DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

C O N T R A C T

Between

CITY OF READING

and

3B SERVICES, INC.

2020 – For the Electrical Service, Generator and Boiler Replacement at 3rd and Court Fire Station..

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C O N T R A C T

THIS AGREEMENT, made and concluded this day of 10/22/2020, by and between the **CITY OF READING**, a municipal corporation of the Commonwealth of Pennsylvania, located in the County of Berks, said Commonwealth, party of the first part, and **3B SERVICES, INC.**, Contractor, party of the second part, pursuant to law and to the provisions and requirements of the ordinance of the City of Reading, Pennsylvania.

WITNESSETH, that the parties to these presents, each in consideration of the agreements on the part of the other herein contained, have agreed, and hereby do agree, the party of the first part for itself, its successors and assign, and the party of the second part for itself, himself, or themselves, its successors, or his or their executors and administrators as follows:

CONTRACTOR'S GENERAL AGREEMENT. The Contractor covenant, promises and agrees to and with the party of the first part, for the consideration hereinafter mentioned and contained, and under the penalty expressed in a bond and hereto attached, to furnish all the material, machinery, equipment, tools, labor and transportation, except as hereinafter otherwise provided, at his own cost, necessary or proper for the purpose of executing the work embraced in this contract in a good, substantial and workmanlike manner, and in strict accordance with the specifications pertaining to this contract a herein contained.

PARTS OF CONTRACT. The Location Map; Notice to Contractors; Bid Instructions; Documents to be Submitted with Bid; Contract Documents; Documents to be Submitted During the Course of the Contract; Wage Rate Determinations; Notice of Preconstruction Requirements and Pre-Construction Conference Questionnaire; Affirmative Action Requirements; General Provisions; Supplementary General Terms and Conditions; Technical Specifications; Supplementary Technical Specifications; and Correspondence and Supportive Documentation shall each form a part of the Contract.

THE CONTRACT SUM. The City shall pay the Contractor for the performance of the Contract, subject to additions and deductions provided therein, in current funds as follows:

One Hundred Two Thousand and Three Hundred Twenty-Five Dollars ($102,325.00).

For the Electrical Service, Generator and Boiler Replacement at 3rd and Court Fire Station.

Where the quantities originally contemplated are so changed that application of the agreed unit price to the quantity of work performed is shown to create a hardship to the Owner or the Contractor, there shall be an equitable adjustment of the Contract to prevent such hardship.

TIME & MANNER OF DOING WORK. The party of the second part agrees to commence the construction of the work to be done under this contract, immediately upon receiving written notice from the Director of Public Works, or other applicable Director, so to do and to complete the entire work as specified in the technical specifications, it being expressly agreed and

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understood that the time of beginning, rates of progress and time of completion of the work are essential under this contract. Time is to be considered to be the essence of this contract.

STIPULATED DAMAGES. The Contractor shall begin work within ten (10) days of receipt of written notice from the applicable Director, to do so. If the Contractor fails to complete and finish the work in conformity with the terms and provisions of this Contract within the time hereinbefore specified, he shall pay to the City the sum of Five Hundred Dollars ($500.00) for each and every day thereafter, including Sundays and holidays, that the finishing of the Contract is delayed, which sum shall be construed as stipulated and liquidated damages and not as a penalty and shall be deducted from the amount due by the terms of the Contract; provided, however, that in case of justifiable delay, the City shall extend the time for completion of said work as provided for in Article G.7, but no extension of time for any reason beyond the time fixed herein for the completion of the work shall be deemed a waiver by the City of the right to abrogate this Contract for abandonment for delay.

LIENS. Neither the final payment nor any part of the retained percentage shall become due until the Contractor, if required, shall deliver to the City a complete release of all liens arising out of this Contract, or receipts in full in lien thereof, and, if required in either case, an affidavit that so far as he has knowledge or information the release and receipts include all the labor and material for which a lien could be filed. If any lien remains unsatisfied after all payments are made, the Contractor shall refund to the City all monies that the latter may be compelled to pay in discharging such a lien, including all costs and a reasonable attorney's fee.

IN WITNESS WHEREOF, the said City of Reading has caused this Agreement to be executed by its Mayor, and its corporate seal to be hereunto affixed, duly attested by its City Clerk, and the Vendor has caused this Agreement to be executed by its President and its corporate seal to be hereunto affixed, duly attested by its Secretary, has hereunto set his/their hand(s) and seal(s) the day and year first above written.

