over 25 years experience in roadway and utility construction, including major storm, sewer, water, gas, and electric installations

Employers

- Bond Brothers
- C. Pezza & Son
- R.P. Iannuccillo
- DiGregorio, Inc. - Current

Superintendent on the Following Projects

- Rising Sun Mills – Site Grading and Utility installations
- N.B.C. Sewer Overflow Project - Providence
- Johnston Drainage – 7,000lf of drains up to 48 inches
- Street and Sidewalk Reconstruction – City of Providence
- Install 7 miles of 24" gas main for Algonquin Gas
- Install 6 miles of electric duct in Boston, for Boston Edison
- Glenbrook Cable Project installing 8"- 8 way electric ducts
- Brown University Steam Line & Utility Relocation Project
- A. Duie Pyle – Site Work and Utilities
- Hartford Avenue – Install 2,000 LF of 12" water mains
- Brown University Metcalf Renovation Project
- Roger Williams University – Site Work and Utilities

STEPHEN D. DINOBILE
93 Hillside Drive
North Providence, RI 02904
(401) 641-4929

Work History:

2001-Present	DiGregorio, Inc.	Project Superintendent
1993-2001	Fleet Construction	Project Foreperson

Experience: Over 25 years experience in roadway and utility construction, including major storm, sewer, water, gas, and electric installations.

Projects:

Current	Hartford Avenue Reconstruction Johnston, Rhode Island
2009	RI State Police Barracks Scituate, Rhode Island
2007-2008	Glenbrook Cables Darien, Connecticut
	Lakeside Commerce Park Johnston, Rhode Island
2006	J&W Harborside Dorms Providence, Rhode Island
	Cranston Police Station Cranston, Rhode Island
2004-2005	Stop & Shop Supermarket Meadowbrook Commons Warwick, Rhode Island
2003	Stop & Shop Supermarket Mashapaug Commons Providence, Rhode Island

EQUIPMENT LISTING
DiGregorio, Inc.

Pickup Trucks

2008 Ford F-150 Pick-Up Bella
Ford F-150 2004 Pick Up
Ford F-150 2004 Pickup
Ford F-150 2006 Pick Up
Ford F-150 Pick Up 1997
Ford F-150 Pick Up 1998
Ford F-150 Pick Up 1999 - SOLD
Ford F-250 Pick Up 1997
Ford F-350 Pick-Up 2006
Ford F150 2004 Pick Up
Ford F150 2010
Ford F150 2010 P-18
Ford F150 2010 P17
Ford F150 Pick Up 2000
Ford F150 Pick Up 2000
Ford F150 Pick Up 2001 - P8
Ford F250 Pickup 2006
Toyota Tacoma 2007

Ten Wheelers

Mack RD688SX Ten Wheeler 1996
Mack RD688SX Ten Wheeler 1999
Mack Tri-Axel CV713 2004

Trailer Dumps

Mack CH613 2004 TD
Mack Tri-Axle CV713 2006
Steco 2000 Dump Trailer
Mack CH613 Trailer Dump 1996
Mack CH613 Trailer Dump 2001
Steco 2000 Dump Trailer DIGREG

Equipment Trailers

Eagle FLT Trailer 1990
Fontaine TH55-DSR Trailer 2000
Interstate FlatbedTrailer 2006
J&J Dump Trailer 2001
Palmer TA-26F Trailer 2000
Superior Flatbed Trailer 2001
Superior Trailer 2007
Tilt Trailer Superior 2007

Front End Loaders

CAT 980G Wheel Loader 2001
CAT Wheel Loader 930H
Caterpillar 966F Wheel Loader

EQUIPMENT LISTING
DiGregorio, Inc.

Bulldozers

CAT D6R LGP Bulldozer
Caterpillar D4H XL Track Dozer
Caterpillar D6M LGP Tractor 03
Caterpillar D8R Dozer

Backhoes

CAT420D Backhoe Loader 2003
John Deere 410D 1995
John Deere 410G 2001
John Deere 410G 2002
John Deere 410J Backhoe 2008
John Deere 410J Backhoe Loader
John Deere 510D Loader

Rollers

Inger Rand Roller Tandem DD-24
Wacker Roller w/Remote RT82-SC

Bobcat

New Holland Loader LX865

Power Screening Plant

Erin Screener FT-1020

Compressors

Air Compressor
Air Compressor 2003
Air Compressor ISA2507
IR Air Compressor 2475F
IR P185WJD Compressor
Titan Compressor TAC-2T

Tractors

CAT D6N LGP Tractor
Ford 445C Tractor Loader
Peterbilt Tractor Model 388

Maintenance Vehicles

Ford F-550 2001
Ford F550 2005 Pick Up

Articulated Dumps

TA30 #1 Off Road Truck
TA30 #2 Off Road Truck

Water Truck

Ford Louisville H2O Truck 1997

EQUIPMENT LISTING
DiGregorio, Inc.

Excavators

CAT 330CL Excavator
CAT966G Wheel Loader 04
CAT 308DCRSB Hydrauliuc Exc
CAT 330CL Excavator
CAT M322D Wheel Excavator
CAT M322D Wheel Excavator
CAT325L Excavator 1999
CAT330BL Excavator 2002
CAT330CL Excavator 2005
Caterpillar 345 Excavator
Caterpillar M318C Excavator
John Deere 160LCExcavator 1998
Komatsu PC400LC Excavator 2000
Takeuchi Mini Excavator TB135

Compactors

Bowmag Roller 2001
Bowmag VIB Roller 2003
Plate Compactor GRA2376
Wacker Plate Compactor

SUVs

2010 Ford Explorer
Ford Expedition 1999

Stakebody Vehicles

2007 Ford F-550 Stake Body
2008 Ford F350 Stakebody
Ford 1990 Utility Truck
Ford F-350 2006 Utility Truck
Ford F350 2010
Ford F450 2005 Pick Up
Ford F450 Stakebody 2000
Ford Stakebody F450 1997

Power Washers

Landa Pressure Washer
Titan Pressure Washer TPW-2200

Lasers

Bunce Rotating Laser RL-H3C
Bunce Rotating Laser TT-400
Rotating Laser
Rotating Laser
Topcon Laser System RL-H3C
Topcon Pipe Laser TPL-4AV

Compactors

VIB Plate 7500lb Impact
VIB Plate Wacker BPU3545

EQUIPMENT LISTING
DiGregorio, Inc.

Generators

Generator Multi Quip
Honda Generator
Magnum Generator MMG35J
Titan Generator TG5500D
Titan Generator TG5500D

Welders

Bobcat 225 Portable Welder
Miller Trailblazer DC Welder

Butt Fusion Machine

McElroy Butt Fusion Machine

Trench Boxes

Trench Box 4D812 DA Smith 2003
Trench Box Kundel Titan 6'x22'
Trench Box Light Weight 6x8
Trench Box w/ 60 inch spreader

Trailers

Fontaine Magnitude 2010 55H DS
Fruehauf 1977 Tank Trailer
Fruehauf Flatbed Trailer 1988
Interstate Trailer 40DLA 1998

Storage Container

Valtran 20' Storage Container

Pumps

Tanker WaterPump Monarch MIH40
Titan Trash Pump PT-300 3x3

Bedding Box

Bedding Box 7.5cy Super Duty

Forklift

Forklift Used Datsun 5000lb

Fuel Truck

White Expeditor 2 Fuel Truck

Boom Truck

Volvo Boom Truck1998 WG64

Tanks

Highland Tank 1000 Gallon
Septic Tank 2500 Gallon

Buckets

30" Heavy Duty Bucket CAT330
Bella Sand Bucket 48" TB Link

Survey/Layout

GTS-235W 5" Total Station
Trimble SCS900 & TSC2

Curbing Jeeps

Jeep Wrangler 1994
Jeep Wrangler 2002

EQUIPMENT LISTING
DiGregorio, Inc.

Crushing Plant

2004 Nordberg Crusher/Bella

Snow Plow

Fisher 8' HD MM2 Snowplow

Hammers

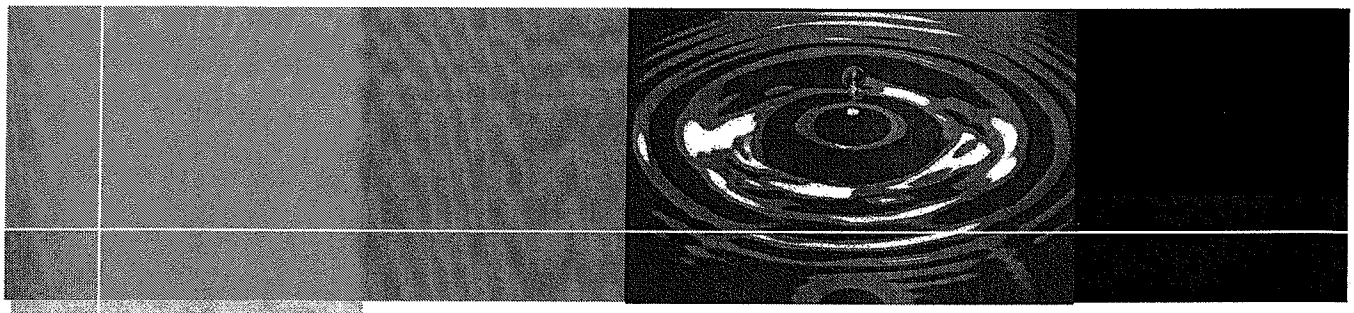
Hammer MPKE 216
Hammer NPK GH10 New
NPK Hammer 2007

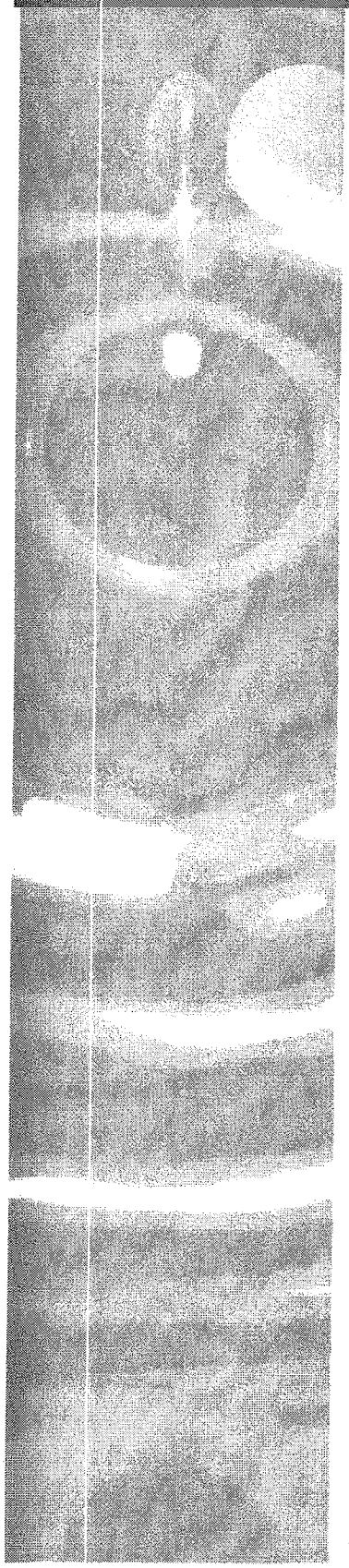
Light Towers

Light Tower Towable
Terex Light Tower
Terex Light Tower
Terex Light Tower
Terex Light Tower
Terex Light Tower
Terex Light Tower

Vibrators

Northrock PRO 50
Northrock PRO 50





Contractor Experience

Contractor Experience for:

ARRA Cement Water Main Replacement and Water Booster Pump Station at Rhode Island College

DIGREGORIO
23 Business Park Drive
Smithfield, Rhode Island 02917

EXPERIENCE

Water Main Installations
Completed By: DiGregorio, Inc.

The following is a list of Water Main Installations that we have successfully completed as part of major construction projects, a number of these being under the jurisdiction of the Providence Water Supply Board.

- Hartford Avenue; Johnston, RI
- RI State Police Barracks; Scituate, RI
- FM Global Corporate Headquarters; Johnston, RI
- Lakeside Commerce Park; Johnston, RI
- Johnson & Wales Dormitories; Providence, RI
- Roger Williams University; Bristol, RI
- Laurelwoods; North Smithfield, RI
- A. Duie Pyle; Johnston, RI
- RNE Facility; Smithfield, RI
- Smithfield Business Park; Smithfield, RI
- Colonial Toyota; Smithfield, RI

SIMILAR PROJECTS

Project Name:	**RI State Police Barracks**
Project Location:	Scituate, Rhode Island
Brief Scope of Work:	Construction of new State Police Headquarters, clear & grub tress and stumps, excavate for footing and foundations, install new drainage system and retention pond, install new water pump station and 900LF of new 8-inch DI water pipe and multiple 1" and 2" services tying in additional building on campus, install two (2) 10,000 gallon cisterns for the fire line, 600 LF of 6" fire main and fire hydrants, install 350 LF of 6" sewer, concrete sidewalks, curbing, and paving parking lots.
Approx. Dollar Value:	$2,155,065.00
Date Completed:	October, 2010
Owner's Rep:	A.F. Lusi Construction, Armand Lusi
Owner's Telephone:	(401) 232-1010

Project Name:	**Roger Williams University, New Residence Hall** Subcontractor
Project Location:	Bristol, Rhode Island
Brief Scope of Work:	Excavation for foundations, F&I new water and sewer lines, drainage, curbing, paving, concrete sidewalks, retaining walls and landscaping
Approx. Dollar Value:	$1,160,000.00
Date Completed:	August, 2009
Owner's Rep:	Bond Brothers, Ted Nevells
Owner's Telephone:	(401) 254-5281

Project Name:	**Glenbrook Cables**
Project Location:	Norwalk, CT
Brief Scope of Work:	Excavate & Backfill 8-way 8" high voltage electric ducts.
Approx. Dollar Value:	$7,000,000.00
Date Completed:	June, 2008
Owner's Rep:	Bond Brothers, Tom Bailey
Owner's Telephone:	(617) 387-3400

Project Name:	**Lakeside Commerce Center – Contract 2**
Project Location:	Johnston Central Landfill, Johnston RI
Brief Scope of Work:	Clearing and grubbing, earth excavation, rock excavation, utility installations, pump stations, concrete curbing, retaining walls, bituminous concrete pavement, concrete sidewalks, loaming and seeding, pavement markings and signage.
Approx. Dollar Value:	$7,000,000.00
Date Completed:	December, 2008
Owner's Rep:	Rhode Island Resource Recovery Corporation, William Anderson
Owner's Telephone:	(401) 942-1430

SIMILAR PROJECTS

Project Name:	**Laurelwood**
Project Location:	North Smithfield, Rhode Island
Brief Scope of Work:	Construction of 45-Acre Condominium Project including: Clearing, Erosion Controls, Site Grading, Storm Drainage, Sanitary Sewer, Water, Sub drains, Electric, Gravel Bases, Bituminous Concrete Pavement and Sidewalks.
Approx. Dollar Value:	$3,020,000.00
Date Completed:	December, 2007
Owner's Rep:	REPM, Ed Pivirotto Project Executive
Owner's Telephone:	(401) 769-1670

Project Name:	**Brown University / Utility Upgrades**
Project Location:	Providence, RI
Brief Scope of Work:	Furnish and Install approximately 3000 linear feet of hot water steam lines on campus.
Approx. Dollar Value:	$7,000,000.00
Date Completed:	November, 2007
Owner's Rep:	Bond Brothers, Phil Mauch
Owner's Telephone:	(401) 274-0921

Project Name:	**Johnson & Wales Harborside Dormitories – Phase II**
Project Location:	Harborside Boulevard, Cranston RI
Brief Scope of Work:	Site work including foundation excavation, storm drainage, sanitary sewer, water, curbing, and pavement.
Date Completed:	December, 2006
Approx. Dollar Value:	$1,156,450.00
Owner's Rep:	Capstone Builders, Steve Smith
Owner's Telephone:	(203) 619-4528

Project Name:	**Smithfield Business Park**
Project Location:	Smithfield, Rhode Island
Brief Scope of Work:	Construct approximately 3000 LF of industrial roadway including earthwork, detention ponds, sanitary sewer, water, drainage, precast curb, bituminous concrete paving and industrial lot grading.
Approx. Dollar Value:	$1,600,000.00
Date Completed:	December, 2005
Owner's Rep:	Marshall Properties, Jack Marshall, President
Owner's Telephone:	(401) 725-9370

Project Name:	**Johnson & Wales Harborside Dormitories**
Project Location:	Harborside Boulevard, Cranston RI
Brief Scope of Work:	Site Preparation for 13 Dormitory Buildings including: 200,000cy of Off-Site Borrow, Rip Rap Revetment, Retaining Walls, and Sanitary Sewer Relocation.
Date Completed:	April 2005
Approx. Dollar Value:	$2,900,000.00
Owner's Rep:	Callahan, Inc. – Tim Callahan
Owner's Telephone:	(508) 279-0012

SIMILAR PROJECTS

Project Name:	**Providence College Steam Lines**
Project Location:	Providence RI
Brief Scope of Work:	Furnish and Install approximately 1750 linear feet of hot water steam lines throughout campus.
Date Completed:	September 1994
Approx. Dollar Value:	$950,000.00
Owner's Rep:	Robinson Green Berretta Corporation
Owner's Telephone:	(401) 272-1730

Current Contracts

Project Name:	Hartford Avenue Reconstruction Prime Contractor
Project Location:	Johnston, Rhode Island
Brief Scope of Work:	Full depth road reconstruction including lane widening, partial bridge reconstruction, 2000' of new 12- inch water main, drainage, gas main, fiber optics, precast curb, bituminous concrete pavement, concrete sidewalks, signing, pavement markings, landscaping, and two traffic signal systems.
Approx. Dollar Value:	$ 3,500,000.00
Completed Amount:	80%
Completion Date:	July 31, 2011
Owner's Rep:	RI Dept. of Transportation ~ Construction Management
Owner's Telephone:	(401) 222-2495

Project Name:	FM Global Roadway
Project Location:	Johnston, Rhode Island
Brief Scope of Work:	Earth excavation, new drainage, retention pond, drilling & blasting, F&I granite curbing, F&P 750LF concrete wall, F&I new telecommunications lines, relocate telephone & power lines, install new concrete sidewalks, loam and seed.
Approx. Dollar Value:	$ 2,600,000.00
Completed Amount:	50%
Completion Date:	Spring, 2011
Owner's Rep:	VHB Engineering Group
Owner's Telephone:	(401) 415-1480

Project Name:	Brown Metcalf Renovation Project
Project Location:	Providence, Rhode Island
Brief Scope of Work:	Site earthwork, E&B under-slab utilities, E&B area way and stairs, paving, curbing, drainage, sanitary sewer, water and gas.
Approx. Dollar Value:	$ 875,000.00
Completed Amount:	50%
Completion Date:	Summer, 2011
Owner's Rep:	Dimeo Construction Co., Inc.
Owner's Telephone:	(401) 273-9627

MAJOR CONSTRUCTION PROJECTS

Project Name:	**Route 44 Improvements**
Project Location:	Smithfield, RI
Brief Scope of Work:	Remove and replace curb and sidewalks, realign Austin Avenue, cold plane and overlay roadway, reconstruct catch basins, traffic signal system and repairs to Longhouse Road Bridge.
Approx. Dollar Value:	$1,686,431.83
Completion Date:	June 1, 2010
Owner's Rep:	RI Dept. of Transportation ~ Construction Management
Owner's Telephone:	(401) 222-2495

Project Name:	**Whipple Avenue Landfill Closure**
Project Location:	Burrillville, Rhode Island
Brief Scope of Work:	15 Acre Earth Cap of an existing landfill and construction of a transfer station including clearing, erosion controls, earthwork, relocation of solid waste, common borrow, low permability soil cap, geotextile fabric, rip rap slopes, gas vents, fencing, and landscaping.
Approx. Dollar Value:	$ 1,701,250.00
Completion Date:	June 1, 2010
Owner's Rep:	Woodard and Curran, John Bobrek
Owner's Telephone:	(866)702-6371

Project Name:	**FM Global Corporate Headquarters**
Project Location:	Johnston RI
Brief Scope of Work:	Clearing and grubbing, earth excavation, rock excavation, utility installations, parking garage, detention ponds, concrete curbing, retaining walls, bituminous concrete pavement and concrete sidewalks.
Approx. Dollar Value:	$9,000,000.00
Date Completed:	December, 2009
Owner's Rep:	Dimeo Construction, Norm DeGuillio
Owner's Telephone:	(401) 626-3162

Project Name:	**Roger Williams University, New Residence Hall**
Project Location:	Bristol, Rhode Island
Brief Scope of Work:	Excavation for foundations, F&I new water and sewer lines, drainage, curbing, paving, concrete sidewalks, retaining walls and landscaping
Approx. Dollar Value:	$1,160,000.00
Date Completed:	August, 2009
Owner's Rep:	Bond Brothers, Ted Nevells
Owner's Telephone:	(401) 254-5281

MAJOR CONSTRUCTION PROJECTS

Project Name:	**Phase IV Landfill Cap Construction**
	Prime Contractor
Project Location:	Johnston Central Landfill, Johnston RI
Brief Scope of Work:	Cap approximately 30 acres including subgrade preparation, diversion benches, geomembrane liner system, CDN, subsoil, topsoil, and Hydroseeding.
Approx. Dollar Value:	$7,000,000.00
Date Completed:	December, 2008
Owner's Rep:	Rhode Island Resource Recovery Corporation, William Anderson
Owner's Telephone:	(401) 942-1430

Project Name:	**Lakeside Commerce Center – Contract 2**
Project Location:	Johnston Central Landfill, Johnston RI
Brief Scope of Work:	Clearing and grubbing, earth excavation, rock excavation, approximately 25,000 LF of utility installations, pump stations, concrete curbing, retaining walls, bituminous concrete pavement, concrete sidewalks, loaming and seeding, pavement markings and signage.
Approx. Dollar Value:	$7,000,000.00
Date Completed:	December, 2008
Owner's Rep:	Rhode Island Resource Recovery Corporation, William Anderson
Owner's Telephone:	(401) 942-1430

Project Name:	**Glenbrook Cables**
Project Location:	Norwalk, CT
Brief Scope of Work:	Excavate & Backfill 8-way 8" high voltage electric ducts.
Approx. Dollar Value:	$7,000,000.00
Date Completed:	June, 2008
Owner's Rep:	Bond Brothers, Tom O'Connell
Owner's Telephone:	(617) 394-6235

Project Name:	**Phase IV Landfill Cap Construction**
Project Location:	Johnston Central Landfill, Johnston RI
Brief Scope of Work:	F&I 10,000 CY of Common Borrow, Place 220,000 CY of controlled fill, Excavation of 10,000 CY of solid waste, Excavation of 6,500 CY of non-solid waste, Geotextile fabric, 6" Bedding layer, Geomembrane/CDN, 18" Subsoil, 6" Topsoil, Hydro-seeding, Diversion Benches, Temporary Downchute, Perimeter drainage channels and 250 Boot Connections.
Date Complete:	December, 2007
Approx. Dollar Value:	$7,000,00.00
Owner's Rep:	Rhode Island Resource Recovery Corporation: William Anderson
Owner's Telephone:	(401) 942-1430

MAJOR CONSTRUCTION PROJECTS

Project Name:	**Laurelwood**
Project Location:	North Smithfield, Rhode Island
Brief Scope of Work:	Construction of 45-Acre Condominium Project including: Clearing, Erosion Controls, Site Grading, Storm Drainage, Sanitary Sewer, Water, Subdrains, Electric, Gravel Bases, Bituminous Concrete Pavement and Sidewalks.
Approx. Dollar Value:	$3,020,000.00
Date Completed:	December, 2007
Owner's Rep:	REPM, Ed Pivirotto Project Executive
Owner's Telephone:	(401) 769-1670

Project Name:	**Brown University / Utility Upgrades**
Project Location:	Providence, RI
Brief Scope of Work:	Furnish and Install approximately 3000 linear feet of hot water steam lines on campus.
Approx. Dollar Value:	$7,000,000.00
Date Completed:	November, 2007
Owner's Rep:	Bond Brothers, Phil Mauch
Owner's Telephone:	(401) 274-0921

Project Name:	**Colonial Toyota**
Project Location:	Route 116, Smithfield RI
Brief Scope of Work:	Site work for new car dealership including earthwork, detention ponds, retaining walls, sewer, storm drainage, water, precast curb and bituminous concrete paving.
Approx. Dollar Value:	$1,900,000.00
Date Completed:	July, 2007
Owner's Rep:	Rhode Island Automall Condo Association, Butch Sormanti
Owner's Telephone:	(401) 413-8091

Project Name:	**Phase V Area 1 Landfill Baseliner**
Project Location:	Johnston Central Landfill, Johnston RI
Brief Scope of Work:	Construct approximately 55 acres of Baseliner consisting of 12" Low Permeability Clay, Multi-Layer Geomembrane System, 24" of Drainage Sand, and a Leachate Conveyance System. 30 Acres of this project was completed during the 2004 Construction Season.
Date Completed:	12/31/2006
Approx. Dollar Value:	$10,547,884.00
Owner's Rep:	RIRRC: William Anderson, PE
Owner's Telephone:	(401) 942-1430

MAJOR CONSTRUCTION PROJECTS

Project Name:	**Johnson & Wales Harborside Dormitories – Phase II**
Project Location:	Harborside Boulevard, Cranston RI
Brief Scope of Work:	Site work including foundation excavation, storm drainage, sanitary sewer, water, curbing, and pavement.
Date Completed:	December, 2006
Approx. Dollar Value:	$1,156,450.00
Owner's Rep:	Capstone Builders, Steve Smith
Owner's Telephone:	(203) 619-4528

Project Name:	**Cranston Police Station**
Project Location:	Cranston RI
Brief Scope of Work:	Site work including building excavation, grading, utilities, block retaining walls, precast curb, and concrete pavement.
Date Completed:	December, 2006
Approx. Dollar Value:	$595,550.00
Owner's Rep:	Brewery Parkade, Michael Sweeney
Owner's Telephone:	(860) 646-6555

Project Name:	**Hexagon Metrology**
Project Location:	North Kingstown, Rhode Island
Brief Scope of Work:	Site work including building pad preparation, earthwork, utilities, curbing and pavement
Date Completed:	November, 2006
Approx. Dollar Value:	$1,311,000.00
Owner's Rep:	A/Z Corporation, Mick Owen
Owner's Telephone:	(860) 464-8944

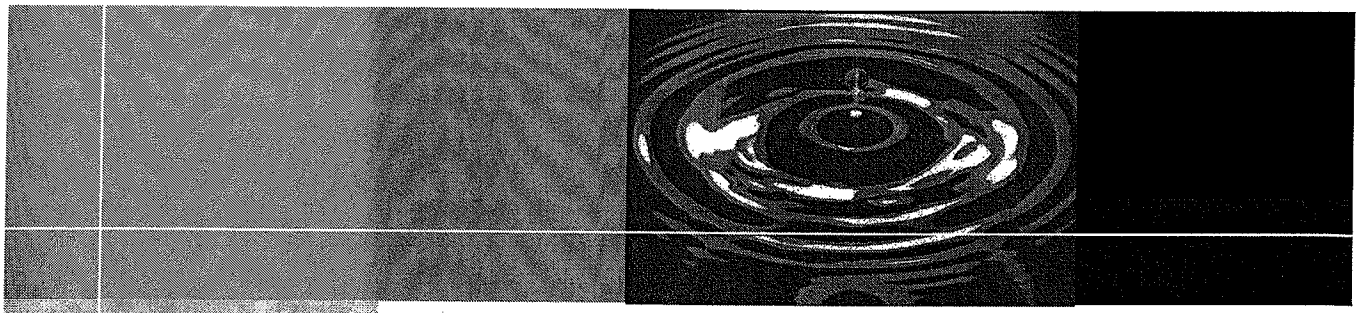
Project Name:	**Davison Avenue Landfill**
Project Location:	Woonsocket, Rhode Island
Brief Scope of Work:	Construct Landfill Cap (Approx. 25 Acres) including: Clearing, Erosion Controls, Site Grading, Geomembrane Liner System, Drainage Sand, Vegetative Soil, Rip Rap, Underdrains, Gas Vents, Water Main, Building Foundation and Landscaping.
Date Completed:	September, 2006
Approx. Dollar Value:	$3,524,000.00
Owner's Rep:	City of Woonsocket, Mike Del Rossi
Owner's Telephone:	(401) 767-9218

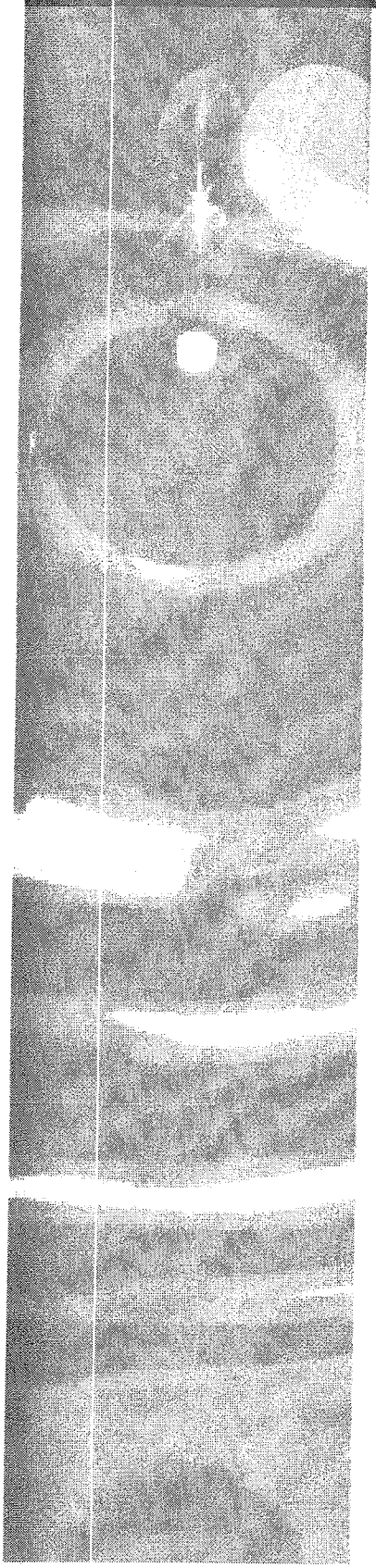
MAJOR CONSTRUCTION PROJECTS

Project Name:	**Statewide Drainage Improvements to Greenville Avenue/Brown Avenue**
Project Location:	Johnston, Rhode Island
Brief Scope of Work:	Relocate gas main and install new 24-inch drainage system along a section of Greenville Avenue. Also included are cold planing the existing roadway surface and a full width overlay.
Date Completed:	September, 2006
Approx. Dollar Value:	$324,170.00
Owner's Rep:	State of RI; Department of Transportation; Construction Management Group; Richard Raczelowski, Resident Engineer
Owner's Telephone:	(401) 222-2468

Project Name:	**RNE Facility**
Project Location:	Smithfield Business Park, Smithfield RI
Brief Scope of Work:	Site work including earthwork, building pad preparation, storm drainage, detention pond, sewer, water, and pavement subbase preparation.
Date Completed:	August, 2006
Approx. Dollar Value:	$1,015,000.00
Owner's Rep:	Riggs & Gallagher, Inc.
Owner's Telephone:	(401) 781-5350

Project Name:	**Johnson & Wales Harborside Dormitories**
Project Location:	Harborside Boulevard, Cranston RI
Brief Scope of Work:	Site Preparation for 13 Dormitory Buildings including: 200,000cy of Off-Site Borrow, Rip Rap Revetment, Retaining Walls, and Sanitary Sewer Relocation.
Date Completed:	April 2005
Approx. Dollar Value:	$2,900,000.00
Owner's Rep:	Callahan, Inc. – Tim Callahan
Owner's Telephone:	(508) 279-0012





Contractor References

Contractor References

Contractor References for:

ARRA Cement Water Main Replacement and Water Booster Pump Station at Rhode Island College

DIGREGORIO
23 Business Park Drive
Smithfield, Rhode Island 02917

REFERENCES

ENGINEERING FIRMS

Pare Engineering Corporation
8 Blackstone Valley Place
Lincoln, Rhode Island 02865
Contact Person: Armando Ricci, P.E.
Telephone No.: (401) 334-4100

Fuss & O'Neill Inc.
146 Hartford Road
Manchester, CT 06040
Contact Person: Charles Ahles, P.E.
Telephone No.: (860) 646-2469

Woodward & Curran
35 New England Business Center Drive
Andover, MA 01810
Contract Person: Alan Benevides, P.E.
Telephone No.: (866) 702-6371

GENERAL CONTRACTORS

Dimeo Construction Companies
75 Chapman Street
Providence, RI 02905
Contact Person: Joseph Bolton, PM
Telephone No.: (401) 781-9800

Bowdoin Construction Corp.
220-1 Reservoir Street
Needham Heights, MA 02494
Contact Person: Brian Collins, VP
Telephone No.: (781) 444-6302

REPM, Inc.
170 Providence Pike
North Smithfield, Rhode Island 02896
Contact Person: Ed Pivirotto
Telephone No.: (401) 356-1236

A/Z Corporation
7 Lorenz Industrial Parkway
Ledyard, CT 06339
Contact Person: Mick Owen
Telephone No.: (860) 464-8944

Bond Brothers, Inc.
145 Spring Street
Everett, MA 02149
Contact Person: Robert Murray, SVP
Telephone No.: (617) 387-3400

STATE AGENCIES

State of Rhode Island
Department of Transportation
Two Capitol Hill
Providence, RI 02903
Contact Person: Charles Alves, Deputy Director
Telephone No.: (401) 222-2481

RI Resource Recovery Corporation
65 Shun Pike
Johnston, RI 02917

Contact Person: William Anderson
Telephone No.: (401) 942-1430

Cities & Towns

Town of Johnston
1385 Atwood Avenue
Johnston, RI 02919
Contact Person: Joseph M. Polisena, Mayor
Telephone No.: (401) 553-8800

Town of Glocester
91 Chestnut Hill Road
Chepachet, RI 02814
Contact Person: Larry DiSanno, Bldg. Insp.
Telephone No.: (401) 568-5540

Town of Burrillville
65 Union Avenue
Harrisville, RI 02830
Contact: Michael Wood, Town Mgr.
Telephone No.: (401) 568-4440

City of Central Falls
580 Broad Street
Central Falls, RI 02863
Contact: Charles Moreau, Mayor
Telephone No.: (401) 727-7480

Property Managers

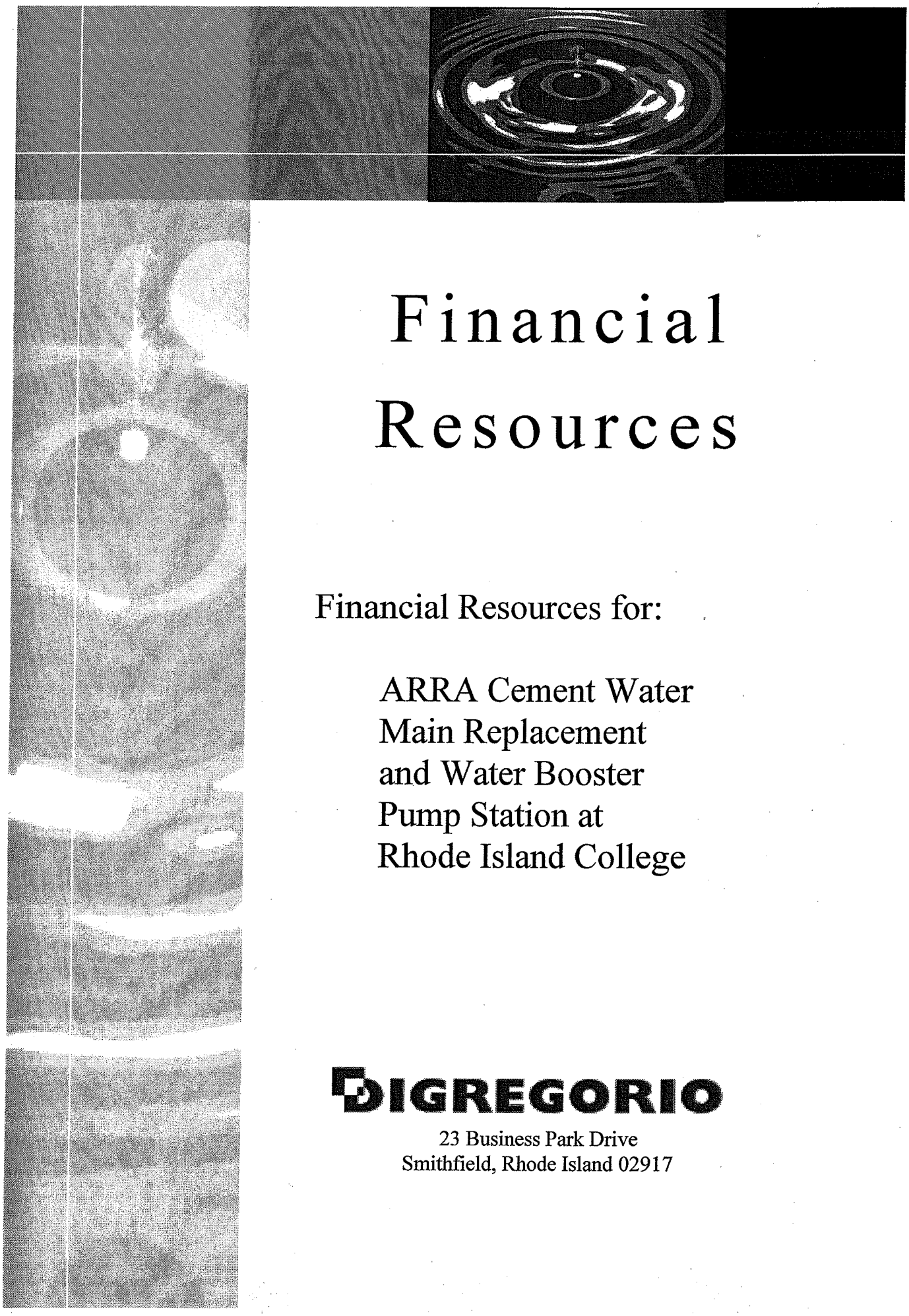
Marshall Properties
P.O. Box 4970
Rumford, Rhode Island 02916
Contact Person: Jack Marshall, Pres.
Telephone No.: (401) 725-9370

Unions

Teamsters, Local 251
1201 Elmwood Avenue
Providence, RI 02907-3799
Contact Person: Joseph Bairos, Co-Chairman
Telephone No.: (401) 467-3323

Operating Engineers Local 57
141 Gano Street
Providence, RI 02906
Contact Person: Jim White, BA
Telephone No.: (401) 421-6678

RI Laborers Local 271
410 S. Main Street
Providence, RI 02908
Contact: Michael Sabitoni, BA
Telephone No.: (401) 331-9682



Financial Resources

Financial Resources for:

ARRA Cement Water Main Replacement and Water Booster Pump Station at Rhode Island College

DIGREGORIO
23 Business Park Drive
Smithfield, Rhode Island 02917

FINANCIAL RESOURCES

Name of Firm/Business Address/Mailing Address	*Year Established*
DiGregorio, Inc. 23 Business Park Drive Smithfield, RI 02917 Telephone (401) 232-1400 Facsimile (401) 232-5848	1990 *Year Incorporated* 1996

Type of Ownership	Corporation
Principals	Enrico F. DiGregorio, President Tracy K. DiGregorio, Secretary

Personnel				
	Estimator	(2)	Project Manager	(3)
	Engineer	(1)	Office Manager	(1)
	Administrative	(2)	Controller	(1)
	Supervisors	(6)	Bookkeeper	(1)
	Mechanic	(3)	Foreperson	(8)
	Laborer	(20)	Operators	(25)
	Truck Driver	(12)	Safety Officer	(1)

Summary of Gross Billings – last 3 years

2007	$21.2 million
2008	$21.4 million
2009	$ 13 million

Bonding Agent	GenCorp, Insurance Brian M. Rossi, Executive Vice President 16 Main Street East Greenwich, RI 02818 (401) 336-2187
Surety Company	Berkley Regional Insurance Company 11201 Douglas Avenue Urbandale, IA 50322
Bonding Capacity	$15 million single project/year $25 million aggregate work/year

FINANCIAL RESOURCES

Financial References

Financial Institution Bank RI
Steve Russell
One Turks Head Place
Providence, RI 02903
(401) 574-1610

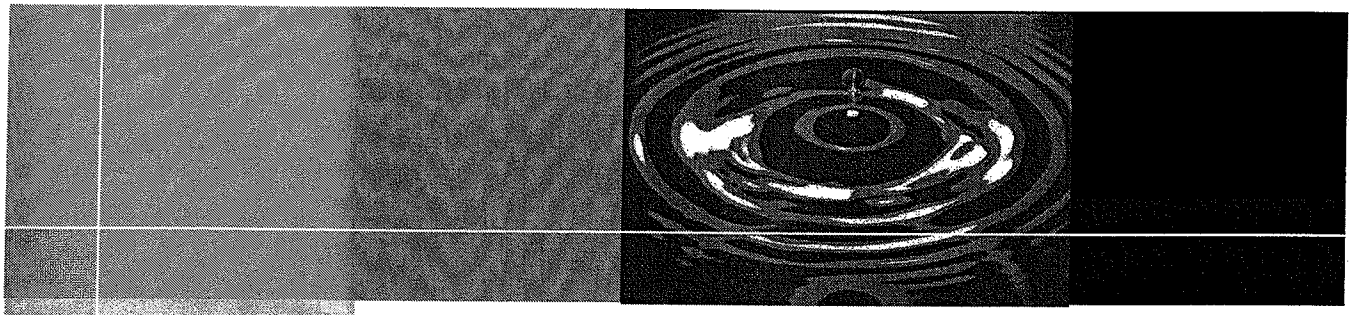
Accounting Firm Richard A. Furia, CPA
117 Metro Center Blvd, Suite 3000
Warwick, RI 02886
(401) 681-4350

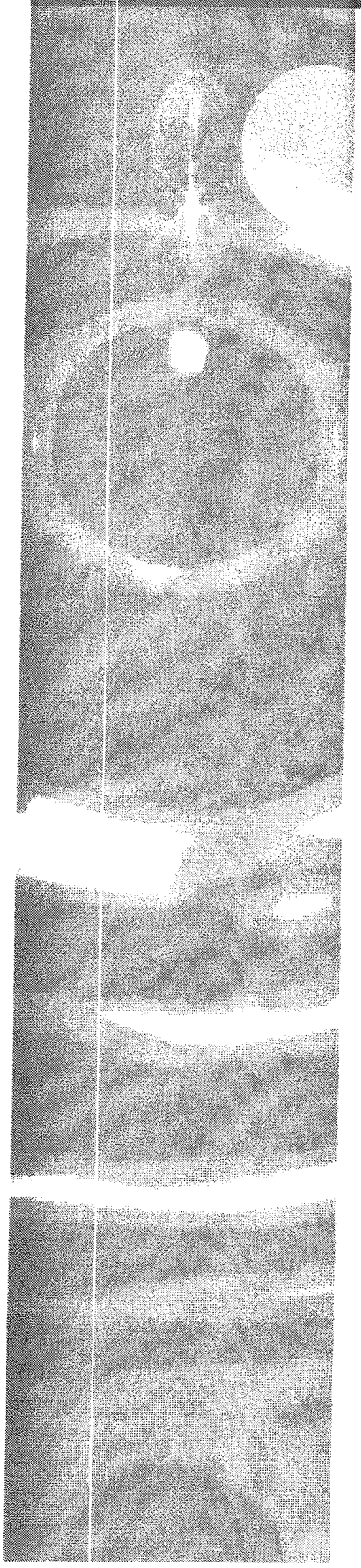
DiGregorio, Inc. has never failed to complete any project awarded to them as a general contractor, subcontractor, or joint venture.