Signed and sealed in the Presence of:

Attest:

DocuSigned by:
Linda A. Kelleher CMC, City Clerk
73DE031C240D451...

CITY OF READING

By: DocuSigned by:
Mayor Eddie Moran
9DBC26E27C594BB...
Mayor

3B SERVICES, INC.

By: DocuSigned by:
Matthew Blanski
EDAD6E9D36CD47A...

Title: President

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

APPENDIX

1. Proposal

2. Requests for Proposals and Addenda

3. Submittals (Stipulation Against Liens)

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

1. Proposal

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PROPOSAL

FOR

READING FIRE DEPARTMENT
3RD AND COURT
ELECTRICAL SERVICE, GENERATOR & BOILER REPLACEMENT

CITY OF READING, PENNSYLVANIA

Proposal of

3B Services, Inc.
(name)

P.O. Box 15183, Reading, PA 19612
(address)

TO: Mayor Eddie Moran
City of Reading
815 Washington Street
Reading, PA 19601

Dear Mayor Moran:

In conformity with City Plans and specifications, all as prepared by the Public Works Department and after an examination of the site of the work, and the Contract Documents, including the instructions to Bidders, Form of Proposal, Bid Bond and Conditions, the undersigned submits this proposal, and encloses herewith as proposal guaranty, a Certified or Treasurer's Check, or Bid Bond, in an amount not less than ten percent (10%) of the bid herein submitted, which it is understood will be forfeited if this proposal is accepted by the City of Reading, and the undersigned fails to furnish approved bonds and execute the contract within the time stipulated; otherwise, the guarantee will be returned.

The undersigned declares that no Member of Council, Director of Department, Division Manager, deputy thereof or clerk therein, or other officer of the City of Reading, is directly or indirectly interested as principal, surety of otherwise in this proposal or has any supervision or overall responsibility for the implementation in administration of the contract.

It is certified that the undersigned is the only person(s) interested in this proposal as principal and that the proposal is made without collusion with any person, firm, or corporation.

It is hereby agreed to execute the contract and furnish surety company bonds, on the forms enclosed in the Contract Documents, in the amount of one hundred percent (100%) of the contract price within ten (10) days of mailing of the contract documents from the City to the Principal, and to begin work within ten (10) days after receipt of Notice to Proceed from the City of Reading.

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

CONTRACT 1

BASIS OF BID – BOILER REPLACEMENT

LUMP SUM BID

Bidder will complete the Work in accordance with the Contract Documents for the following lump sum (stipulated) price:

Contingency:	$ 5,000.00
Lump Sum Bid Price:	$ 97,325.00
TOTAL BID PRICE	$ 102,325.00

RECEIPT OF ADDENDA

Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Addendum Date
#1	6-29-20
#2	7-1-20

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

CONTRACT 2

BASIS OF BID – ELECTRICAL

LUMP SUM BID:

Bidder will complete the Work in accordance with the Contract Documents for the following lump sum (stipulated) price:

Contingency:	$ 20,000.00
Lump Sum Bid Price:	$ No Bid
TOTAL	$ No Bid

RECEIPT OF ADDENDA

Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Addendum Date

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

IN WITNESS WHEREOF, this proposal has been executed this 14th day of July, 2020, by the setting hereunto of his or its hand and seal.

FOR INDIVIDUAL:

_____(Seal)

FOR CORPORATION:

3B Services, Inc.
(Name of Corporation)

By:

Matthew Blanski
(Official Title) Matthew Blanski, President

Attest:

Joan Blanski
(Secretary) Joan Blanski, Secretary

FOR PARTNERSHIP:

_____
(Name of Partnership)

By:

_____(Seal)

_____(Seal)
Partners

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

NON-COLLUSION AFFIDAVIT

INSTRUCTIONS FOR NON-COLLUSION AFFIDAVIT

This Non-Collusion Affidavit is material to any contract pursuant to this bid. According to the Pennsylvania Antibid-Rigging Act, 73 P.S. 1611 et seq., governmental agencies may require Non-Collusion Affidavits to be submitted together with bids.

This Non-Collusion affidavit must be executed by the member, officer, or employee of the bidder who is authorized to legally bind the bidder.

Bid rigging and other efforts to restrain competition, and the making of false sworn statements in connection with the submission of bids are unlawful and may be subject to criminal prosecution. The person who signs the Affidavit should examine it carefully before signing and assure himself or herself that each statement is true and accurate, making diligent inquiry, as necessary, of all other persons employed by or associated with the bidder with responsibilities for the preparation, approval, or submission of the bid.