The Corporate Officers of DiGregorio, Inc. have never failed to complete any project awarded to them as a general contractor, subcontractor, or joint venture.

DiGregorio, Inc. has never filed for bankruptcy.

The Corporate Officers of DiGregorio, Inc. have never filed for bankruptcy.





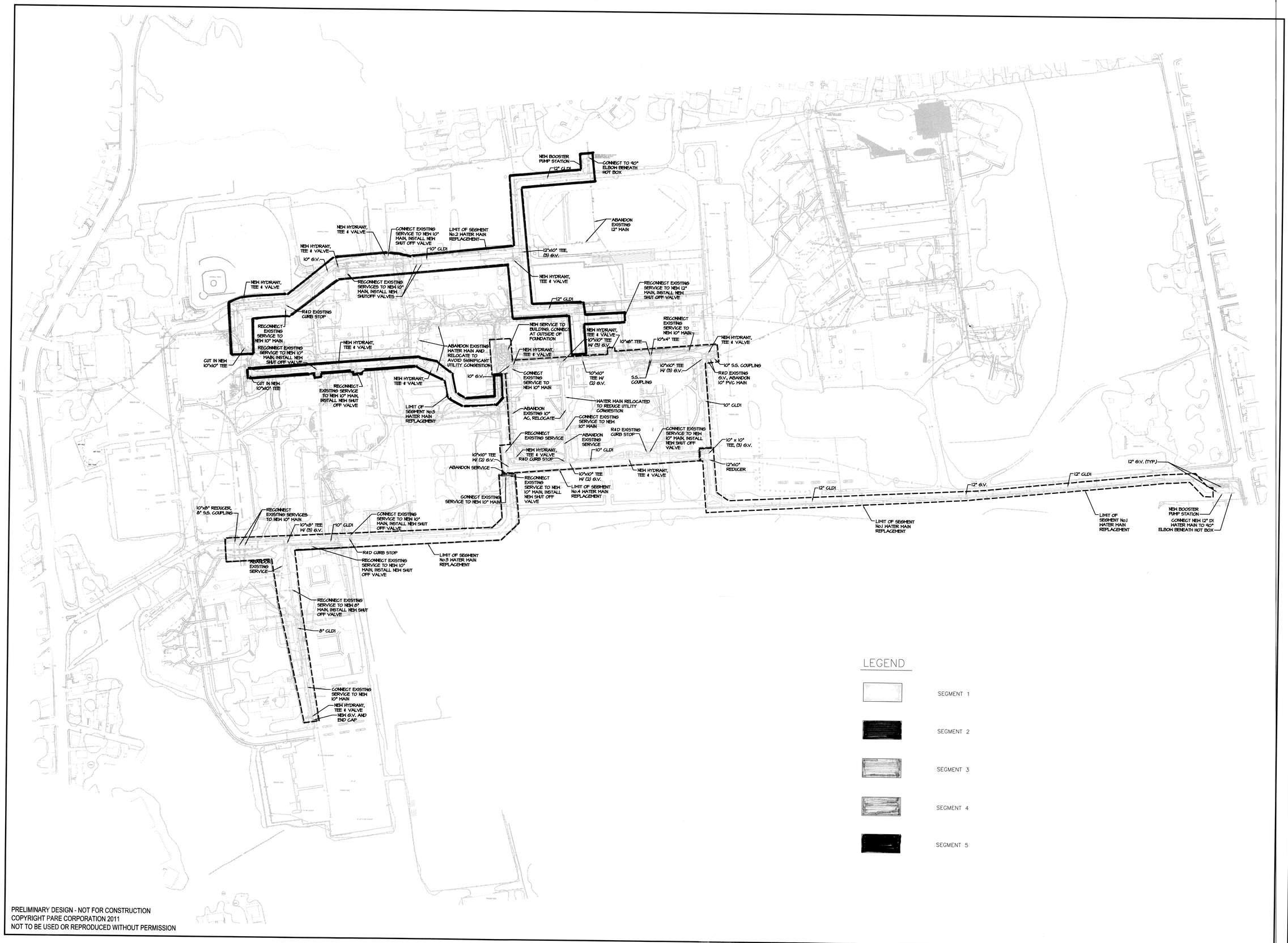
Prel. Design Documents

Prel. Design Documents
for:

ARRA Cement Water
Main Replacement
and Water Booster
Pump Station at
Rhode Island College

DIGREGORIO
23 Business Park Drive
Smithfield, Rhode Island 02917

Prel. Design
Documents



PRELIMINARY DESIGN - NOT FOR CONSTRUCTION
COPYRIGHT PARE CORPORATION 2011
NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION

PARE
PARE CORPORATION
ENGINEERS - SCIENTISTS - PLANNERS
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401-334-4100

Rhode Island College
Cement Water Main Replacement & Booster Pump Station D/B
Providence, Rhode Island

0.5" 0 1.0"
BAR SCALE

REVISIONS:

PROJECT NO.:	EP360.10
DATE:	JANUARY 2011
SCALE:	1"=150'
DESIGNED BY:	TPT
CHECKED BY:	BFE
DRAWN BY:	AKL
APPROVED BY:	BFE

DRAWING TITLE:

OVERALL PLAN
SEGMENT No. 1 - 5

DRAWING NO.:

SHEET NO. OF

Rhode Island College
Cement Water Main Replacement
& Booster Pump Station D/B

Providence, Rhode Island
RFP # 7448088

PREPARED BY:

PARE

PARE CORPORATION
ENGINEERS - SCIENTISTS - PLANNERS
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401-334-4100

SCALE: 1"=2000'

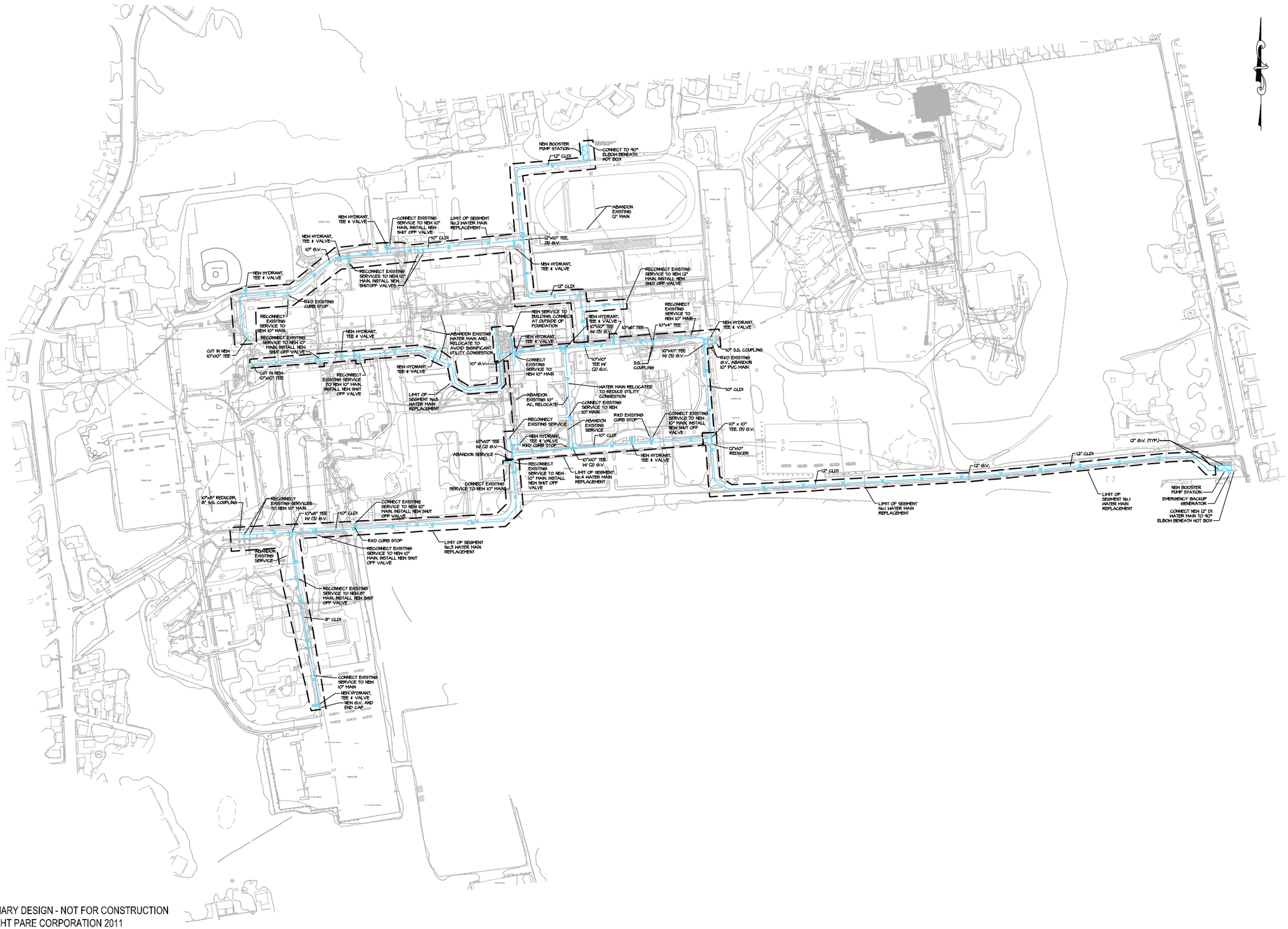
INDEX OF DRAWINGS

SHEET No.	DESCRIPTION
1	COVER SHEET
2	OVERALL PLAN SEGMENT No. 1 - 5
3 - 4	SEGMENT No.1 WATER MAIN REPLACEMENT
5 - 6	SEGMENT No.2 WATER MAIN REPLACEMETN
7	SEGMENT No.3 WATER MAIN REPLACEMENT
8	SEGMENT No.4 WATER MAIN REPLACEMENT
9	SEGMENT No.5 WATER MAIN REPLACEMENT
10	TYPICAL BOOSTER PUMP STATION LAYOUT PLAN

JANUARY 2011

PRELIMINARY DESIGN - NOT FOR CONSTRUCTION

COPYRIGHT PARE CORPORATION 2011
NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION



PRELIMINARY DESIGN - NOT FOR CONSTRUCTION
COPYRIGHT PARE CORPORATION 2011
NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION

PARE CORPORATION
ENGINEERS - SCIENTISTS - PLANNERS
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401-334-4100

PARE

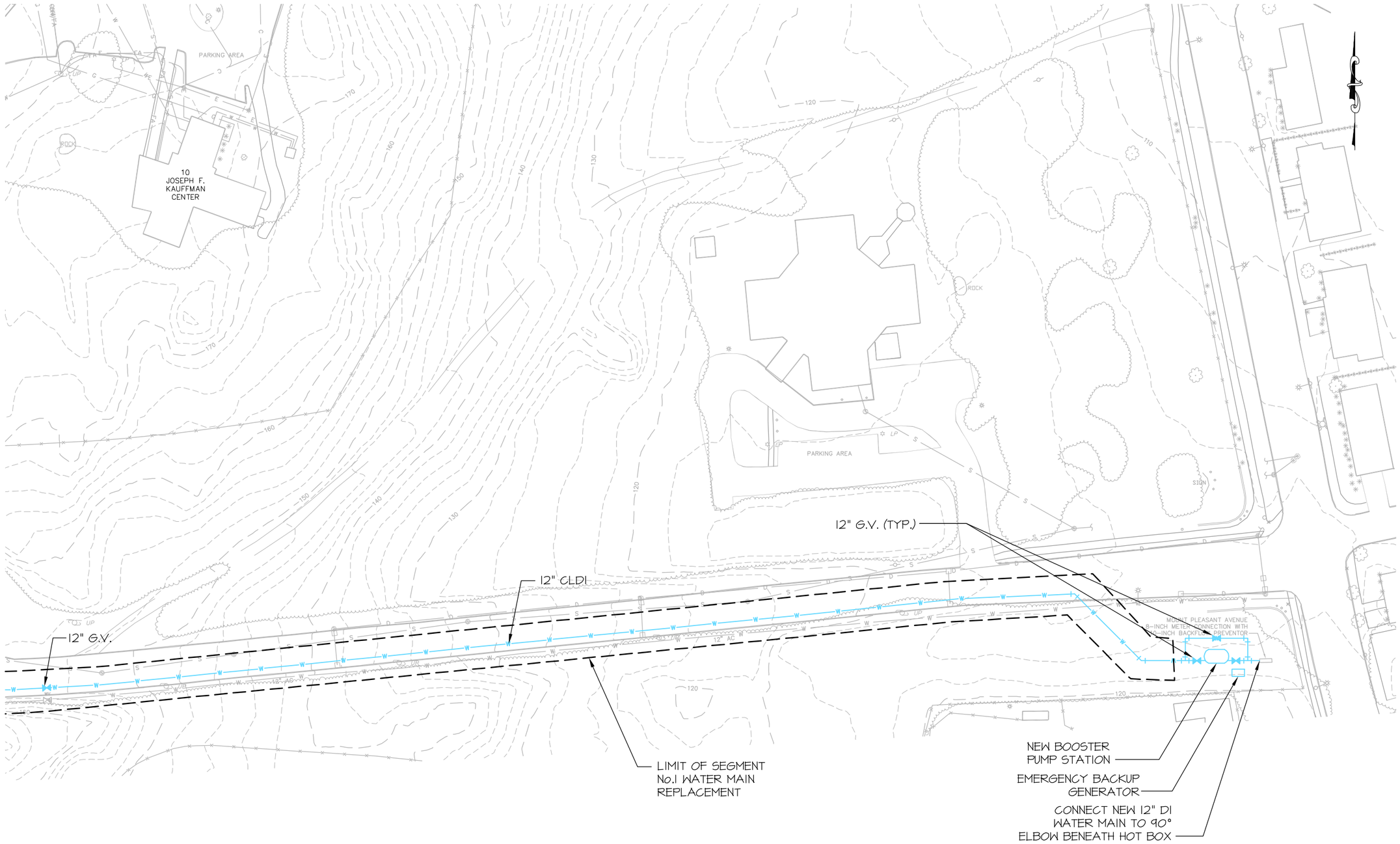
Rhode Island College Cement Water Main Replacement & Booster Pump Station D/B

Providence, Rhode Island

SCALE:	N.T.S.
DATE:	JANUARY 2011
PROJECT NO.:	EP360.10
DESIGNED BY:	TPT
DRAWN BY:	AKL
CHECKED BY:	BFE

FIGURE NO.

Overall Plan
Segment No.1-5



PRELIMINARY DESIGN - NOT FOR CONSTRUCTION
COPYRIGHT PARE CORPORATION 2011
NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION

PARE CORPORATION
ENGINEERS - SCIENTISTS - PLANNERS
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401-334-4100

PARE

Rhode Island College Cement Water Main Replacement & Booster Pump Station D/B

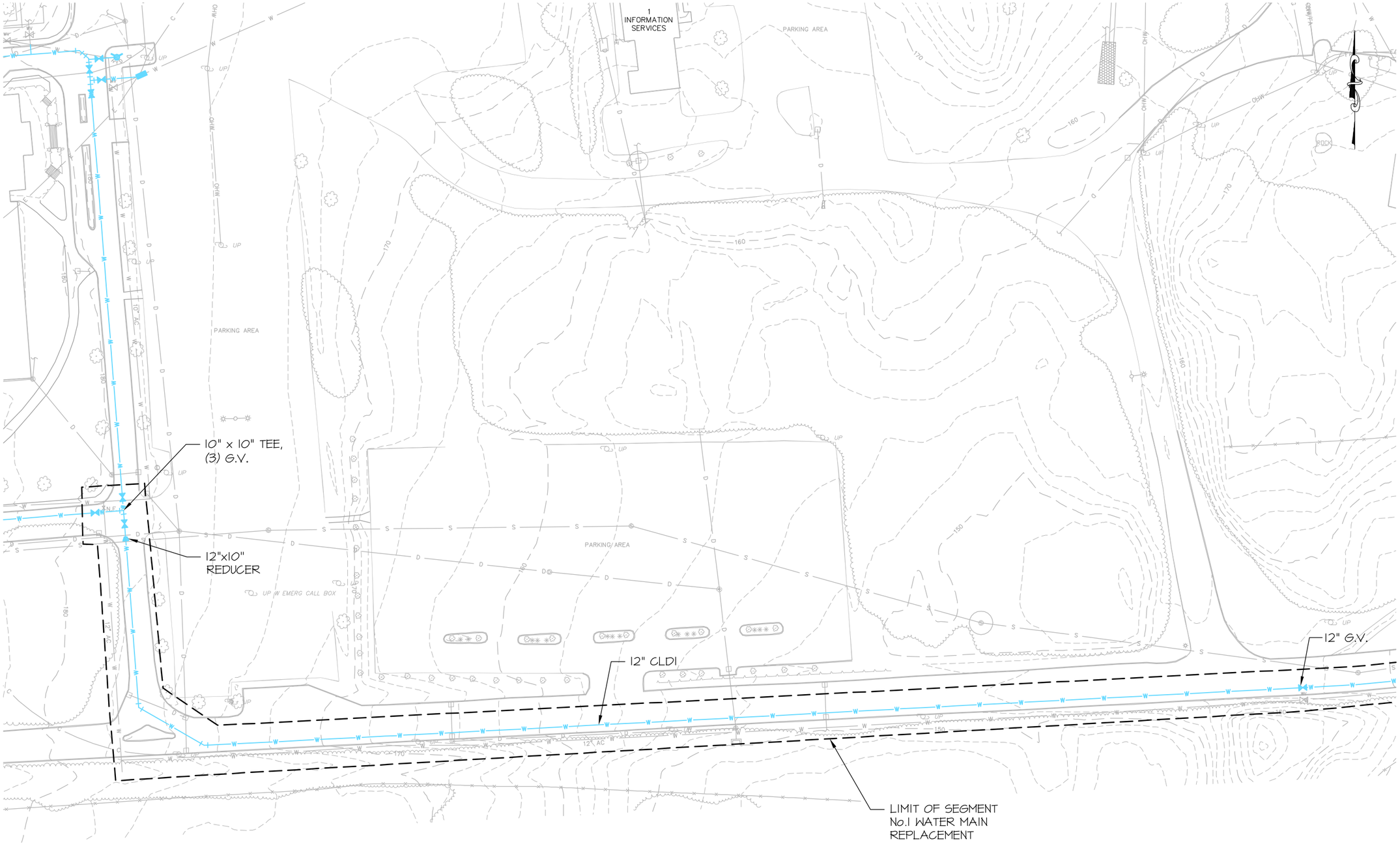
Providence, Rhode Island

SCALE:	1"=80'
DATE:	JANUARY 2011
PROJECT NO.:	EP360.10
DESIGNED BY:	TPT
DRAWN BY:	AKL
CHECKED BY:	BFE

FIGURE NO.