In the case of a bid submitted by a joint venture, each party to the venture must be identified in the bid documents, and an Affidavit must be submitted separately on behalf of each party.

The term "complementary bid" as used in the Affidavit has the meaning commonly associated with that term in the bidding process, and includes the knowing submission of bids higher than the bid of another firm, any intentionally high or noncompetitive bid, and any form of bid submitted for the purpose of giving a false appearance of competition.

Failure to file an Affidavit in compliance with these instructions will result in disqualification of the bid.

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

NON-COLLUSION AFFIDAVIT OF PRIME BIDDER

State of Pennsylvania

County of Berks

Matthew Blanski, being first duly sworn, deposes and says that:

He/She is President
(Owner, Partner, Officer, Representative or Agent)
of 3B Services, Inc., the Bidder that has submitted the attached Bid or Bids;

He/She is fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such Bid;

Such Bid is genuine and is not a collusive or sham Bid;

Neither the said Bidder nor any of its officers; partners, owners, agents, representatives, employees or parties in interest, including this affidavit, has in any way colluded, conspired, connived or agreed, directly or indirectly, with any other Bidder, firm or person to submit a collusive or sham Bid in connection with the Contract for which the attached Bid has been submitted or to refrain from bidding in connection with such Contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication of conference with any other Bidder, firm or person to fix the price or prices in the attached Bid or of any other Bidder, or to fix any overheld, profit or cost element of the Bid price or the Bid price of any other Bidder, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the City of Reading or any person interested in the proposed Contract;

The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, including this affidavit; and,

Neither the said Bidder nor any of its officers, partners, owners, agents or parties in interest, have any interest, present or prospective, that can be reasonably construed to result in a conflict of interest between them and the City of Reading, which the Bidder will be required to perform.

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

I state that 3B Services, Inc. understands
(Name of Firm)
and acknowledges that the above representations are material and important, and will be relied on by the City of Reading in awarding the contract(s) for which this bid is submitted. I understand and my firm understands that any misstatement in this affidavit is and shall be treated as fraudulent concealment from the City of Reading of the true facts relating to the submission of bids for this contract.

Matthew Blanski, Pres.
(Name and Company Position)
Matthew Blanski, President

SWORN TO AND SUBSCRIBED
BEFORE ME THIS 14th
DAY OF July, 2020

Kimberly A Yeakly
Notary Public

My Commission Expires Aug. 16, 2020

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
Kimberly A. Yeakley, Notary Public
City of Reading, Berks County
My Commission Expires Aug. 16, 2020
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

STATEMENT OF BIDDER'S QUALIFICATIONS

All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized. If necessary, questions may be answered on separate attached sheets. The Bidder may submit any additional information he desires.

1. Name of Bidder: 3B Services, Inc.

2. Permanent main office address: P.O. Box 15183, Reading, PA 19612

3. When organized: April 1982

4. If a corporation, where incorporated: Pennsylvania

5. How many years have you been engaged in the contracting business under your present firm or trade name: 38 years = 32 years as Blanski, Inc.; 6 years as 3B Services, Inc.

6. Contracts on hand: (Schedule these on an attached sheet, showing amount of each contract and the appropriate anticipated dates of completion.)

7. Have you ever failed to complete any work awarded to you? If so, where and why?

   No

8. Have you ever defaulted on a contract ? No . If so, where and why?

9. List the more important projects recently completed by your company on an attached sheet, stating the approximate cost of each, and the month and year completed.

10. List your major equipment available for this contract.

    Pipe Threaders, Welders, Gantry, 15 fully equipment vans for boiler/burner services.

11. Describe experience in construction work similar in importance to this project on an attached sheet.

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

Statement of Bidder's Qualifications

12. Background and experience of the principal members of your organization, including the officers.

Matthew Blanski, President - Penn State Graduate, 12 years experience

Karl Copenhafer, Sales Engineer - Drexel University Graduate - 34 years experience

13. Credit available: $ 75,000.00 line of credit

14. Give Bank reference: Santander Bank, 6th and Penn Street, Reading, PA 19601

15. Will you, upon request, fill out a detailed financial statement and furnish any other information that may be required by the City? Yes

16. (A) Have you ever been a party to or otherwise involved in any action or legal proceeding involving matters related to race, color, nationality or religion? No

If so, give full details. _____

(B) Have you ever been accused of discrimination based upon race, color, nationality or religion in any action or legal proceeding including any proceeding related to any Federal Agency? No. If so, give full details _____

17. All prospective bidders are required to present proof of an acceptable disposal method approved by the Pennsylvania Department of Environmental Resources. The proof may consist of a copy of a State Solid Waste Disposal Permit issued to the prospective bidder by the Pennsylvania Department of Environmental Resources, or a letter of approval from the Pennsylvania Department of Environmental Resources for the use of a proposed or existing disposal facility which has a permit or is under review for a permit. Same to be in accordance with Section 7 (a) application and permits, Pennsylvania Solid Waste Management - "Act 241."

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

Statement of Bidder's Qualifications

18. Name, address, phone number, and contact person at surety company who will provide bonding for this contract:

Traveler's Insurance Company, C/O Engle, Hambright and Davies Insurance, One Meridian Boulevard Suite 4A01, Wyomissing, PA 19610

Attention: Ms. Morgan Ellis - 717-394-5681 x251

19. Name, address, phone number, and contact person at insurance company who will provide insurance coverage for this contract:

Engle Hambright and Davies, One Meridian Boulevard, Suite, 4A01, Wyomissing, PA 19610

Attention: Ms. Jennifer Stansberry, 610-374-4893 xt 114

20. The undersigned hereby authorizes any person, firm or corporation to furnish any information requested by the City of Reading in verification of the recitals comprising this Statement of Bidder's Qualifications.

DATED at 120 Madison Avenue, Rdg this 14 th day of July, 20 20.

3B Services, Inc.
(NAME OF BIDDER)

BY: Matthew Blanski
Matthew Blanski

TITLE: President

#6

3B SERVICES, INC - CURRENT CONSTRUCTION PROJECTS

DATE - NOTICE TO PROCEED	CUSTOMER	BUSINESS CONTACT	PROJECT DESCRIPTION	ARCHITECT	% OF WORK BY OWN FORCES	% COMPLETE	SCHEDULED COMPLETION DATE	CONTRACT AMOUNT
3-2-18	TYSON FOODS, INC	ROGER GOOD 717-354-4211 403 S. CUSTER AVENUE NEW HOLLAND, PA 17557	INSTALLATION OF EMERGENCY SHUT OFF VALVES	IN HOUSE	100%	0%	UNKNOWN	$ 63,892.00
5-31-19	POTTSTOWN MEDICAL CENTER	VINCE CICCHINO 610-327-7064 1600 EAST HIGH STREET POTTSTOWN, PA 19464	WATER SOFTENER REPLACEMENT PROJECT	IN HOUSE	100%	0%	5/20	$52,580.00
1-20-20	BOOSE ALUMINUM FOUNDRY	KURI SNYDER 717-336-5581 77 NORTH MAIN STREET REAMSTOWN, PA 17567	FURNISH/INSTALL NEW MAKE UP AIR GAS FIRED HEATER	IN HOUSE	100%	50%	4/20	$151,900.00
2-11-20	NORTHEASTERN SCHOOL DISTRICT	DALE KNEPPER 717-266-3667 41 HARDING STREET MANCHESTER, PA 17345	SHALLOW BROOK INTERMEDIATE SCHOOL - BOILER REPLACEMENT PROJECT	IN HOUSE	100%	95%	8/20	$197,700.00
2-11-20	POTTSGROVE SCHOOL DISTRICT	JEFFREY CARDWELL 610-327-2272 XT 1005 1301 KAUFFMAN ROAD POTTSTOWN, PA 19454	MULTIPLE SCHOOL - BURNER REPLACEMENT PROJECT	IN HOUSE	100%	5%	10/20	$215,274.80
2-11-20	DOYLESTOWN HOSPITAL	STEVEN GRIFFITH 215-345-2905 595 WEST STATE STREET DOYLESTOWN, PA 18901	WATER SOFTENER REBED AND BUILD PROJECT	IN HOUSE	85%	25%	10/20	$28,091.00
4-15-20	DOWNINGTOWN AREA SCHOOL DIST	DALE LAUVER 484-667-9430 540 TRESTLE PLACE DOWNINGTOWN, PA 19335	HIGH SCHOOL EAST - BOILER REPLACEMENT PROJECT	DIMITRI J VERVERELLI, INC 211 N 13TH ST, 9TH FLOOR PHILADELPHIA, PA 19107 215-496-0000	85%	45%	10/20	$667,600.00
4-15-20	DOWNINGTOWN AREA SCHOOL DIST	DALE LAUVER 484-667-9430 540 TRESTLE PLACE DOWNINGTOWN, PA 19335	BEAVER CREEK ELEMENTARY - BOILER REPLACEMENT PROJECT	DIMITRI J VERVERELLI, INC 211 N 13TH ST, 9TH FLOOR PHILADELPHIA, PA 19107 215-496-0000	85%	67%	8/20	$367,000.00
5-28-20	OCTORARA SCHOOL DISTRICT	228 HIGHLAND ROAD, SUITE 1 ATGLEN, PA 19310	HIGH SCHOOL - WATER HEATER REPLACEMENT PROJECT	IN HOUSE	100%	0%	10/20	$73,800.00
5-28-20	SOLANCO SCHOOL DISTRICT	1866 ROBERT FULTON HIGHWAY QUARRYVILLE, PA 17566	SWIFT MIDDLE SCHOOL - BOILER REPLACEMENT PROJECT	MOORE ENGINEERING 3637 COLUMBIA AVENUE LANCASTER, PA 17603	90%	10%	10/20	