Segment No.1
Water Main
Replacement

SHEET 1 OF 2



PRELIMINARY DESIGN - NOT FOR CONSTRUCTION
COPYRIGHT PARE CORPORATION 2011
NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION

PARE CORPORATION
ENGINEERS - SCIENTISTS - PLANNERS
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401-334-4100

PARE

Rhode Island College Cement Water Main Replacement & Booster Pump Station D/B

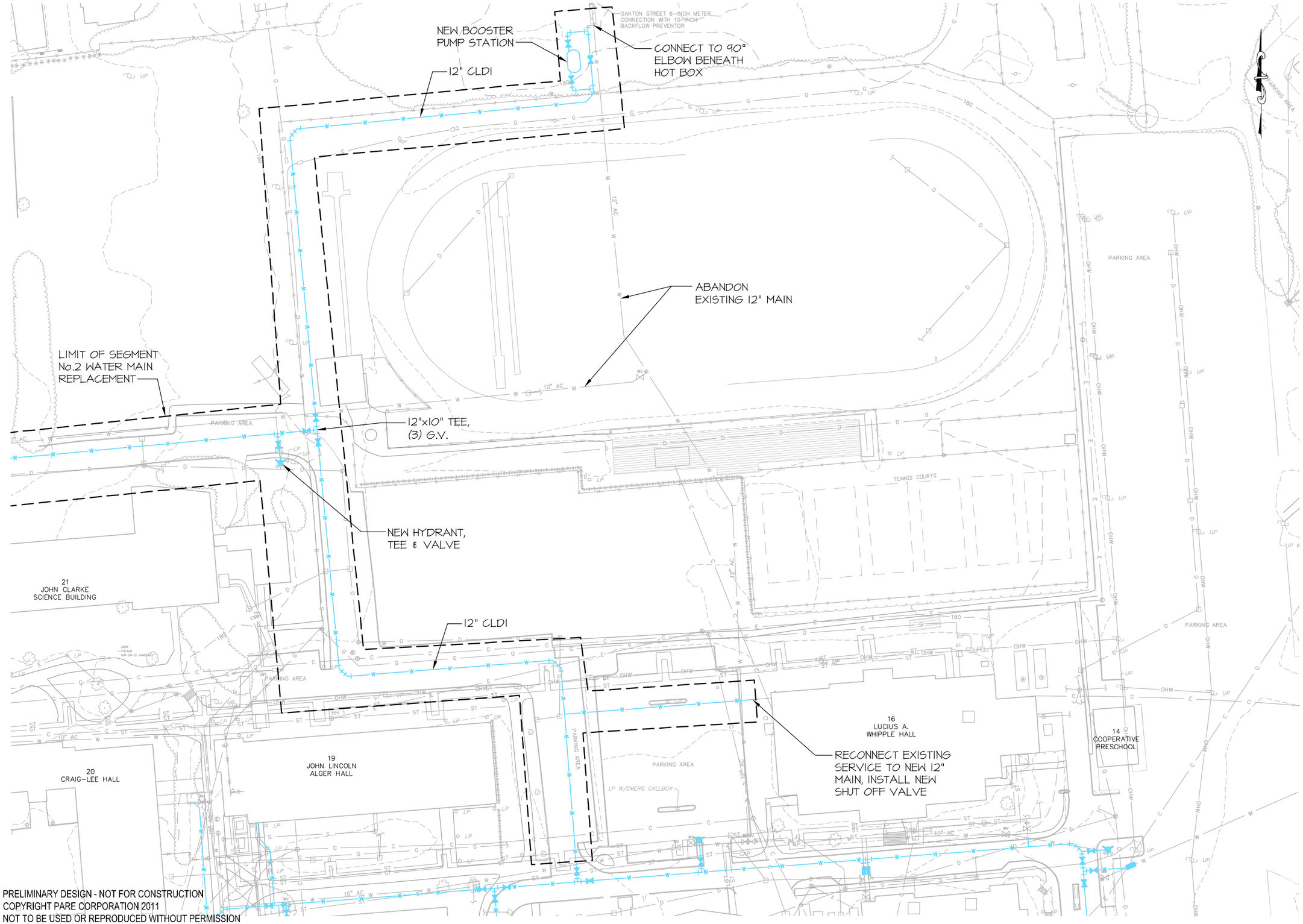
Providence, Rhode Island

SCALE:	1"=80'
DATE:	JANUARY 2011
PROJECT NO.:	EP360.10
DESIGNED BY:	TPT
DRAWN BY:	AKL
CHECKED BY:	BFE

FIGURE NO.

Segment No.1 Water Main Replacement

SHEET 2 OF 2



PRELIMINARY DESIGN - NOT FOR CONSTRUCTION
COPYRIGHT PARE CORPORATION 2011
NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION

PARE CORPORATION
ENGINEERS - SCIENTISTS - PLANNERS
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401-334-4100

PARE

Rhode Island College Cement Water Main Replacement & Booster Pump Station D/B

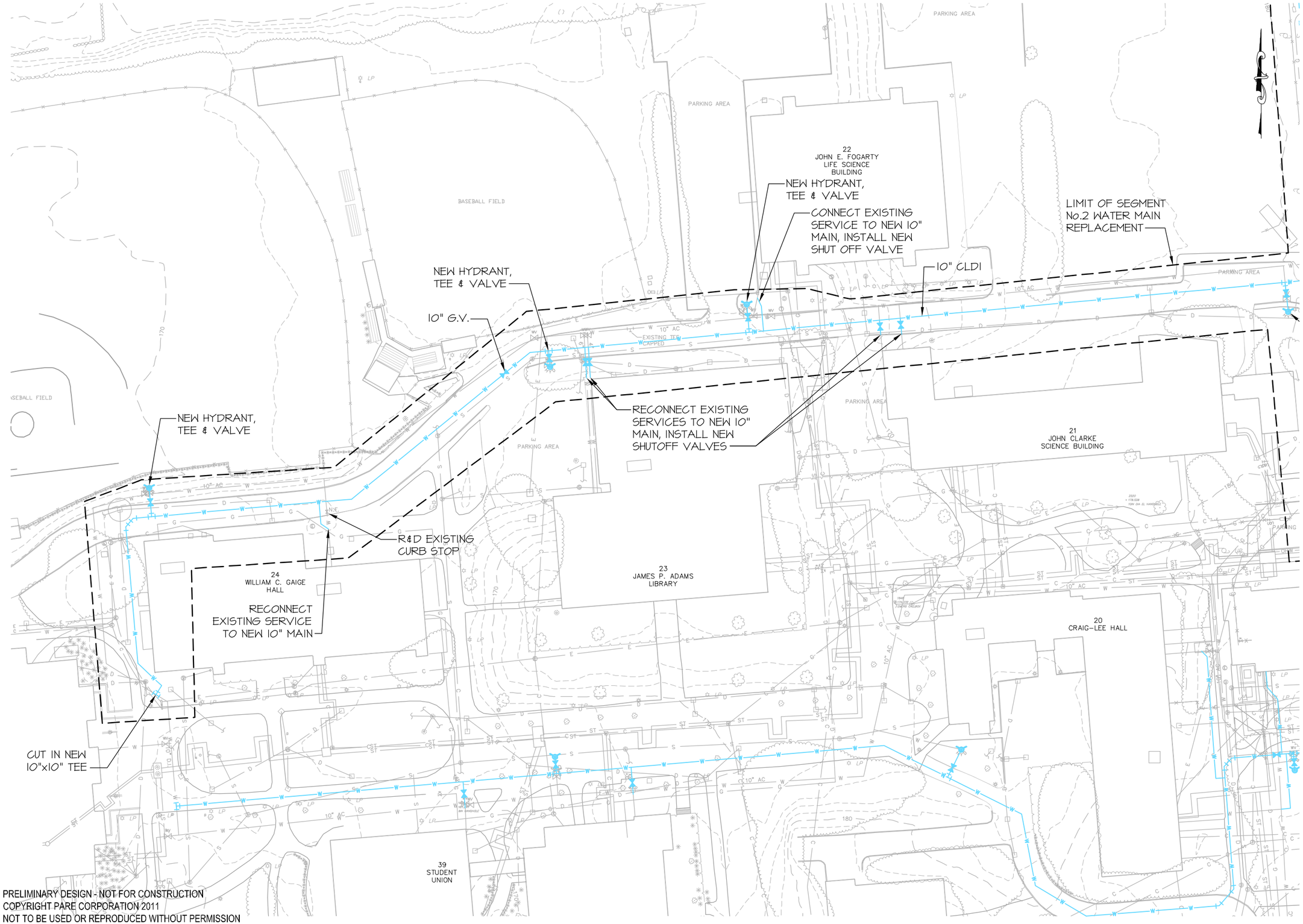
Providence, Rhode Island

SCALE:	1"=80'
DATE:	JANUARY 2011
PROJECT NO.:	EP360.10
DESIGNED BY:	TPT
DRAWN BY:	AKL
CHECKED BY:	BFE

FIGURE NO.

Segment No.2 Water Main Replacement

SHEET 1 OF 2



PRELIMINARY DESIGN - NOT FOR CONSTRUCTION
COPYRIGHT PARE CORPORATION 2011
NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION

PARE CORPORATION
ENGINEERS - SCIENTISTS - PLANNERS
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401-334-4100

PARE

Rhode Island College Cement Water Main Replacement & Booster Pump Station D/B

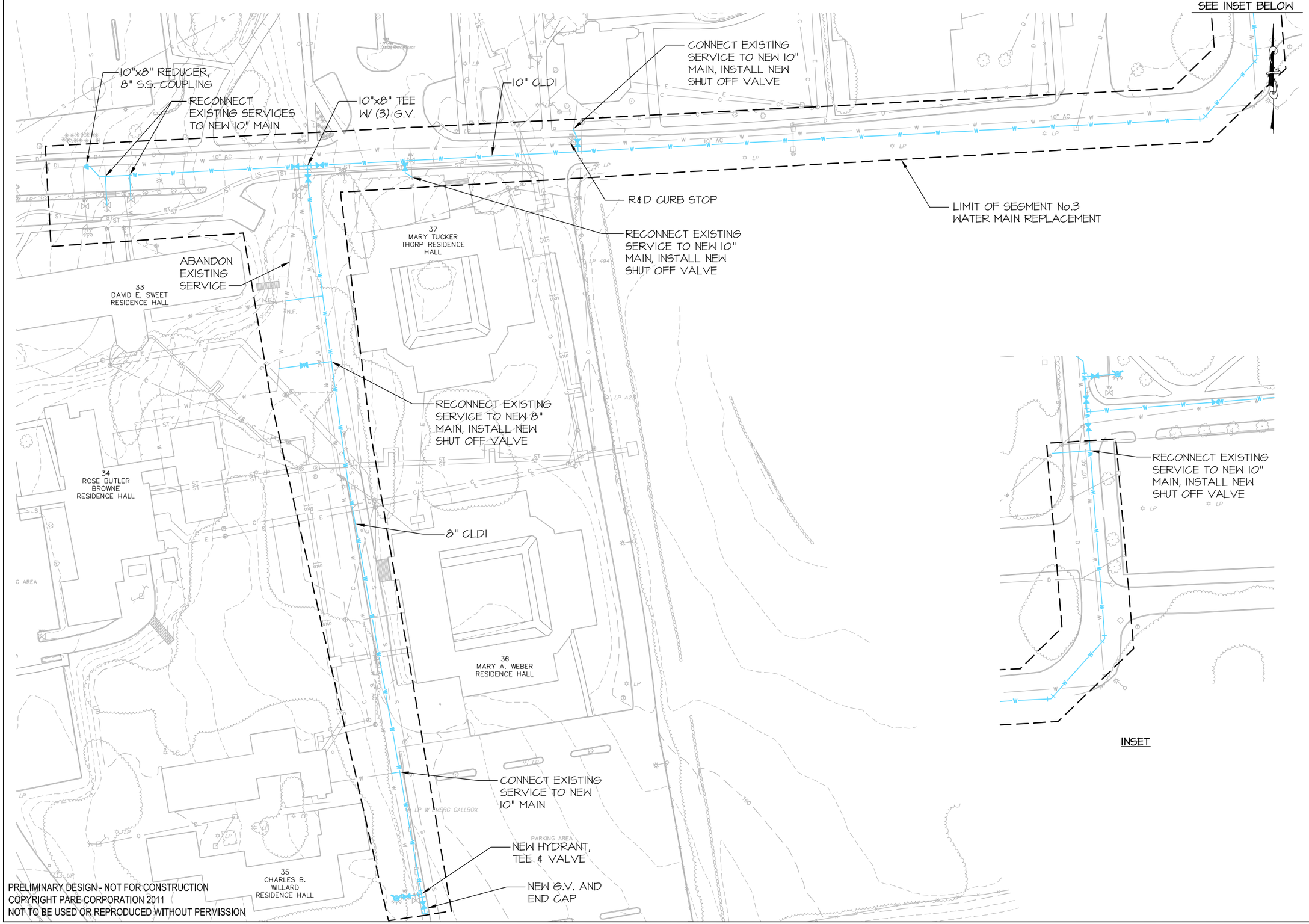
Providence, Rhode Island

SCALE:	1"=80'
DATE:	JANUARY 2011
PROJECT NO.:	EP360.10
DESIGNED BY:	TPT
DRAWN BY:	AKL
CHECKED BY:	BFE

FIGURE NO.

Segment No.2
Water Main
Replacement

SHEET 2 OF 2



PRELIMINARY DESIGN - NOT FOR CONSTRUCTION
COPYRIGHT PARE CORPORATION 2011
NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION

PARE CORPORATION
ENGINEERS - SCIENTISTS - PLANNERS
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401-334-4100

PARE

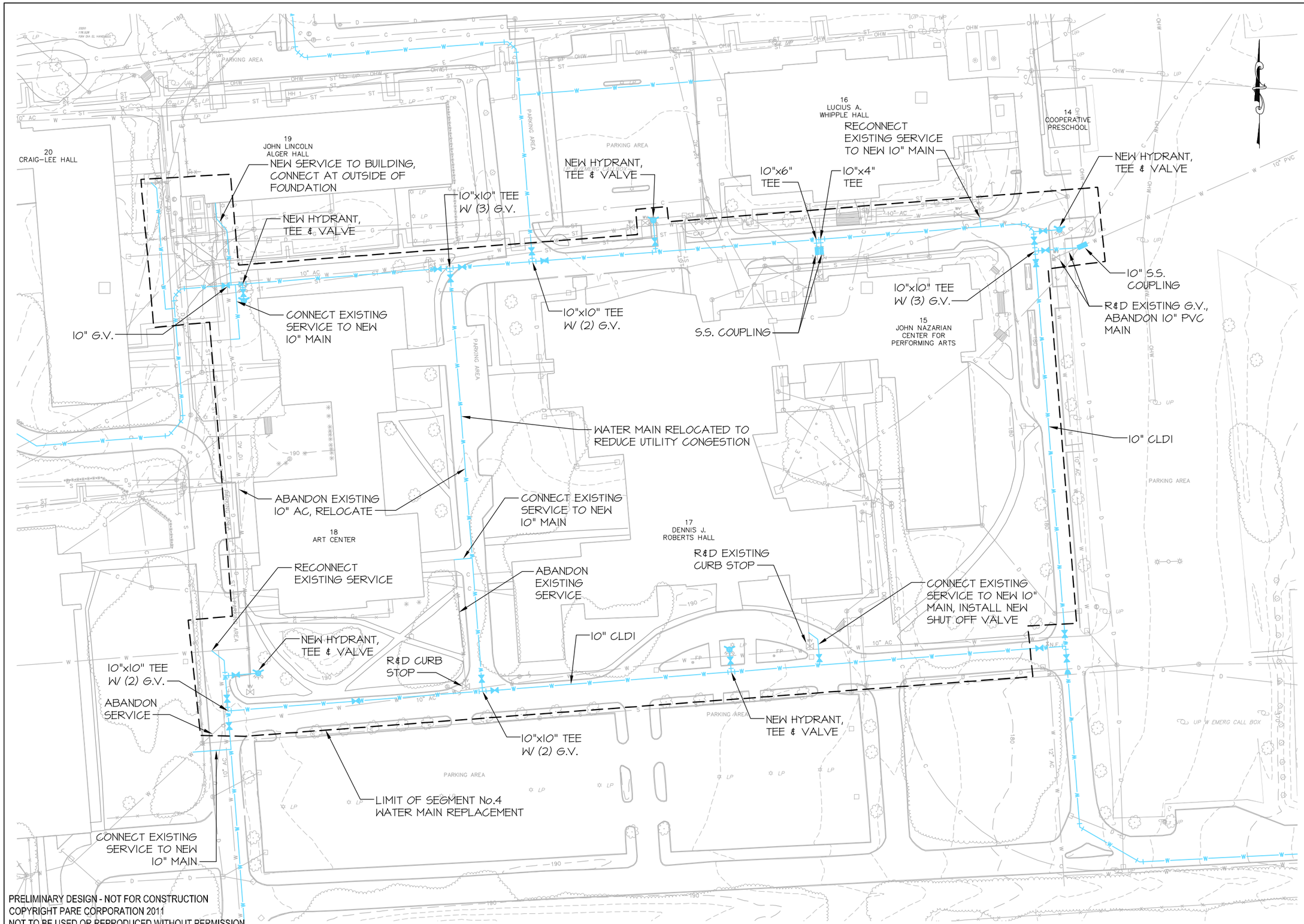
Rhode Island College Cement Water Main Replacement & Booster Pump Station D/B

Providence, Rhode Island

SCALE:	1"=80'
DATE:	JANUARY 2011
PROJECT NO.:	EP360.10
DESIGNED BY:	TPT
DRAWN BY:	AKL
CHECKED BY:	BFE

FIGURE NO.

Segment No.3 Water Main Replacement



PRELIMINARY DESIGN - NOT FOR CONSTRUCTION
COPYRIGHT PARE CORPORATION 2011
NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION

PARE CORPORATION
ENGINEERS - SCIENTISTS - PLANNERS
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401-334-4100

PARE

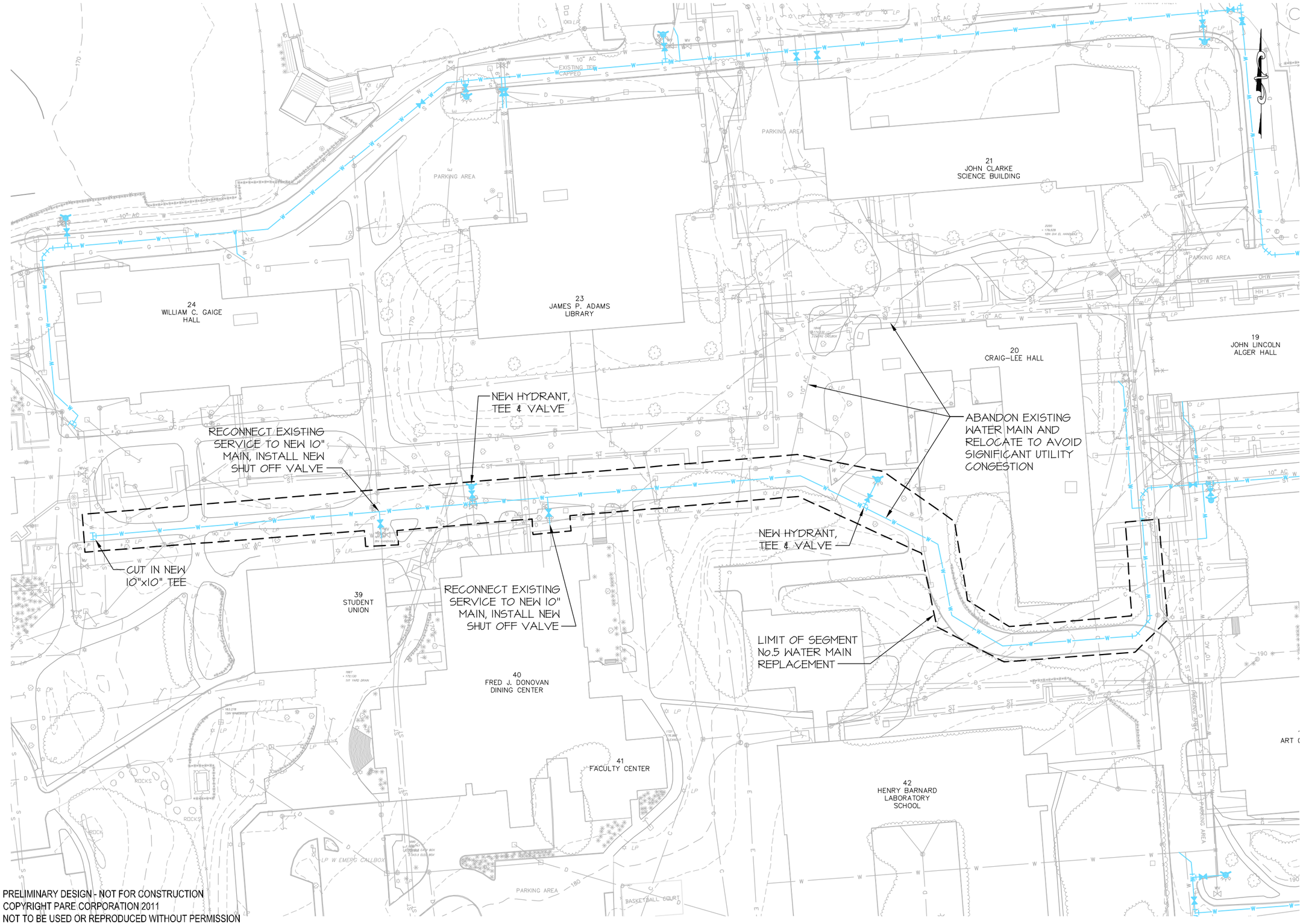
Rhode Island College Cement Water Main Replacement & Booster Pump Station D/B

Providence, Rhode Island

SCALE:	1"=80'
DATE:	JANUARY 2011
PROJECT NO.:	EP360.10
DESIGNED BY:	TPT
DRAWN BY:	AKL
CHECKED BY:	BFE

FIGURE NO.