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

#9

3B SERVICES, INC
COMPLETED CONSTRUCTION PROJECTS

DATE - NOTICE TO PROCEED	CUSTOMER	BUSINESS CONTACT	PROJECT DESCRIPTION	ARCHITECT	% OF WORK BY OWN FORCES	% COMPLETE	COMPLETION DATE	CONTRACT AMOUNT
2-15-11	PENNRIDGE SCHOOL DISTRICT	JEFF LOFFLER 215-257-5047 1400 NORTH FIFTH STREET PERKASIE, PA 18944-2295	GRASSE ELEMENTARY SCHOOL - DOMESTIC WATER TREATMENT PROJECT	D'HUY ENGINEERING INC. 610-865-3000	95%	100 %	11/11	$ 168,075.00
3-25-11	NORTHAMPTON SCHOOL DISTRICT	JOSEPH KOVALCHICK 610-262-7811 XT 20202 2014 LAUBACH AVENUE NORTHAMPTON, PA 18067	MOORE ELEMENTARY - CHIMNEY BREECHING MODIFICATIONS	D'HUY ENGINEERING INC. 610-865-3000	95%	100 %	8/11	$ 96,120.00
4-11-11	CUMBERLAND PERRY AVTS	JONI RUDY 717-269-0354 XT 100 110 OLD WILLOW MILL ROAD MECHANICSBURG, PA 17050	BOILER REPLACEMENT PROJECT	GATTER & DIEHL, INC. 717-657-9700	100%	100 %	9/11	$ 102,345.00
5-3-11	ARBONITE COATINGS AND LININGS	PETER FITCHMAN 215-348-2950 3826 OLD EASTON ROAD P.O. BOX 888 DOYLESTOWN, PA 18901	REPAIRS TO YORK SHIPLEY BOILER	IN HOUSE	100%	100 %	1/12	$ 40,987.00
5-19-11	LEHIGH UNIVERSITY	JEFFREY HOSAK 610-758-3998 27 MEMORIAL DRIVE WEST BETHLEHEM, PA 18015	BOILER RENTALS	IN HOUSE	100%	100 %	8/11	$ 40,300.00
5-20-11	ROCK TENN CONTAINER CORP	RYAN SMITH 717-207-3441 500 RICHARDSON DRIVE LANCASTER, PA 17603	INSTALLATION OF NEW SIEMENS LVM LINKAGELSS BURNER MANAGEMENT CONTROL SYSTEM	IN HOUSE	100%	100 %	10/11	$ 75,000.00
6-13-11	DOWNINGTOWN AREA SCHOOL DIST	JOSEPH FRAIM 610269-8460 XT 6222 540 TRESTLE PLACE DOWNINGTOWN, PA 19335	LIONVILLE MIDDLE SCHOOL - WATER HEATER REPLACEMENT PROJECT	D'HUY ENGINEERING INC. 610-865-3000	100%	100 %	9/11	$ 32,635.00
6-29-11	DANIEL BOONE SCHOOL DISTRICT	PHIL CARE 610-582-6146 2144 WEAVERTOWN ROAD DOUGLASSVILLE, PA 19518	APC - REPLACE BOILER	IN HOUSE	100%	100 %	12/11	$ 107,232.56
7-5-11	TREDYFFRIN/EASTTOWN SCHOOL DIST	ROD KREIS 484-753-5400 920 OLD LANCASTER ROAD BERWYN, PA 19312	BEAUMONT ELEMENTARY SCHOOL - REPLACE SCHEDULE 40 PIPING	IN HOUSE	100%	100 %	8/11	$ 63,955.81
7-12-11	BETHLEHEM SCHOOL DISTRICT	RAY SAKASITZ 610-867-8635 1516 SYCAMORE STREET BETHLEHEM, PA 18017	FOUNTAIN HILL ELEMENTARY - REPLACE GAS FIRED DOMESTIC WATER HEATER	D'HUY ENGINEERING INC. 610-865-3000	100%	100 %	11/11	$ 52,800.00
7-25-11	BEACON CONTAINER	JOE COCHIE 610-582-2222 700 WEST FIRST STREET BIRDSBORO, PA 19508	CONVERT WEBSTER BURNER TO FIRE NATURAL GAS AND INSTALL NEW GAS LINE	IN HOUSE	100%	100 %	11/11	$ 56,394.00
8-9-11	MILLERSVILLE UNIVERSITY	ANNA STAUFFER 717-871-4185 P.O. BOX 1002 20 DILWORTH ROAD MILLERSVILLE, PA 17551	OSBURN HALL - PK BOILER REPAIRS	IN HOUSE	100%	100 %	9/11	$ 29,650.00
8-10-11	PERKIOMEN SCHOOL DISTRICT	SCOTT CLEMMER 610-489-8506 XT 1107 3 IRON BRIDGE DRIVE COLLEGEVILLE, PA 19426	MIDDLE SCHOOL EAST - REPLACE WEIL MCLAIN BOILER	IN HOUSE	100%	100 %	10/11	$ 110,241.92
9-19-11	FIRST UNITED CHURCH OF CHRIST	MIKE REESE 484-557-6751 611 WASHINGTON STREET P.O. BOX 402 READING, PA 19603	FURNISH AND INSTALL NEW GAS SERVICE INCLUDING BOILERS	IN HOUSE	100%	100 %	10/12	$ 60,442.00
10-31-11	ALLENTOWN SCHOOL DISTRICT	RICHARD KLOCEK 484-765-4980 31 SOUTH PENN STREET P.O. BOX 328 ALLENTOWN, PA 18105	HARRISON MORTON MIDDLE SCHOOL - PROVIDE GAS CONVERSION SERVICES	EASTERN CONSULTANTS 610-258-6425	100%	100 %	11/11	$ 28,700.00
11-8-11	TEMPLE INLAND	DAN COOPER 570-384-0225 533 FOREST ROAD HAZLETON, PA 18202	HAZLETON PLANT - DEAERATOR REPLACEMENT PROJECT	IN HOUSE	100%	100 %	12/11	$ 72,850.00
11-21-11	PARKLAND SCHOOL DISTRICT	DALE REITZ 610-351-5660 768 PARKWAY ROAD ALLENTOWN, PA 18104	HIGH SCHOOL - NATURAL GAS INSTALLATION WORK	D'HUY ENGINEERING INC. 610-865-3000	100%	100 %	7/12	$ 57,275.00

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

3B SERVICES, INC
COMPLETED CONSTRUCTION PROJECTS

DATE - NOTICE TO PROCEED	CUSTOMER	BUSINESS CONTACT	PROJECT DESCRIPTION	ARCHITECT	% OF WORK BY OWN FORCES	% COMPLETE	COMPLETION DATE	CONTRACT AMOUNT
12-16-11	DOLAN CONSTRUCTION COMPANY	GERRY DELANEY 610-372-4664 401 SOUTH 13TH STREET READING, PA 19602	PHOEBE ALLENTOWN - PHASE I - INSTALL NEW GAS PIPING, INSTALL RENTAL BOILER	IN HOUSE	100%	100 %	6/12	$ 54,425.00
12-19-11	COOPERS CREEK CHEMICAL CORP	JOHN KINAST 610-828-0375 XT22 884 RIVER ROAD WEST CONSHOHOCKEN, PA 19428-2699	FURNISH AND INSTALL GAS BURNERS FOR PLANT EQUIPMENT INCLUDING GAS PIPING	IN HOUSE	100%	100 %	6/12	$ 386,750.00
1-6-12	DERRY TOWNSHIP MUN AUTHORITY	WAYNE SCHUTZ 717-566-3237 XT 312 670 CLEARWATER ROAD HERSHEY, PA 17033	SLUDGE BUILDING BOILER REPAIRS	BUCHART HORN, INC. 717-852-1400	100%	100 %	4/12	$ 23,745.00
1-17-12	DOLAN CONSTRUCTION COMPANY	GERRY DELANEY 610-372-4664 401 SOUTH 13TH STREET READING, PA 19602	PHOEBE ALLENTOWN - PHASE II - INSTALL DOMESTIC HOT WATER HEATERS	IN HOUSE	100%	100 %	6/12	$ 168,795.00
1-17-12	DOLAN CONSTRUCTION COMPANY	GERRY DELANEY 610-372-4664 401 SOUTH 13TH STREET READING, PA 19602	PHOEBE ALLENTOWN - PHASE II -RELOCATE CHILLED WATER LINE & INSTALL EXHAUST FANS & LOUVERS	IN HOUSE	100%	100 %	6/12	$ 29,780.00
2-21-12	HENRY COMPANY	GIL AUDETTE 484-923-2319 336 COLD STREAM ROAD KIMBERTON, PA 19442	BOILER PROJECT - EQUIPMENT INSTALLATION	IN HOUSE	100%	100 %	9/12	$ 213,815.00
2-21-12	HENRY COMPANY	GIL AUDETTE 484-923-2319 336 COLD STREAM ROAD KIMBERTON, PA 19442	BOILER PROJECT - BUILDING MODIFICATIONS	IN HOUSE	100%	100 %	9/12	$ 33,000.00
4-3-12	LEDERER GREENHOUSES, INC.	JOSEPH LEDERER 610-495-6293 95 WELLS ROAD P.O. BOX 425 PARKERFORD, PA 19457-0425	GAS CONVERSION OF EXISTING 200 HP CLEAVER BROOKS BOILERS	IN HOUSE	100%	100 %	10/12	$ 33,675.00