Segment No.4 Water Main Replacement



PRELIMINARY DESIGN - NOT FOR CONSTRUCTION
COPYRIGHT PARE CORPORATION 2011
NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION

PARE CORPORATION
ENGINEERS - SCIENTISTS - PLANNERS
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401-334-4100

PARE

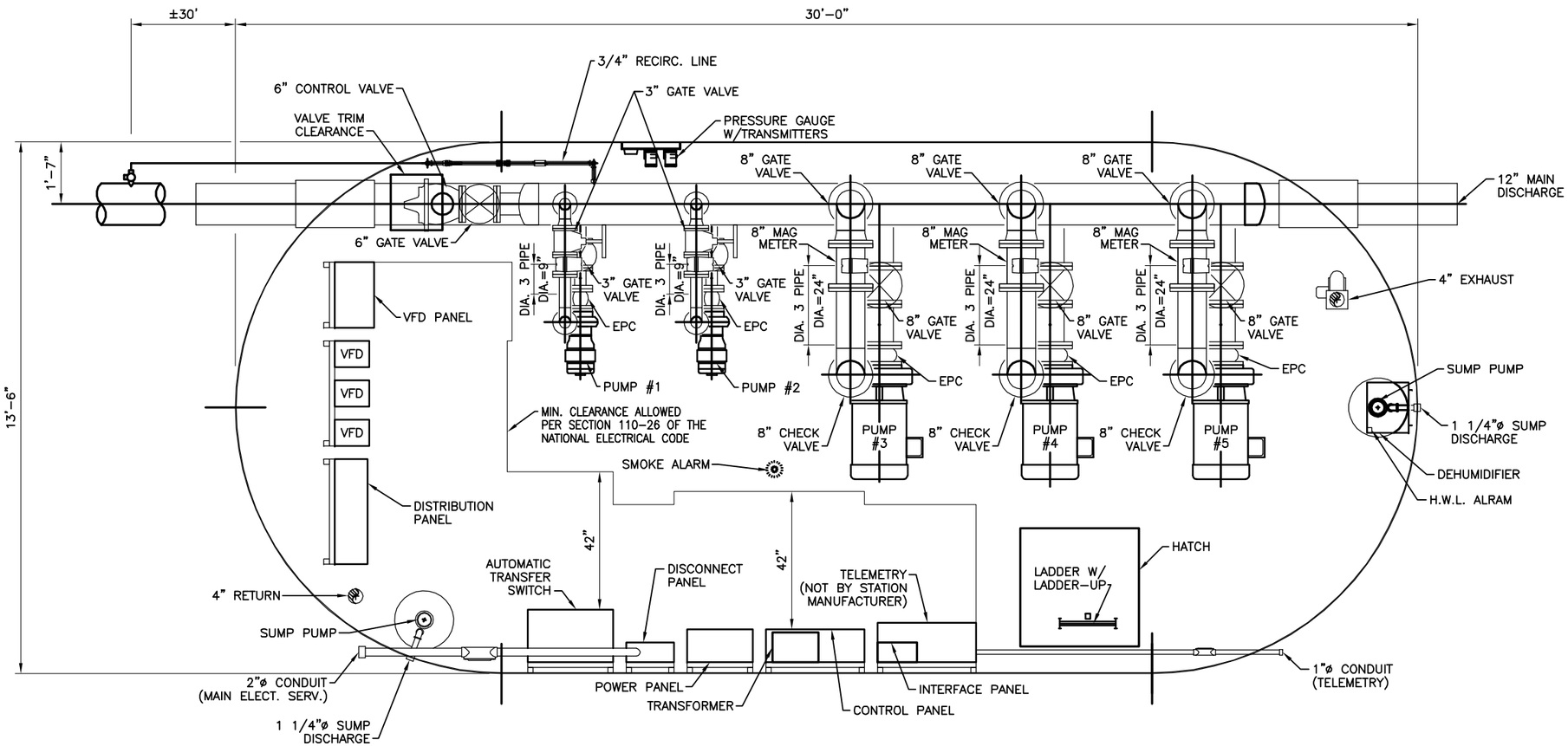
Rhode Island College Cement Water Main Replacement & Booster Pump Station D/B

Providence, Rhode Island

SCALE:	1"=80'
DATE:	JANUARY 2011
PROJECT NO.:	EP360.10
DESIGNED BY:	TPT
DRAWN BY:	AKL
CHECKED BY:	BFE

FIGURE NO.

Segment No.5
Water Main
Replacement



INTERIOR PLAN

NOTES:

1. THIS STATION DESIGN IS TYPICAL FOR BOTH MT. PLEASANT AVENUE AND OAKTON STREET. FINAL LAYOUT AT EACH WILL BE DETERMINED DURING DESIGN.
2. STATION LAYOUT IS BASED ON AN ENGINEERED FLUID INCORPORATED PACKAGED PUMP STATION.

PRELIMINARY DESIGN - NOT FOR CONSTRUCTION
COPYRIGHT PARE CORPORATION 2011
NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION

PARE CORPORATION
ENGINEERS - SCIENTISTS - PLANNERS
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401-334-4100

PARE

Rhode Island College
Cement Water Main Replacement
& Booster Pump Station D/B
Providence, Rhode Island

SCALE:	N.T.S.
DATE:	JANUARY 2011
PROJECT NO.:	EP360.10
DESIGNED BY:	TPT
DRAWN BY:	AKL
CHECKED BY:	BFE

FIGURE NO.

Typical Booster Pump Station Layout

Providence Water

Requirements for Water Mains, Services and Appurtenances

June 2004

TABLE OF CONTENTS

1.0 ADMINISTRATIVE PROCEDURES

100.1 Applicable Standards 1-1
100.2 Approved Materials 1-1
100.3 Restrictions 1-1
100.4 Applications 1-1
100.5 Fees 1-1
100.6 Time of Review 1-1
100.7 Duration of Approval 1-1
100.8 As-Built Drawings 1-1

2.0 ENGINEERING REQUIREMENTS

200.1 Professional Certification 2-1
200.2 Base of Levels 2-1
200.3 Calculations 2-1
200.4 Construction Plans 2-1
200.5 Fire Flow Testing 2-1
200.6 Water System Modeling 2-1

3.0 MATERIALS

300.1 Pipe 3-1
300.2 Fittings 3-1
300.3 Valves 3-1
300.3.1 Gate 3-1
300.3.2 Butterfly 3-1
300.3.3 Swing-Check 3-2
300.3.4 Tapping 3-2
300.3.4.1 Tapping Sleeve 3-2
300.4 Valve Boxes 3-2
300.4.1 Gate Valve Box 3-2
300.4.2 Gate Valve Roadway Box 3-2
300.4.3 Gate Valve Box Aligners 3-2
300.5 Blow Off Assembly 3-2
300.6 Fire Hydrants 3-2
300.7 Service Connections 3-3

4.0 CONSTRUCTION PROCEDURES

400.1 General Requirements 4-1
400.1.1 Notification 4-1
400.1.2 Inspection 4-1
400.1.3 Disposal of Removed Materials 4-1
400.1.4 Trench Excavation and Backfill 4-1
400.2 Specific Components 4-1
400.2.1 Pipe and Fittings 4-1
400.2.2 Valves 4-3
400.2.2.1 Gate 4-3
400.2.2.2 Butterfly 4-3
400.2.2.3 Swing-Check 4-3
400.2.2.4 Tapping 4-3
400.2.3 Valve Boxes 4-3
400.2.3.1 Gate Valve Box 4-3
400.2.3.2 Gate Valve Roadway Box 4-3
400.2.4 Blow Off Assembly 4-3
400.2.5 Fire Hydrants 4-3
400.2.6 Service Connections 4-4
400.3 Thrust Restraint 4-4
400.4 Leakage and Pressure Testing 4-5
400.5 Disinfection 4-6

APPENDIX A - INSTALLATION DETAILS A-1

2-Inch Blowoff Assembly A-2
Check Valve Manhole A-3
Fire Hydrant (Post Type) A-4
Gate Valve A-5
Gate Valve Box A-6
Gate Valve Roadway Box A-7
Tapping Sleeve & Valve A-8
Residential Service Connection Diagram A-9

APPENDIX B - LIST OF APPROVED MATERIALS / MANUFACTURERS FOR USE IN THE PROVIDENCE WATER DISTRIBUTION SYSTEM B-1

INDEX I-1

SECTION 100

ADMINISTRATIVE PROCEDURES

100.1 Applicable Standards. American Water Works Association (AWWA) standards shall be considered to be part of the *Requirements for Water Mains, Services and Appurtenances.* The Chief Engineer of Providence Water (PW) reserves the right to make exceptions to the *Requirements.* If required, a manufacturer's *Certificate of Compliance* shall be submitted to PW for components incorporated into the water system.

100.2 Approved Materials. Materials used in the construction, repair or maintenance of the water system shall meet the approval of PW. A published *List of Approved Materials/Manufacturers for use in the Providence Water Distribution System,* which appears as "Appendix B" in the *Requirements,* defines specifically approved materials and manufacturers of the same. It is important to note that the "list" is subject to change— without notice—and it is the responsibility of the customer and/or contractor to acquire the latest revision of such list from Providence Water prior to commencing construction.

General material specifications may be found in Chapter 3, Materials, of the *Requirements.*

100.3 Restrictions. Valves, hydrants, meters, blowoffs, curbstops and other appurtenances in the PW system are the property of PW and operation of the same shall be limited to PW personnel who hold, at a minimum, a valid Class I Water System Operator's License, as issued by the R.I. Department of Health, unless otherwise authorized.

100.4 Applications. Water service connection and/or repair, water meters, backflow prevention device installation, and water main extension involve an application process. Application forms are available at the Engineering Office, which is located at 430 Scituate Avenue, Cranston, RI.

Applications involving commercial properties, subdivisions or other major projects shall require the submission of detailed construction plans, details and specifications.

100.5 Fees. Fees for applications and other pertinent items are published in PW's *Terms and Conditions,* as approved by the Rhode Island Public Utilities Commission. A current copy of the *Terms and Conditions* is available at PW offices located at 552 Academy Avenue, Providence, RI or 430 Scituate Avenue, Cranston, RI.

100.6 Time of Review. Time for processing applications will vary depending on project complexity and work load. Applicant shall allow up to 8 weeks for PW to respond to an application submitted for review and approval.

100.7 Duration of Approval. Approvals shall remain valid for one (1) year. PW will not guarantee the access to, or availability of, the water service or main extension beyond this approval period. Installations not begun within one (1) year of approval will require resubmission of the request. An extension to the original approval may be granted, pending review of circumstances provided in writing by the requestor.

100.8 As-Built Drawings. Upon completion of all construction, and prior to connection to the PW system, accurate record ("as-built") drawings of the work shall be provided to PW by the requestor. This applies to commercial properties, subdivisions or other major projects. It shall include locations of all new mains/services showing ties and measurements from street property lines and permanent objects as well as the exact locations of the completed water line. Water service will not be activated without the approval of PW and receipt of "as-built" drawings.

"As-built" drawings shall be prepared on 4-mil, double matte, mylar sepia or other approved reproducible media, marked "AS BUILT," and "wet-stamped" and signed by a professional civil engineer who is registered and certified in the State of Rhode Island. Preferably, or as mandated by Providence Water, "as-builts" shall be submitted in electronic AutoCAD compatible format. "As-built" drawings shall remain the property of PW upon approval and acceptance of the same.

SECTION 200

ENGINEERING REQUIREMENTS

200.1 Professional Certification. Designs and calculations shall be prepared by an engineer who is professionally licensed and authorized to provide engineering services in the State of Rhode Island.

Field grades and measurements, as may be needed for determination of the location of existing and proposed water facilities, shall be provided by a land surveyor who is a licensed professional and authorized to provide surveying services in the State of Rhode Island.

200.2 Base of Levels. Base of levels for determining topographic elevations in the PW system are based upon City of Providence Mean High Water (MHW) Datum. The MHW Datum is 2.35 feet above Mean Sea Level (MSL) elevation. Plans, calculations, reports, etc. shall specify which datum is used.

200.3 Calculations. PW calculates the size of domestic water services and meters based upon a detailed list of water using fixtures (actual and/or proposed) that is supplied by the Applicant for water service. For instances where non-standard fixtures are used, a gallon-per-minute (gpm) value shall be supplied including average day usage, instantaneous peak usage and fire flow requirements. This information will be used to compute the minimum size of water service and meter size.

If the existing system pressure in the water main located in the street where a connection is proposed is such that PW determines that the pressure in the main may not deliver adequate pressure to the interior domestic supply plumbing, an individual pressure booster pump may be required. Regional pump stations will only be allowed in the system when approved by the Chief Engineer and in conformance with PW standards and practices. Installation of this type of facility shall be the sole responsibility of the Owner and dedicated to PW upon satisfactory completion.

200.4 Construction Plans. Project drawings should be prepared on sheets no larger than 24" x 36". Two (2) sets of plans shall be submitted for review and comment. If a project is to be implemented in stages (phases), a master plan showing the entire development shall be submitted for review.

Site plans must display a "north arrow" and be drawn at a scale of not less than 1"=100' and no more than 1"=20'. Contour lines, when included, should be drawn at intervals of no more than two (2) feet. A locus map shall be included on the drawing at a scale of not less than 1"=2000'.

Layout of existing and proposed water mains, valves, fittings, hydrants, services and any other appurtenances to the water system shall be shown, as well as details, notes, sewer lines, septic systems, drainage lines and rights-of-way.

200.5 Fire Flow Testing. Public hydrant fire flow testing shall only be performed by PW personnel. PW charges a fee for each test performed (see Sec. 100.4, *Fees*). Results of the test(s) will be furnished usually within ten (10) working days of completing the test(s).

200.6 Water System Modeling. Some projects may require the Applicant to provide PW with a computerized hydraulic simulation model of the proposed modifications to the existing system. Analysis shall include domestic demands as well as fire flows. Modeling shall be performed using standards acceptable to PW, incorporating aspects of the existing system as needed and required. When proposed system modifications are of such magnitude that a full simulation of the entire system is deemed necessary, PW engineering staff can be made available to assist the Applicant in accomplishing this, at a cost to be borne by the Applicant (see Sec. 100.4, *Fees*).

SECTION 300

MATERIALS

300.1 Pipe. Water pipe, of the push-on or mechanical joint type, shall be manufactured of ductile iron and shall be Class 52. In high pressure applications, or other special conditions, PW may require the use of Class 56 pipe. Pipe is to be furnished with at least one (1) coat of cement mortar on the interior surface and the exterior is to be coated with a 1 mil± thick coating of asphaltic paint.

300.2 Fittings. Fittings shall be ductile iron, mechanical joint (MJ), Class 350 (4" - 24") and Class 250 (30" - 48"), cement-mortar lined and provided with an asphaltic coating 1 mil± thick on the exterior. Ductile iron compact fittings, Class 350, may be used in the 4 to 16-inch size. Components shall conform with the weights, excluding accessories, and dimensions shown in current AWWA standards.

Sleeve couplings and accessories shall be pressure rated to at least equal to that of the pipe. Couplings shall be ductile iron. After assembly, all exterior surfaces, including bolts and nuts, shall be thoroughly coated with two (2) coats of heavy-duty protective asphaltic coating. The interior of the coupling shall be fusion-bonded epoxy coated in accordance with AWWA standards, composed of thermosetting epoxy with a minimum dry film thickness of 10 mils and a maximum of 20 mils.

Bolts and nuts shall be rustproofed steel.

300.3 Valves.

300.3.1 Gate. Valves up to 12-inches in diameter shall be resilient-seated style. Those that are buried shall be non-rising stem (NRS) style, open "RIGHT" (clockwise) and capable of producing a bubble-tight seal at 200 psi (either direction).

Operating nuts shall be 2-inches square at the base, tapering to 1-15/16 inches square at the top and shall be manufactured of cast or ductile iron and attached to the stem with a nut or pin at the factory. Nuts shall be painted red and marked with an "arrow" to indicate direction of opening.

Valves shall have mechanical joint (MJ) ends, complete with all accessories. MJ bolts and nuts shall be rustproofed steel. Valve exteriors shall be coated with fusion-bonded epoxy at the place of manufacture. If required, operating stem extension rods shall be furnished and installed with the valve.

Bronze stem material shall have a minimum tensile strength of 70,000 psi, yield strength of 35,000 psi and maximum elongation of 15 percent. Stem seals shall consist of at least two (2) O-ring seals. One shall function as a dirt seal and the other as a pressure seal and both shall be capable of being replaced with the valve under pressure in the full open position.

A thrust washer of an approved material shall be used between bearing surfaces of the stem collar and valve body. The torque required to open a fully closed valve under 100 psi pressure on one side shall not exceed 100 ft-lbs and the torque required to fully close a valve under the flow conditions of 10 fps shall not exceed 100 ft-lbs. Valves must be able to withstand an input torque of 300 ft-lbs with no distortion of the stem or other damage to the valve.

Gate cross-section shall be symmetrical about its vertical axis.

Rubber seats shall be new and of a compound—natural or synthetic—designated for water service application. Reclaimed rubber is not acceptable. Seats shall be either bonded or mechanically attached to the gate. When mechanically attached, all exposed hardware shall be 18-8 Type 304 stainless steel.

The waterway inside the body of the valve shall be free of pockets, channels, cavities, depressions or obstructions in the seat area.

Interior surfaces of valve bodies shall be fusion-bonded epoxy coated at the place of manufacture in accordance with current AWWA standards. Field coating with epoxy is prohibited. Bonnet bolts, seal plate bolts, stuffing box bolts and other bolts in contact with soil shall be manufactured of stainless steel or low-zinc bronze.

300.3.2 Butterfly. Valves 16-inches and larger shall be butterfly-type and suitable for direct burial. They shall open "RIGHT" (clockwise) and be designed for satisfactory performance involving frequent operation after long periods of inactivity. They shall be capable of maintaining a bubble-tight seal at 150 psi (either direction).

Rubber seats shall be new and of a compound—natural or synthetic—designated for water service application. Reclaimed rubber is not acceptable. Mating seat surfaces shall be Type 304 or 316 stainless steel.

Actuators shall be either the traveling nut or gear type and. furnished with the valve. Valves up to 24-inches in diameter shall be able to sustain an input torque of 300 ft-lbs measured at the actuator stem. For those with diameters of 30-inches to 48-inches, actuators shall be capable of withstanding a sustained input torque of 450 ft-lbs. If required, extension rods shall be furnished and installed on actuator stems.

Actuator stems shall have at least one (1) O-ring. It shall function as a dirt seal and prevent groundwater from entering the actuator housing. A thrust washer of an approved material shall be used directly above and below the actuator stem collar.

Valves shall have mechanical joint (MJ) ends, complete with all accessories. Bolts and nuts shall be rustproofed steel. Valve interiors and exteriors shall be coated with fusion-bonded epoxy.

300.3.3 Swing-Check. Swing-check valves shall utilize iron-body bronze-mounted (IBBM) design. They may employ metal-to-metal or composition-to-metal seat construction. Working pressure shall be 175 psi for valves up to 12-inches and 150 psi for those 16-inches and larger.

300.3.4 Tapping. Tapping valves shall be full-body, full-port style, with a flanged end on the upstream side and a raised male centering lip to register with the counterbore in the tapping sleeve outlet connecting flange. They shall conform to Sec. 300.3.1, *Gate*, in all other respects.

300.3.4.1 Tapping Sleeve. Tapping sleeves shall be ductile iron or stainless steel rated for at least 150 psi working pressure. Sleeves shall have side flanges with gaskets extending the full length of the sleeve (NOTE: for stainless steel sleeves, gaskets shall cover the entire surface area of each sleeve). Gaskets shall be supplied for flanges, where applicable. Bolts used to assemble the halves of the sleeve shall pass directly through the flanges. Ductile iron mechanical joint tapping sleeves are to be extra heavy pattern to withstand the severe strains of making the wet tap or machine connections. Connection flanges shall be machined, faced, counterbored and drilled to register with the flanged end on the upstream side of the tapping valve to be installed. **NOTE:** Fabricated sleeves, which are used for larger pipe sizes, shall be epoxy coated and employ a gasket at the throat.

300.4 Valve Boxes.

300.4.1 Gate Valve Box. A gate valve box shall consist of three (3) pieces—cover, upper section, and lower section—all of which are manufactured of cast iron. The lower section shall have an inside diameter of not less than 5¼-inches and a length of at least 36-inches—it shall be designed to telescope (slide) into the upper section. Upper section length shall be 26-inches. Covers shall have the word "WATER" (in caps) cast upon them.

300.4.2 Gate Valve Roadway Box. A gate valve roadway box shall consist of three (3) pieces—cover, upper section, and lower section—all of which are manufactured of cast iron. The lower section incorporates two (2) diametrically opposed horseshoe-shaped openings, which are designed to straddle service pipes up to 2-inches in diameter. Additionally, the lower section shall have an inside diameter of not less than 4¼-inches and a length of at least 36-inches—it shall be designed to telescope (slide) into the upper section. Upper section length shall be 26-inches. Covers shall have the word "WATER" (in caps) cast upon them.

300.4.3 Gate Valve Box Aligners. Gate valve box aligners shall be used in every gate valve box installation.

300.5 Blow Off Assembly. A 2" blow off assembly shall be used at the terminus of a "dead end" main. It consists of the following 2" diameter components: tapping saddle, brass nipples, brass elbow, curbstop valve (open "RIGHT") with drain, galvanized pipe, ductile iron end cap (MJ) for main, poured concrete thrust block, cast iron 4 1/4" gate valve roadway box, and cast iron 5 1/4" gate valve box. Components shall be joined together with iron pipe threads.