4-13-12	COOPERS CREEK CHEMICAL CORP	JOHN KINAST 610-828-0375 XT22 884 RIVER ROAD WEST CONSHOHOCKEN, PA 19428-2699	FURNISH AND INSTALL NEW BRYAN STEAM BOILER	IN HOUSE	100%	100 %	11/12	$ 33,860.00
6-15-12	HAIN PURE PROTEIN	KIP FINDLEY 717-865-2136 220 NORTH CENTER STREET P.O. BOX 10 FREDERICKSBURG, PA 17026	NATURAL GAS CONVERSION PROJECT	IN HOUSE	100%	100 %	12/12	$ 159,815.00
7-2-12	BETHLEHEM SCHOOL DISTRICT	RAY SAKASITZ 610-867-8635 1516 SYCAMORE STREET BETHLEHEM, PA 18017	NITSCHMANN MIDDLE SCHOOL - LOCKER ROOM HEAT REPAIR	D'HUY ENGINEERING INC. 610-865-3000	95%	100 %	11/12	$ 39,265.00
7-13-12	HARLEYSVILLE MUTUAL INSURANCE COMPANY	ANDY SHEILDS 215-256-5068 355 MAPLE AVENUE HARLEYSVILLE, PA 19438	BOILER REPLACEMENT PROJECT	IN HOUSE	100%	100 %	10/12	$ 322,500.00
8-16-12	MARKEL CORPORATION	JIM MCCLURE 610-270-3137 435 SCHOOL LANE ROAD PLYMOUTH MEETING, PA 19462	FURNISH AND INSTALL NEW DUPLEX BOILER FEED WATER SYSTEM	IN HOUSE	100%	100 %	10/12	$ 25,300.00
8-29-12	LEHIGH VALLEY HOSPITAL	GARY WILLIAMS 610-402-8515 1200 S CEDAR CRED BLVD P.O. BOX 1110 ALLENTOWN, PA 18103	MOSELEM SPRINGS OFFICE - REPLACE WATER HEATER/REPLACE EXISTING GAS FIRED BOILER	IN HOUSE	100%	100 %	11/12	$ 26,850.00
9-27-12	DERRY TOWNSHIP MUN AUTHORITY	WAYNE SCHUTZ 717-566-3237 XT 312 670 CLEARWATER ROAD HERSHEY, PA 17033	UNIT HEATER AND CIRCULATION PUMP REPAIRS	BUCHART HORN, INC. 717-852-1400	100%	100 %	12/12	$ 67,637.00
11-1-12	CONESTOGA VIEW REST HOME	MICHAEL HOFMANN 717-209-3110 900 EAST KING STREET LANCASTER, PA 17602	BOILER ROOM REPAIR WORK	IN HOUSE	100%	100 %	3/13	$ 104,800.00
11-21-12	DOWNINGTOWN AREA SCHOOL DIST	JOSEPH FRAIM 610269-8460 XT 6222 540 TRESTLE PLACE DOWNINGTOWN, PA 19335	DOWNINGTOWN MIDDLE SCHOOL - WATER HEATER REPLACEMENT PROJECT	IN HOUSE	100%	100 %	1/13	$ 34,230.00
1-2-13	NATIVITY BVM HIGH SCHOOL	TONY KLAZAS 570-622-8110 XT 323 ONE LAWTON HILL POTTSVILLE, PA 17901	FURNISH AND INSTALL NEW BOILER	IN HOUSE	100%	100 %	4/13	$ 47,987.00