300.6 Fire Hydrants. Hydrants shall be dry-barrel, post-type. The main hydrant valve shall be a compression-type that opens against pressure in the main with a 5¼-inch opening and be constructed of solid rubber that may be reinforced with steel. The bottom cap nut is to be bronze or fusion-bonded epoxy

coated ductile or cast iron. An O-ring seal shall be provided in the main valve assembly to insure that water cannot leak from the hydrant shoe, or elbow, into the hydrant barrel or drainway. O-ring seals in the main valve area shall seat against bronze or fusion-bonded epoxy coated cast iron. Hydrants shall have a bronze seat ring threaded to a bronze sub-set (NOTE: threads of the main valve seat ring shall not be designed as a sealing thread).

Drainways are to be manufactured of nautical brass, bronze, fusion-bonded epoxy coated cast iron, or an approved equal. At least two (2) drain ports are to be provided with a minimum net diameter of ¼-inch. Drain valves shall momentarily force flush each time the hydrant is operated.

Hydrants shall open "RIGHT" and utilize a breakaway design. Each hydrant shall have two 2½-inch hose nozzles, 180-degrees apart, and one 4½-inch steamer port nozzle. (NOTE: Special High Service hydrants shall have three (3) 2½-inch hose nozzles and no steamer port.) All nozzle threads are to be National Standard Thread (NST). Lead shall not be used to secure nozzles to the hydrant barrel. Nozzle caps shall be cast iron and shall be secured to the hydrant barrel with rustproof steel chains.

Hydrants shall be designed so that no part of the threads of the operating rod will be in contact with water. Two (2) O-rings shall be used to accomplish this. One (1) O-ring shall be used to seal the upper end of the operating mechanism from atmospheric moisture. The operating rod stem shall be sheathed with nautical brass or bronze where it contacts the lower O-rings. All temperature grease shall be used as a lubricant for the operating rod threads - oil is not acceptable. Grease shall be certified by the U.S. Food & Drug Administration (FDA) as "non-toxic" and safe for use in contact with potable water supplies. Changing the main valve and seat shall only require removal of the bonnet and lubrication chamber or bonnet and seal plate.

Hydrant inlet shall be mechanical joint (MJ) with all accessories, and shall accommodate 6-inch ductile iron pipe and cast iron pipe, when requested. All MJ bolts and nuts shall be rustproofed steel. Interior surfaces of the shoe, or elbow, shall be fusion-bonded epoxy coated.

Hydrant exteriors, above the ground line, shall be painted with one (1) coat of primer and two (2) finish coats of "Ivy Green" paint that will produce a surface to which subsequent coats of paint, having a linseed oil base, will readily adhere. Bonnets shall be painted, in the same manner, to match existing colors ("Safety Yellow").

Hydrant extension kits and traffic repair kits must be available from the manufacturer as an off-the-shelf item. Kit components shall only be those manufactured by the original hydrant manufacturer and considered "original equipment." Substitutes are not allowed.

300.7 Service Connections. Service lines up to 2-inches on the customer's side shall be type "K" copper (see *Residential Service Connection Diagram*, Page 5-9). Service size will be determined by PW based upon information supplied by the customer. Use of intermediate couplings is not permitted (NOTE: where service lines are excessively long and would require intermediate couplings, PW may allow or direct the use of an approved polyethylene [200 psi] tubing).

Curb boxes shall be installed directly over the curb stop and brought to finished grade. They shall be a "Buffalo" type (sliding), cast iron, 3-3/8-inch inside diameter and of sufficient length for full coverage for stops no more than 1 inch in diameter. Box covers shall be a locking type and have the word "WATER" (in caps) cast upon it. Gate valve roadway boxes shall be used for 1-1/2 and 2-inch curb stops.

SECTION 400

CONSTRUCTION PROCEDURES

400.1 General Requirements

400.1.1 Notification. PW shall be notified at least forty-eight (48) hours prior to any item being installed within the system. Pressure testing and/or chlorination shall require a two (2) business day notification. It is a requirement that a representative of the PW witness *all* testing.

400.1.2 Inspection. Inspection shall be done in accordance with PW standards and practices. PW employees shall be given full access to the project at all times for inspection on an ***as needed*** basis.

Design drawings and record drawings of the progress of the work shall be maintained at the job site and shall be available for PW inspectors to view at any time. Failure to have these documents available for review or failure to have the documents prepared, may cause cessation of all construction work and disconnection from the PW system until such time that remedial measures to those requirements have been made.

400.1.3 Disposal of Removed Materials. Water pipe and/or appurtenances that are removed shall remain the property of the party whose responsibility it shall be to properly dispose of the same.

Water mains, water services, and hydrant runouts that are disconnected from the system and abandoned in place shall be capped at *ALL* openings. When pipes are severed at tees, the remaining tee shall be removed and replaced with a section of straight pipe, if possible.

400.1.4 Trench Excavation and Backfill. Water mains and services shall be installed with a minimum cover of 4'-6" to the crown of the pipe in an AWWA "Type 5 Trench" (See Fig. 4-1). Where unsuitable material is found at or below the grade of the placement of the pipe or fitting, said material shall be removed to the required width and depth and replaced with thoroughly compacted bank run or processed gravel. Material shall be deposited across the full width and length of the trench in layers of not more than twelve (12) inches in depth, *before* compaction. Each layer shall be compacted to 95% Standard Proctor to within 12-inches of subgrade of the permanent patch. The final 12-inches shall be processed gravel, compacted in the same manner.

A temporary patch shall be installed over the freshly backfilled trench in an existing street or sidewalk using hot bituminous concrete. It shall be at least 3-inches thick consisting of equal thickness layers of Modified Binder and Type I-1 Wearing Course. After 30-60 days, the temporary patch shall be removed and replaced with a permanent patch.

Permanent patching shall match the thickness of the surrounding existing pavement, or as directed by the local public works department. Whichever the case, the patch shall be underlain by a 12-inch layer of processed gravel compacted to 95% Standard Proctor.

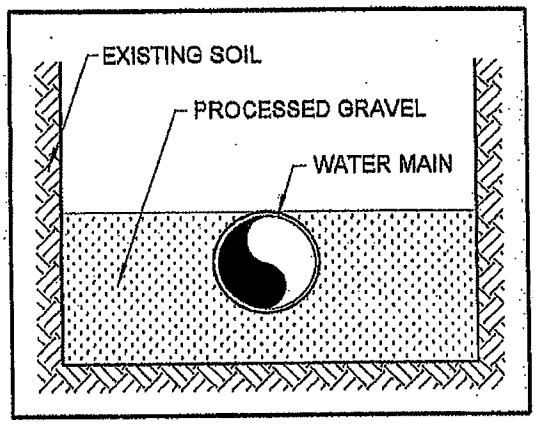


Fig. 4-1 – AWWA TYPE 5 TRENCH

400.2 Specific Components

400.2.1 Pipe and Fittings. Pipes and appurtenances should be installed with a minimum earth cover of 4'-6" over the crown of the pipe in an AWWA *Type 5 Trench* (see Sec. 400.1.4, *Trench Excavation and Backfill*), or as directed by PW.

Metallized, detectable identification tape, 2-inches wide, blue in color and imprinted with the words "CAUTION – WATER LINE BURIED BELOW," shall be utilized over all mains. The tape shall be buried 12-inches below finished grade.

Maximum changes in alignment (offset or deflection) of each 18-foot length of pipe shall not exceed the values in the following table:

TABLE 4-1

MAXIMUM DEFLECTION 18-FT PIPE SECTION

PIPE SIZE (in.)	PUSH-ON JOINT (in.)	MECH. JOINT (in.)
4	14	23
6	14	20
8-12	14	15
14-16	8	10
18-20	8	8
24-30	8	7
36	8	6
42-48	6	6
54	4	-

Maximum changes in alignment (offset or deflection) of each 20-foot length of pipe shall not exceed the values in the following table:

TABLE 4-2

MAXIMUM DEFLECTION 20-FT PIPE SECTION

PIPE SIZE (in.)	PUSH-ON JOINT (in.)	MECH. JOINT (in.)
4	16	26
6	16	23
8-12	16	17
14-16	9	11
18-20	9	9
24-30	9	8
36	9	7
42-48	6	6
54	5	-

Compacted gravel bedding (12" min) shall be installed under the entire length of the pipe and across the full width of the trench. Firm bearing shall be achieved by tamping selected material at the sides of the pipe/fitting, up to the "spring line" (mid-point height).

Whenever pipe laying operations cease for an extended period of time (over 30 minutes), all openings are to be closed with a watertight plug or other means approved by PW. Water shall be kept out of the trench while the pipe is being installed. If required, fittings, in addition to those shown on the plans, shall be provided when crossing utilities or other immovable obstructions that may be encountered when installing water facilities. At least a 12-inch layer of compacted gravel shall be left between all pipes or other subsurface structures, whether they are installed or relocated.

Adequate temporary provisions shall be made to provide for the flow from sewers or drains interfered with by the work. All necessary measures shall be taken to prevent sewage or other contaminating matter from entering the water main.

At all temporary cul-de-sacs and future streets, the main shall end with a full size line valve followed by a full length of pipe and a 3-foot section of pipe. The 3-foot section of pipe shall be outfitted with a cap (MJ) and a blowoff assembly (see Sec. 300.5, *Blowoff Assembly*). An adequate number of pipe sections shall be restrained before the end cap. A formed constructed-in-place concrete thrust block shall be placed against the cap.

Pipe cuts shall be made so as to leave a smooth end at right angles to the main axis of the pipe and also chamfered to conform to the manufactured spigot end. Particular care shall be exercised to minimize damage to the cement mortar lining when making cuts. Machine field cuts shall be made on pipes that are 16-inches and larger.

Dig-Safe® is to be notified prior to commencement of work. Any broken or damaged utility connection or services (water, sewer, gas, telephone, electric, etc.) shall be fully repaired at the expense of the party responsible for the damage. Underground structures shall be thoroughly supported or otherwise protected to maintain uninterrupted service.

New pipes and fittings shall be subjected to a careful visual inspection just before installation.

Any fitting showing a crack or any fitting or pipe that has received a severe blow, which may have caused an incipient fracture even though no such fracture can be seen, or any fitting or pipe discovered to be defective, shall be marked as "REJECTED" and removed at once from the work site. Pipe showing a crack may be cut off at a point at least 12-inches from the visible limit of the crack before the pipe is installed, provided the remaining portion is perfectly sound as determined by testing. Cut ends, used with push-on joints, shall be chamfered to prevent damage to the gasket when the pipe is assembled. Any defective pipe or fitting discovered after installation shall be removed and replaced at the installer's expense.

Pipes shall be cleaned of all excess asphaltic coating, debris, dirt, or other deleterious material, before installation. Care shall be taken in loading, transporting and unloading, to prevent injury to the coatings on the pipes and/or fittings. Any damage to the coatings shall be repaired as directed by a representative of PW. Pipes or fittings shall not be dropped.

400.2.2 Valves. Each valve that can be operated with a wrench or "key" shall be equipped with a sliding-type cast iron gate valve box (see Sec. 300.4.1, *Gate Valve Box*).

400.2.2.1 Gate. Valves shall be installed at all intersections and in each direction and line valves placed no further apart than 800 feet apart, and/or as directed by PW.

Each valve shall be equipped with a sliding-type cast iron gate valve box (see Sec. 300.4.1, *Gate Valve Box*), unless otherwise directed by PW.

400.2.2.2 Butterfly. Each valve shall be equipped with a sliding-type cast iron gate valve box (see Sec. 300.4.1, *Gate Valve Box*) unless otherwise directed by PW.

400.2.2.3 Swing-Check. Valves are to be mounted in an upright horizontal position. Direct access to the valve shall be accomplished by using a precast concrete manhole (5' I.D. min) with heavy duty cast iron manhole frame and solid 30" dia. (min.) cover. Concrete structure and cover shall be capable of withstanding an AASHTO H-20 load. Covers shall have a diamond check pattern with the word "WATER" (in caps) cast upon it. Corrosion resistant, non-slip steps or ladder shall be permanently affixed to the interior vertical wall of the manhole.

Depending on the pipe diameter, a resilient seated gate or butterfly valve shall be placed on each side of the swing-check valve, exterior of the manhole.

400.2.2.4 Tapping. Each valve shall be equipped with a sliding-type cast iron gate valve box (see Sec. 300.4.1, *Gate Valve Box*), unless otherwise directed by PW.

400.2.3 Valve Boxes.

400.2.3.1 Gate Valve Box. Each valve that can be operated with a wrench or "key" shall be equipped with a sliding-type, cast iron, gate valve box (see Sec. 300.4.1, *Gate Valve Box*). Boxes shall be positioned so that no load is transmitted to the valve body. A gate box aligner, manufactured of high strength plastic, shall be used with each installation to center the valve operating nut within the box.

400.2.3.2 Gate Valve Roadway Box. Gate valve roadway boxes shall be used for 1-1/2 and 2-inch curb stops (see Sec. 300.4.2, *Gate Valve Roadway Box*). Boxes shall be positioned so that no load is transmitted to the stop body or service pipe.

400.2.4 Blowoff Assembly. A 2-inch blowoff assembly shall be used at the terminus of a dead end main. Installation should be on the main at the "spring line" of the pipe within 2-feet of the end cap, or on the end cap itself.

400.2.5 Fire Hydrants. Hydrants shall be located so that they are, at a minimum, no more than 1,000 feet apart, or as required by the local fire department.

They shall be designed and installed so that when properly installed a standard 15-inch hydrant wrench will not contact the ground when making a full 360-degree turn on any nozzle cap.

Hydrants shall be set plumb with the steamer port (or central hose nozzle) facing the roadway. Hydrants shall be positioned with the center of the operating nut 24-inches back from the face of curb, or as required by the local fire chief.

Manufacturer's "bury mark" or ground line shall be set at finished grade. If there is no mark on the hydrant, the bottom of the breaking ring (flange) shall be set at a minimum of 2-inches to a maximum of 4-inches above finished grade. Depth of bury shall be at least 4'-6". The base of the hydrant shall be set on either a flat stone or concrete slab that is at least 14-inches square and 6-inches thick.

Hydrants shall be restrained using poured concrete thrust blocks in conjunction with a mechanical joint restraining device or strapped back to the hydrant gate valve.

A drainage pit shall be excavated below and around each hydrant and backfilled to a height of at least 6-inches above all drain ports with at least 1 cubic yard of ½ to 1-inch washed crushed stone. Stone shall be compacted prior to backfilling and compaction of the hydrant. Aggregates shall be covered with a layer of non-woven filter fabric to lessen the intrusion of fine soil particles into the stone.

Hydrants shall be fed from the main with a 6 or 8-inch ductile iron lateral (8-inch is used when hydrant laterals exceed a length of 10-feet). A resilient seated gate valve (MJ) shall be installed in the lateral between the tee and the hydrant. Special anchor or swivel tees (MJ) shall be used to connect the hydrant branch to the main.

For the purpose of standardization and the maintenance of reasonable parts inventories and repair capabilities, PW only allows a certain model of fire hydrant in its system.

400.2.6 Service Connections. Each tap to the main shall be made under pressure by PW personnel or, under some circumstances, an approved contractor. Taps shall be made using an approved method and equipped with a bronze corporation stop—compression type— with copper tube size (CTS) on the service side.

Taps should be made so that the service line will extend to the point where the meter will be located at the nearest point in the building at a 90-degree angle to the street.

Direct taps up to 1-inch may be made in the main. Larger taps shall require a service saddle. Ordinarily, taps will be made at the ten o'clock or two-o'clock position on the circumference of the pipe. When more than one tap is to be made in the main in close proximity to one another, they should be staggered around the circumference at least 12-inches apart.

Services up to 2-inches shall be equipped with a curb stop located 1-foot behind the face of curb or edge of pavement. Curb stops shall be bronze, compression fitted, without drip. Direction of opening shall be to the "RIGHT."

Generally speaking, service lines from the main to curb stop are installed by PW. Owners shall provide a marker (painted and/or staked) to indicate where they prefer the service to be located (must be approved by PW). Service from building to curb stop shall be installed by the Owner and inspected by PW (for sizes 2-inches and smaller—use of intermediate couplings is strongly discouraged.).

Depth to the crown of the service pipe shall be a minimum of 4'-6" below finished grade, throughout the installation. Information on this and other aspects of service installation is available on the PW *Service Installation Procedures* sheet.

Metallized detectable identification tape, 2-inches wide, blue in color and imprinted with the words "CAUTION – WATER LINE BURIED BELOW," shall be utilized over all service lines from the main to the curb stop. The tape shall be buried a depth of 12-inches below finished grade.

A full-ported ball valve (2-inch or less) rated for the service pressure, but not less than 150 psi, shall be installed just prior to the location of the meter coupling and one at the effluent side of the second meter coupling.

400.3 Thrust Restraint. The preferred method of counteracting thrust is through the use of a mechanical joint restraint device. Poured concrete thrust blocks are also allowed and may be used as an option or in conjunction with a mechanical joint restraint device.

Thrust blocks shall be designed using a soil bearing strength of 1,500 pounds per square foot (psf). They shall be constructed in place using Portland cement concrete (R.I. Dept. of Transportation Class "B") having a 28-day compressive strength of at least 3,000 psi, and be located in such a way so as to bear against undisturbed earth. They shall be utilized on all water mains for the following conditions (See Fig. 4-2):

- Pipeline direction changes (tees, bends, etc.)
- Dead end lines (caps, plugs or hydrants)
- Transition pieces (reducers, offsets, etc.)

The sides of thrust blocks shall be formed. Forms shall be removed before backfilling commences. Curing time should be at least fourty-eight (48) hours. Minimum bearing shall be that which is depicted on the plans or as directed by PW. Felt roofing paper shall be used to protect pipe joints. Concrete shall not be placed over bolts or nuts, or placed in such a way that will prevent the removal of joints (NOTE: concrete reaction blocks may be used when bearing against undisturbed soil cannot be achieved).

Vertical fittings shall be anchored to thrust blocks using at least two (2) #5 (5/8-inch minimum), deformed steel rebars. Blocks shall be designed by a professional engineer for pipe sizes greater than 12-inches. Anchors shall be bent to match to outside radius of the fitting to be restrained.

Thrust restraint, where concrete blocks cannot be poured against undisturbed earth, shall be via restrained joint as approved by PW. This may be accomplished by using a mechanical joint restraining device. Restrained joint pipe lengths (restrained length) shall be sufficient to counter the thrust imparted by 1½ times the anticipated working pressure but not less than 150 psi (See Fig. 4-3). Steel tie rods will be allowed with permission from PW. If allowed, they shall be of sufficient strength to withstand forces imparted to them. A *factor of safety* of 2.0 shall be used for all rod thickness calculations. Rods shall be protected from corrosion with at least two (2) coats of asphaltic paint or fusion-bonded epoxy coating.

400.4 Leakage and Pressure Testing. Completed pipe lines shall be tested (in sections) for strength and for leakage at a pressure of 150 psi in areas where "normal static pressure" is no more than 100 psi. In areas that exceed 100 psi, pressure testing shall be at 1.5x the static pressure. No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

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

where ....

L = allowable leakage, in gallons per hour

S = length of pipe tested, in feet

D = nominal diameter of pipe, in inches

P = average test pressure during the leakage test, in psi (gauge)

The rate of leakage shall not exceed the values in the following table:

TABLE 4-3

ALLOWABLE PIPELINE LEAKAGE

PIPE DIAMETER (in)	ALLOWABLE LEAKAGE PER 1,000 LF OF PIPELINE (gallons / hour)
4	0.37
6	0.55
8	0.74
10	0.92
12	1.10
14	1.29
16	1.47
18	1.66
20	1.84
24	2.21
30	2.76
36	3.31
42	3.86
48	4.41
54	4.97

Tests for leakage shall be done by the Applicant's contractor and shall be witnessed by a PW representative. Testing shall last for at least 1 hour and pressure shall not vary by more than ±5 psi for the duration of the test. Any additional water needed to maintain the required pressure shall be accurately measured in a manner approved by PW. During this test all hydrant laterals shall be in the "OPEN" position. Methods of testing and plans showing sections to be tested shall be submitted to PW for approval.

All apparatus, material, and labor necessary for making the tests, including caps temporarily set to accommodate pressure testing, shall be furnished by

the installer. Leaks discovered during testing shall be repaired by the installer.

Arrangements for securing water for test purposes and the expense of the same shall be borne by the installer. Water utilized for this purpose, which is obtained directly from the PW system, must flow through an approved backflow prevention device that has been tested and certified to be in working condition at the time it is used for this purpose.

400.5 Disinfection. Upon completion of the pipeline installation and all the pressure testing thereof, the interior of the pipe shall be flushed and then thoroughly disinfected in all parts. This disinfection must result in eliminating, from the various parts of the new pipeline, all evidence of the existence, therein, of bacteria indicative of any contamination, as determined by tests of the bacterial content of samples of water taken from the new water main. The disinfection shall be accomplished in the following manner:

A. Pipes shall be completely filled with water, all air released, and then thoroughly flushed out in the amount of twice the capacity of the section to be treated. Chlorine liquid/gas, or other approved disinfection agents, shall be introduced into the main near the point of water supply with PW approved Chlorine injection equipment, in the concentration required (not less than 100 parts of available Chlorine per million parts of water [ppm]) to maintain residual concentrations at the end of the disinfection period, as specified. The main shall be wasted or bled from the extreme end opposite the point of application of the disinfection agent until the solution has fully reached the end opposite to the point of application.

B. The disinfecting solution shall be left in the mains under full pressure for a period of not less than 24 hours. Prior to flushing the main, a sample shall be obtained from the main to verify that a minimum Chlorine residual concentration of 50 ppm is present. The entire section shall then be flushed through a neutralizing agent until all traces of Chlorine are removed. NOTE: under special circumstances approved by PW, a 3 hour disinfection period may be allowed with the requirement that a minimum Chlorine residual concentration of 100 ppm is present in the main at the end of the disinfection period.

C. Samples of water shall then be taken by PW and delivered to its laboratory for analysis of the effectiveness of the disinfection treatment.

D. Any main or section of pipe failing to meet laboratory standards for disinfection shall be retreated until the desired results are obtained.

E. Particular attention is directed to the requirement that a double check valve backflow prevention device installation shall be made in the water supply to main under treatment, to prevent possible backflow or back-siphonage of treated solution into the distribution system that is in service.

F. PW approval must be obtained before any main is placed into service.

Connections at cuttings shall be swabbed with 50 ppm solution of Chlorine at locations when other methods are not applicable.

The contractor shall make all necessary arrangements for securing the water for test purposes and shall bear the expense of these arrangements.

The installer shall furnish and install suitable temporary testing plugs, cap, pumps, pipe connections and other appurtenances, as necessary. Water samples shall be collected by a PW representative at points no further apart than 1,000 feet. Sample testing shall be done at the PW laboratory.

TABLE 4-4

THRUST* (IN POUNDS) AT FITTINGS WITH 150 PSI WATER PRESSURE

PIPE SIZE (in)	TEES & DEAD ENDS	90° BEND	45° BEND	22½° BEND	11¼° BEND
4	2,356	3,332	1,803	919	462
6	5,301	7,497	4,058	2,069	1,039
8	9,425	13,329	7,213	3,677	1,848
10	14,726	20,826	11,271	5,746	2,887
12	21,206	29,989	16,230	8,274	4,157
14	28,863	40,819	22,091	11,262	5,658
16	37,699	53,315	28,854	14,709	7,390
18	47,713	67,476	36,518	18,617	9,353
20	58,905	83,304	45,084	22,984	11,547
24	84,823	119,958	64,921	33,096	16,628
30	132,536	187,434	101,439	51,713	25,982
36	190,852	269,903	146,072	74,467	37,413
42	259,770	367,371	198,820	101,357	50,924
48	339,292	479,833	259,688	132,385	66,513
54	429,416	607,287	328,661	167,550	84,180
60	530,142	749,736	405,754	206,852	103,926
66	641,474	907,181	490,963	250,291	125,751
72	763,407	1,079,621	584,286	297,867	149,654

*Calculated by the Formula $T = (2PA\ SIN(\Theta \div 2)) \times 1.25$ (except for Tees & Dead Ends where $T = PA \times 1.25$)

where....

T = Thrust, in pounds
P = Water Pressure, in pounds per square inch
A = Area of Pipe, in square inches
Θ = Bend Deflection Angle, in degrees
1.25 = Factor of Safety

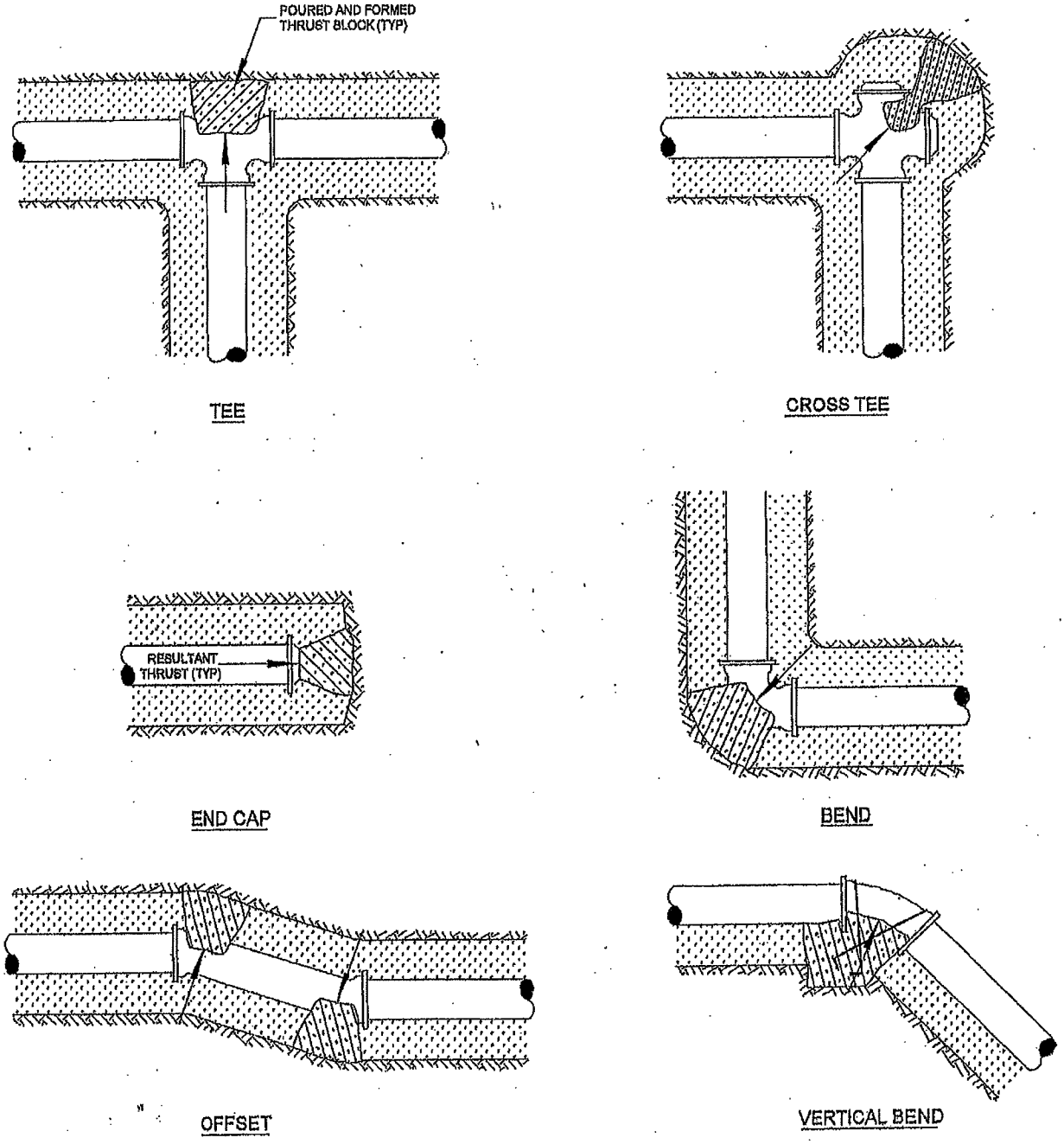
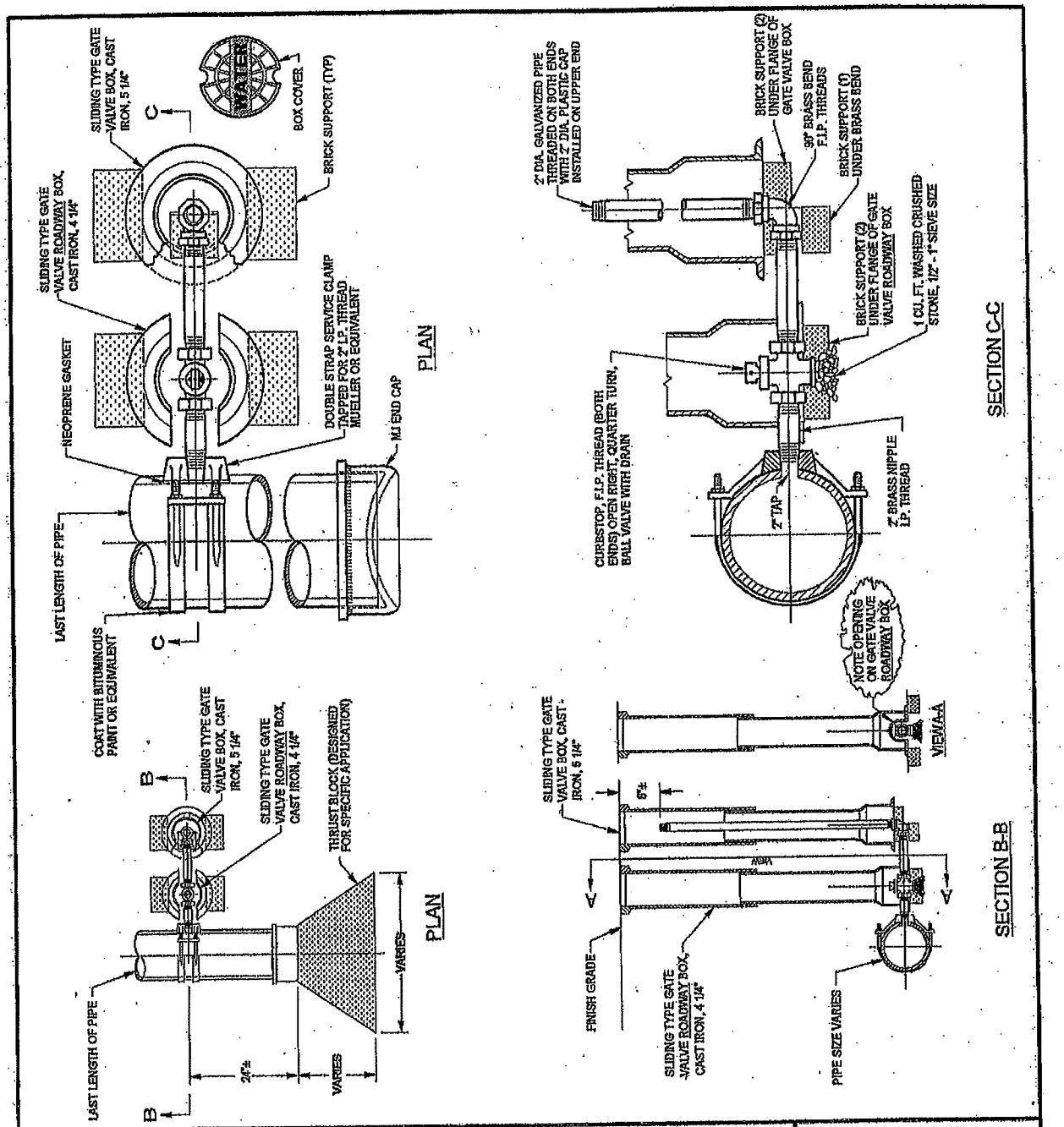


Fig. 4-2 – COMMON TYPES OF THRUST BLOCKING

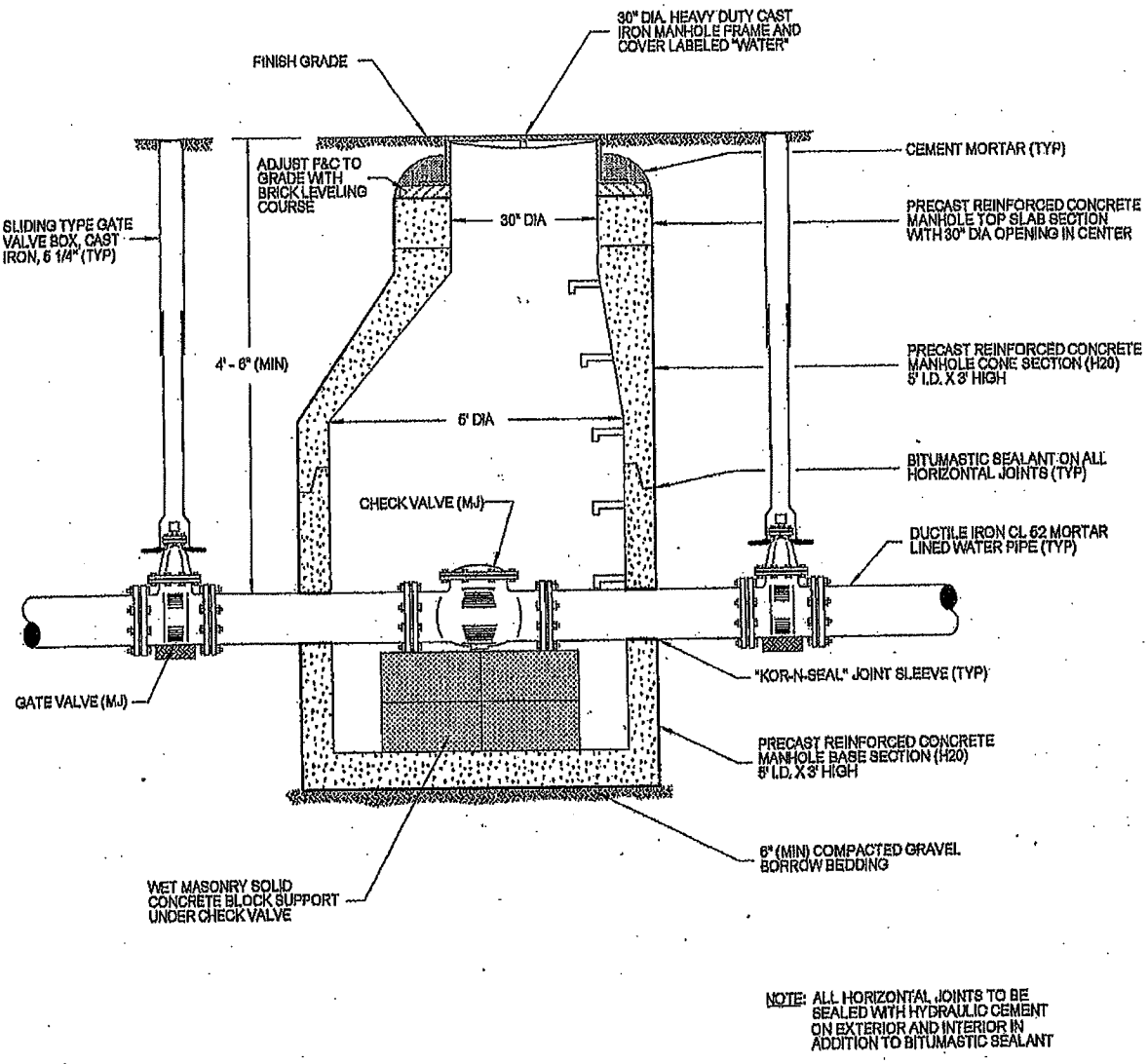
APPENDIX A

INSTALLATION DETAILS



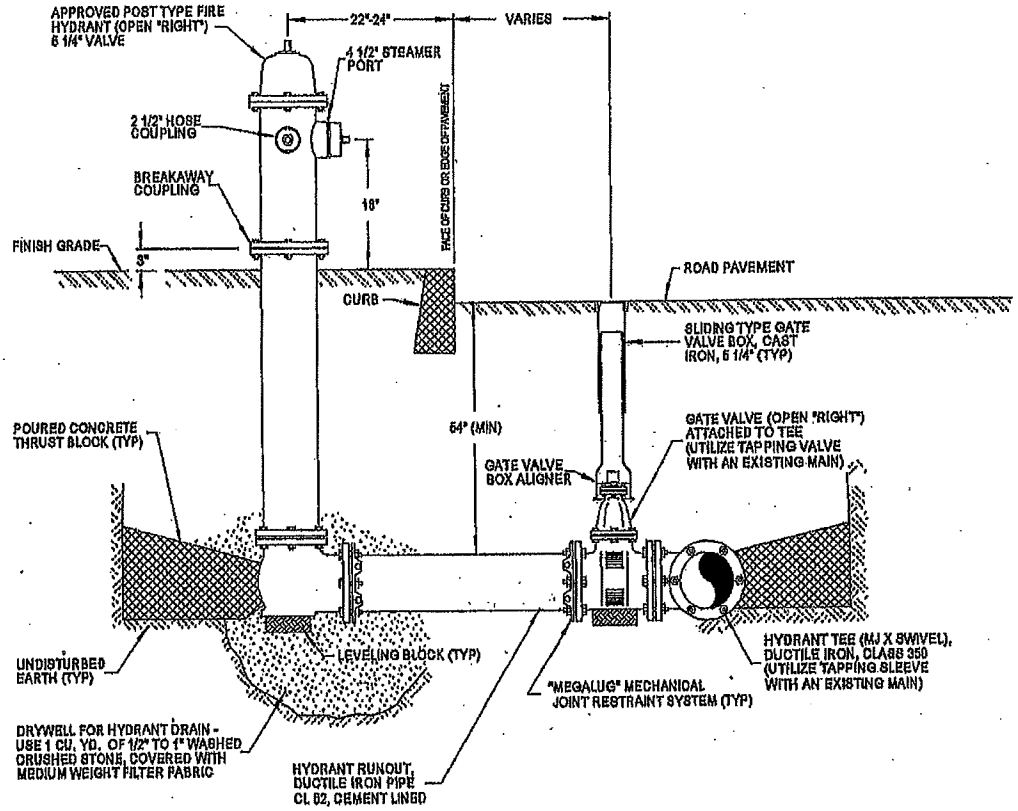
PROVIDENCE WATER	APPROVED:	DATE: 04/05/2002
		DRAWN BY: SP
TYPICAL DETAIL		CHECKED BY: SP & DH
		SCALE: NONE
2-INCH BLOWOFF ASSEMBLY	PAUL J. GADOURY, P.E. DIRECTOR OF ENGINEERING	SHEET NO. 1 OF 1
	DATE	STANDARD NO.

BLOWOFF4A3.DO



NOTE: ALL HORIZONTAL JOINTS TO BE SEALED WITH HYDRAULIC CEMENT ON EXTERIOR AND INTERIOR IN ADDITION TO BITUMASTIC SEALANT

PROVIDENCE WATER	APPROVED:	DATE: 08/31/1998
		DRAWN BY: SP
TYPICAL DETAIL		CHECKED BY: SP & DH
		SCALE: NONE
CHECK VALVE MANHOLE	PAUL J. GADOURY, P.E. DIRECTOR OF ENGINEERING	SHEET NO. 1 OF 1
	DATE	STANDARD NO.

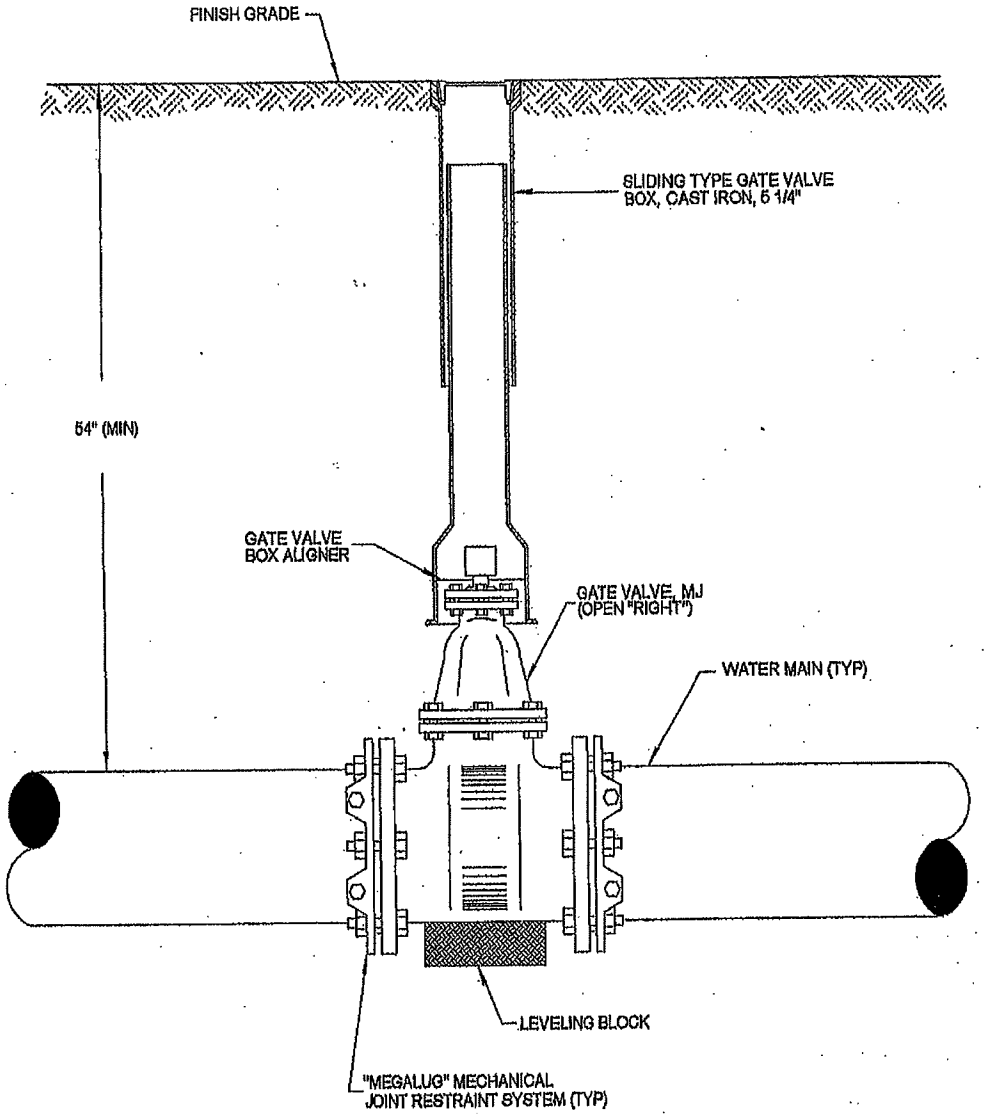


NOTE: THRUST BLOCK IS CAST-IN-PLACE (FORMED) 3,000 PSI (MIN) PORTLAND CEMENT CONCRETE BEARING AGAINST UNDISTURBED EARTH. DESIGN PARAMETERS: 150 PSI WATER PRESSURE (MIN), SOIL BEARING STRENGTH 1,500 PSF. TO BE USED IN CONJUNCTION WITH MECHANICAL JOINT RESTRAINT SYSTEM.

PROVIDENCE WATER	APPROVED:	DATE: 03/08/04
		DRAWN BY: SP
TYPICAL DETAIL		CHECKED BY: SP & DH
		SCALE: NONE
FIRE HYDRANT (POST TYPE)	PAUL J. GADOURY, P.E. DIRECTOR OF ENGINEERING	SHEET NO. 1 OF 1
	DATE	STANDARD NO.

A Providence Water guidance document

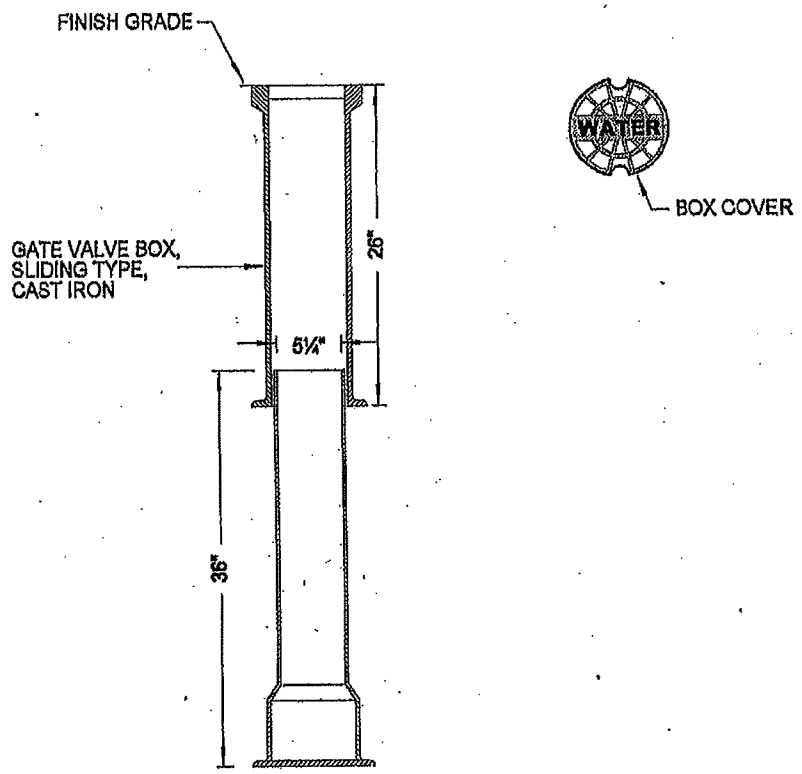
FHYD1B.DC



PROVIDENCE WATER	APPROVED:	DATE: 04/16/2002
		DRAWN BY: SP
TYPICAL DETAIL		CHECKED BY: SP & DH
		SCALE: NONE
GATE VALVE	PAUL J. GADOURY, P.E. DIRECTOR OF ENGINEERING	SHEET NO. 1 OF 1
	DATE	STANDARD NO.

GVINST1B.DC

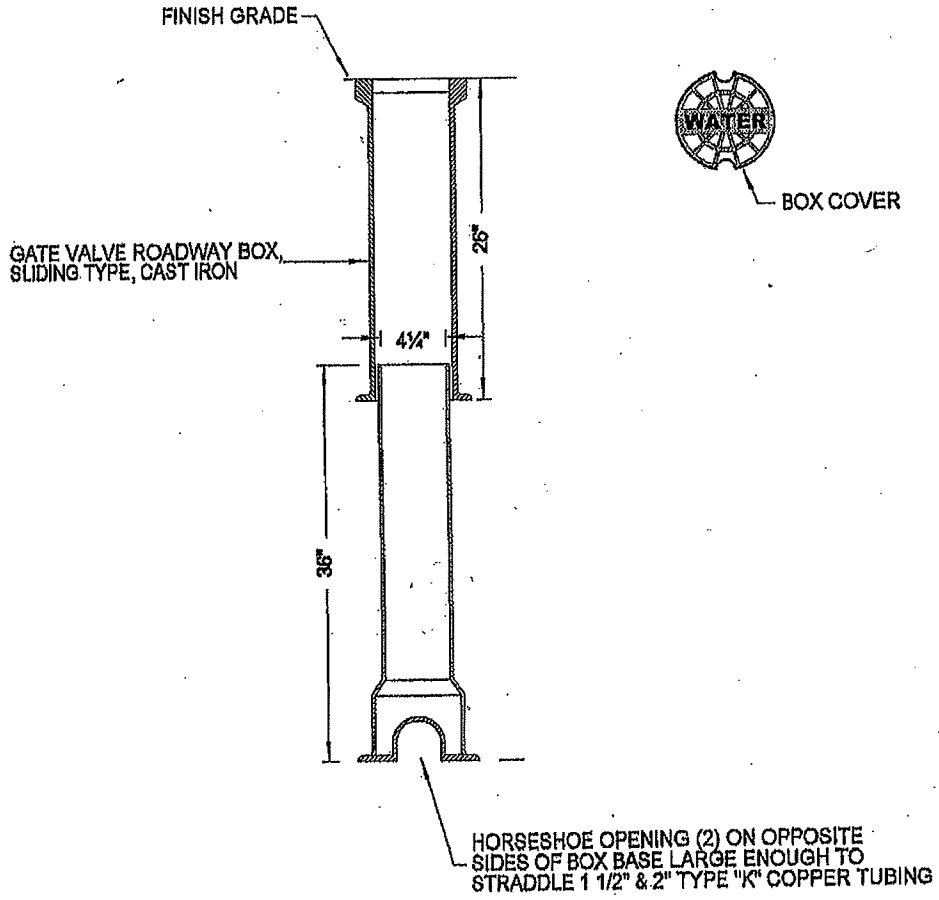
A Providence Water guidance document



PROVIDENCE WATER	APPROVED:	DATE: 11/26/2008
		DRAWN BY: SP
TYPICAL DETAIL		CHECKED BY: SP & DH
		SCALE: NONE
5¼" GATE VALVE BOX	PAUL J. GADOURY, P.E. DIRECTOR OF ENGINEERING	SHEET NO. 1 OF 1
	DATE	STANDARD NO.

GVBDT1..DO

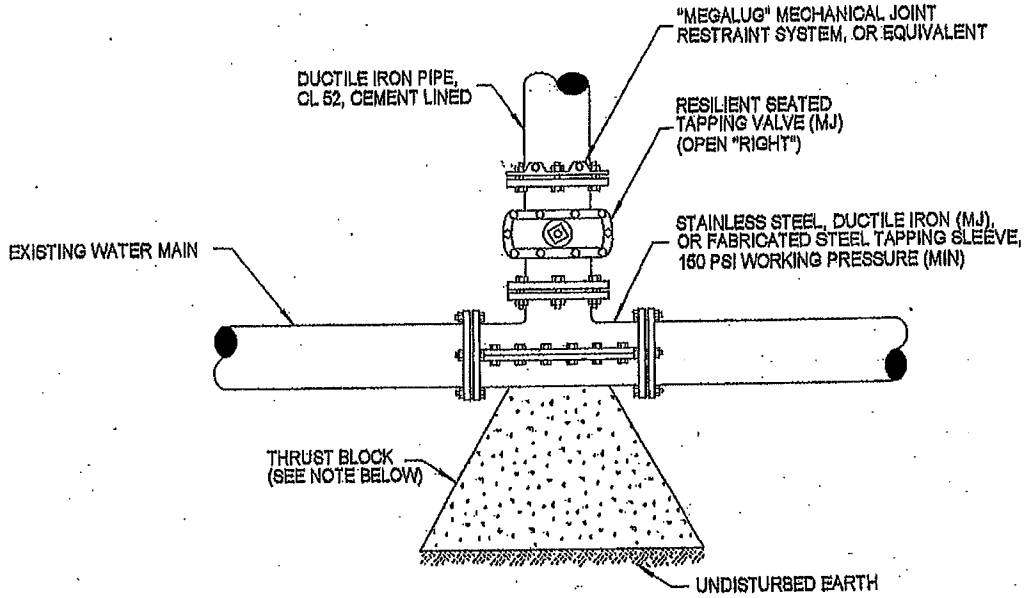
A Providence Water guidance document



PROVIDENCE WATER	APPROVED:	DATE: 11/26/2003
		DRAWN BY: SP
TYPICAL DETAIL		CHECKED BY: SP & DH
		SCALE: NONE
4¼" GATE VALVE ROADWAY BOX	PAUL J. GADOURY, P.E. DIRECTOR OF ENGINEERING	SHEET NO. 1 OF 1
	DATE	STANDARD NO.

GVRBDTL.DC

A Providence Water guidance document

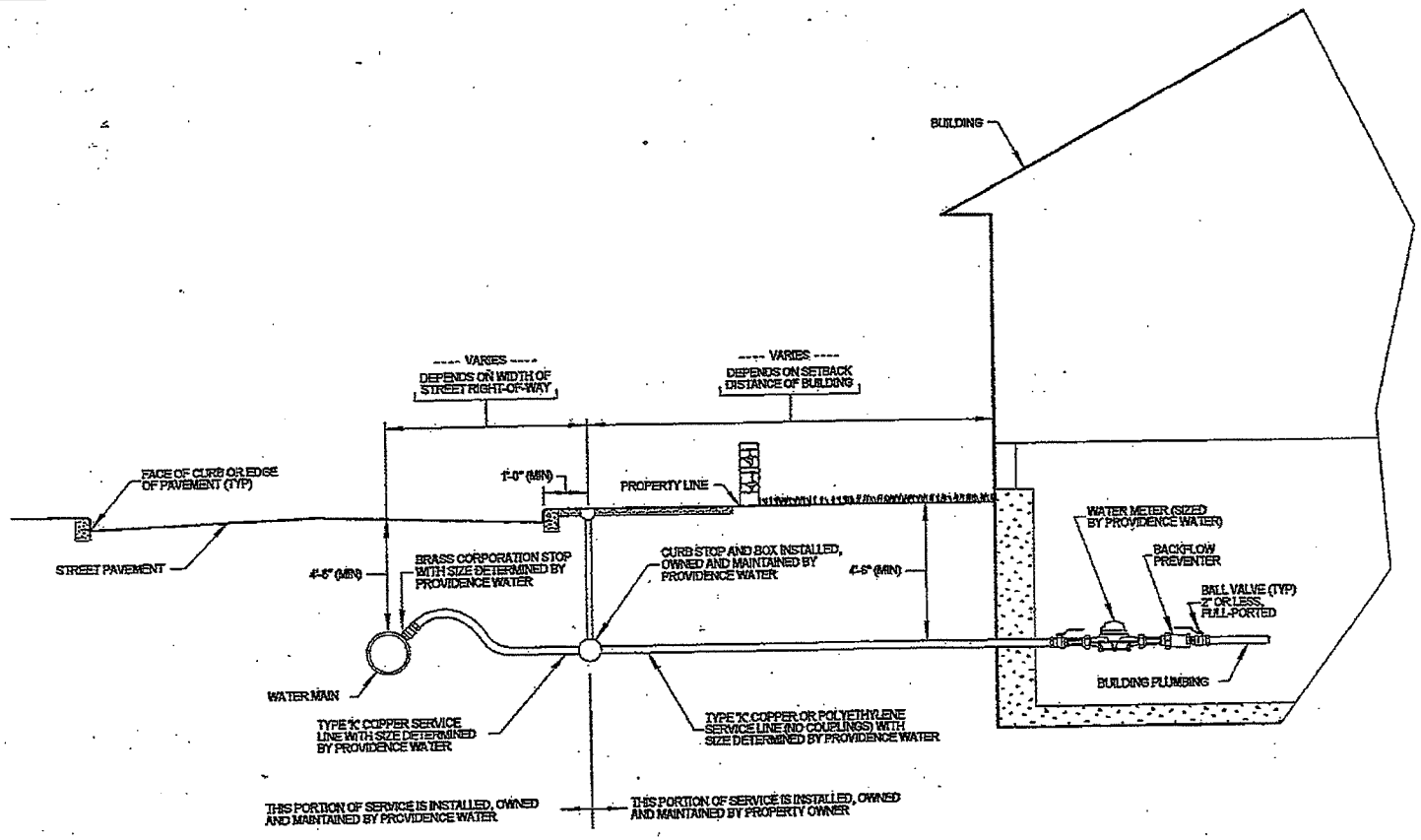


NOTE: THRUST BLOCK IS CAST-IN-PLACE (FORMED) 3,000 PSI (MIN) PORTLAND CEMENT CONCRETE BEARING AGAINST UNDISTURBED EARTH. DESIGN PARAMETERS: 150 PSI WATER PRESSURE (MIN), SOIL BEARING STRENGTH 1,500 PSF. TO BE USED IN CONJUNCTION WITH MECHANICAL JOINT RESTRAINT SYSTEM.

PROVIDENCE WATER	APPROVED:	DATE: 04/161/2002
		DRAWN BY: SP
TYPICAL DETAIL		CHECKED BY: SP & DH
		SCALE: NONE
TAPPING SLEEVE & VALVE	PAUL J. GADOURY, P.E. DIRECTOR OF ENGINEERING	SHEET NO. 1 OF 1
	DATE	STANDARD NO.

A Providence Water guidance document

TSV1A2.DC



RESIDENTIAL SERVICE CONNECTION DIAGRAM

(NOT TO SCALE)

GENERAL NOTES:

WATER SERVICE SHALL BE KEPT AT LEAST TWENTY-FIVE (25) FEET AWAY FROM INDIVIDUAL SEWAGE DISPOSAL SYSTEMS (ISDS) OR CESSPOOLS. LINES CLOSER THAN THE ALLOWABLE DISTANCE SHALL BE ENCASED IN SCHEDULE 40 (MIN) POLYVINYLCHLORIDE (PVC) PIPE. INTERMEDIATE JOINTS SHALL BE JOINED TOGETHER AND SEALED TO FORM A WATERTIGHT CONNECTION. END SECTIONS SHALL BE FITTED WITH A MECHANICAL DEVICE TO MAKE THE SPACE BETWEEN SERVICE PIPE AND ENCASEMENT WATERTIGHT.

SERVICEDIAGDC (10/02/2003)

APPENDIX B

LIST OF APPROVED MATERIALS / MANUFACTURERS
FOR USE IN THE
PROVIDENCE WATER DISTRIBUTION SYSTEM

(As of March 2004)

DUCTILE IRON PIPE

Atlantic States Cast Iron Pipe Co.
Griffin Pipe Products Co.
U.S. Pipe & Foundry Co.

DUCTILE IRON FITTINGS

Griffin Pipe Products Co.
Tyler Pipe / Union Foundry Co.
U.S. Pipe & Foundry Co.

VALVES

American Flow Control
Clow Valve Co.
Kennedy Valve
M&H Valve Co.
Mueller Co.
U.S. Pipe & Foundry Co.

FIRE HYDRANTS

Kennedy Valve - "Guardian" Model

DUCTILE IRON PIPE COUPLINGS

Dresser, Inc.
Romac Industries, Inc.
Smith-Blair, Inc.
The Ford Meter Box Co.

JOINT RESTRAINT FOR DUCTILE IRON PIPE - MECHANICAL

EBBA Iron Sales, Inc. - "Megalug"

JOINT RESTRAINT FOR DUCTILE IRON PIPE - GASKETED

U.S. Pipe & Foundry Co. - "Field Lok 350" Gasket

SERVICE BRASS

A.Y. McDonald Manufacturing Co.
Cambridge Brass
Mueller Co.
Red Hed Supply
The Ford Meter Box Co.

NOTE: This list is subject to change without notice. Customers or contractors are responsible for contacting *Providence Water* to verify their selection of materials prior to starting any construction.

INDEX

- A -

Administrative Procedures 1-1
Aligners, Gate Valve Box, *300.4.3* 3-2
Appendix A - Installation Details A-1
Appendix B - List of Approved Materials / Manufacturers B-1
Applicable Standards, *100.1* 1-1
Applications, *100.4* 1-1
Approved Materials, *100.2* 1-1
As-Built Drawings, *100.8* 1-1

- B -

Backfill and Trench Excavation, *400.1.4* 4-1
Base of Levels, *200.2* 2-1
Blowoff Assembly, Construction Procedures, *400.2.4* 4-3
Blowoff Assembly, Materials, *300.5* 3-2
Boxes, Valve, Construction Procedures, *400.2.3* 4-3
Boxes, Valve, Materials, *300.4* 3-2
Butterfly Valves, *300.3.2* 3-1

- C -

Calculations, *200.3* 2-1
Certification, Professional, *200.1* 2-1
Connections, Service, *300.7* 3-3
Construction Plans, *200.4* 2-1
Construction Procedures 4-1

- D -

Disinfection, *400.5* 4-6
Disposal of Removed Materials, *400.1.3* 4-1
Drawings, As-Built, *100.8* 1-1
Duration of Approval, *100.7* 1-1

- E -

Elevations, Base of, *200.3* 2-1
Engineering Requirements 2-1

- F -

Fees, *100.5* 1-1
Fire Flow Testing, *200.5* 2-1
Fire Hydrants, Construction Procedures, *400.2.5* 4-3
Fire Hydrants, Materials, *300.6* 3-2
Fittings and Pipe, Construction Procedures, *400.2.1* 4-1
Fittings, Materials, *300.2* 3-1

- G -

Gate Valve Box, *300.4.1* 3-2
Gate Valve Box Aligners, *300.4.3* 3-2
Gate Valve Roadway Box, *300.4.2* 3-2
Gate Valves, *300.3.1* 3-2

- H -

Hydrants, Fire, Construction Procedures, *400.2.5* 4-3
Hydrants, Fire, Materials, *300.6* 3-2

- I -

Inspection, *400.1.2* 4-1
Installation Details, Appendix A A-1

- J -

- K -

- L -

Leakage and Pressure Testing, *400.4* 4-5
Levels, Base of, *200.2* 2-1
List of Approved Materials / Manufacturers, Appendix B B-1

- M -

Materials 3-1
Modeling, Water System, *200.6* 2-1

- N -

Notification, *400.1.1* 4-1

- O -

- P -

Pipe & Fittings, Construction Procedures, *400.2.1* 4-1
Pipe, Materials, *300.1* 3-1
Plans, Construction, *200.4* 2-1
Pressure Testing and Leakage, *400.4* 4-5
Procedures, Administrative 1-1
Procedures, Construction 4-1
Professional Certification, *200.1* 2-1

- Q -

- R -

Requirements, Engineering 2-1
Residential Service Connection Diagram A-9
Restrictions, *100.3* 1-1
Review Time, *100.6* 1-1
Roadway Box, Gate Valve, *300.4.2* 3-2

- S -

Service Connections, Construction Procedures, *400.2.6* 4-4
Service Connections, Materials, *300.7* 3-3
Sleeve, Tapping, Materials, *300.3.4.1* 3-2
Standards, Applicable, *100.1* 1-1
Swing-Check Valves, Construction Procedures, *400.2.2.3* 4-3
Swing-Check Valves, Materials, *300.3.3* 3-2

- T -

Tapping Sleeve, Materials, *300.3.4.1* 3-2
Tapping Valves, Construction Procedures, *400.3.3.4* 4-3
Tapping Valves, Materials, *300.3.4* 3-2
Testing, Fire Flow, *200.5* 2-1
Time of Review, *100.6* 1-1
Thrust Restraint, *400.3* 4-4
Trench Excavation and Backfill, *400.1.4* 4-1
Typical and Installation Details, *500.1* A-1
2-Inch Blowoff Assembly A-2
Check Valve Manhole A-3
Fire Hydrant (Post Type) A-4
Gate Valve A-5
Gate Valve Box A-6
Gate Valve Roadway Box A-7
Tapping Sleeve & Valve A-8

- U -

- V -

Valve Boxes, Construction Procedures, *400.2.3* 4-3
Valve Boxes, Materials, *300.4* 3-2
Valves, Gate, Construction Procedures, *400.2.2.1* 4-3
Valves, Gate, Materials, *300.3.1* 3-1
Valves, Butterfly, Construction Procedures, *400.2.2.2* 4-3
Valves, Butterfly, Materials, *300.3.2* 3-1
Valves, Swing-Check, Construction Procedures, *400.2.2.3* 4-3
Valves, Swing-Check, Materials, *300.3.3* 3-2
Valves Tapping, Construction Procedures, *400.3.3.4* 4-3
Valves Tapping, Materials, *300.3.4* 3-2

- W -

Water System Modeling, *200.6* 2-1

- X -

- Y -

- Z -