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1-15-13	SACRED HEART HOSPITAL	JIM ZERNHELT 610-776-4500 421 CHEW STREET ALLENTOWN, PA 18102-3406	RETUBE BOILER #2	IN HOUSE	100%	100 %	1/15	$ 26,929.00
1-15-13	SACRED HEART HOSPITAL	JIM ZERNHELT 610-776-4500 421 CHEW STREET ALLENTOWN, PA 18102-3406	REBUILD BOILER #2	IN HOUSE	100%	100 %	2/15	$ 21,426.00
3-29-13	PALMERTOWN SCHOOL DISTRICT	JOSEPH FAENZA 610-826-8492 580 FOURTH STREET PALMERTON, PA 18071	SS PALMER ELEMENTARY SCHOOL & HIGH SCHOOL - BOILER INSTALLATION/MISC REPAIRS	BARRY ISETT & ASSOCIATES 610-398-0904	90%	100 %	10/13	$ 525,800.00
5-10-13	LEBANON VALLEY COLLEGE	DANIEL NYE 717-867-6340 101 NORTH COLLEGE AVENUE ANNVILLE, PA 17003-1400	MAIN POWER PLANT - RETUBE BOILER #1	IN HOUSE	100%	100 %	6/13	$ 27,897.00
5-23-13	READING EAGLE COMPANY	ROBERT DREXEL 610-371-5216 345 PENN STREET P.O. BOX 582 READING, PA 19603-0582	BOILER SECTION REPLACEMENT	IN HOUSE	100%	100 %	6/13	$ 47,298.00
8-2-13	KALAS MANUFACTURING	LEE SHOWALTER 717-336-5575 86 OLD DENVER ROAD DENVER, PA 17517	FURNISH AND INSTALL NEW BOILER ROOM EQUIPMENT INCLUDING 2 NEW BOILERS	IN HOUSE	95%	100 %	12/13	$ 404,940.00
10-8-13	CONESTOGA VALLEY SCHOOL DISTRICT	JOHN FUDROW 717-397-2421 211 HORSESHOE ROAD LANCASTER, PA 17601	LEOLA ELEMENTARY SCHOOL - NEW DOMESTIC WATER HEATER SYSTEM	MOORE ENGINEERING CO 717-285-3141	100%	100 %	3/14	$ 29,665.00
11-26-13	ARBONITE COATINGS AND LININGS	PETER FITCHMAN 215-348-2950 3826 OLD EASTON ROAD P.O. BOX 888 DOYLESTOWN, PA 18901	INSTALLATION OF BOILER ROOM EQUIPMENT	IN HOUSE	100%	100 %	4/14	$ 30,915.00
12-12-13	ALBRIGHT COLLEGE	ED KAPPENSTEIN 610-921-7520 13TH AND EXETER STREETS P.O. BOX 15234 READING, PA 19612-5234	WALTON HALL - REPLACE BOILER	IN HOUSE	100%	100 %	6/14	$ 51,313.00
12-12-13	SAPA INDUSTRIAL EXTRUSIONS	DAN MCGOEY 570-385-8810 53 POTTSVILLE STREET CRESSONA, PA 17929	RETUBE BOILER #2	IN HOUSE	100%	100 %	5/14	$ 39,750.00
12-24-13	GIORGIO FOODS	AL LIZEWSKI 610-916-4135 1161 PARK ROAD P.O. BOX 96 TEMPLE, PA 19560-0096	REPLACE 4" WATER LINE WITH 304 SS WATER LINE	IN HOUSE	100%	100 %	3/14	$ 45,875.00
2-11-14	GIORGIO FOODS	AL LIZEWSKI 610-916-4135 1161 PARK ROAD P.O. BOX 96 TEMPLE, PA 19560-0096	STEAM KETTLE PIPING PROJECT	IN HOUSE	100%	100 %	4/14	$ 47,895.00
5-19-14	GIORGIO FOODS	AL LIZEWSKI 610-916-4135 1161 PARK ROAD P.O. BOX 96 TEMPLE, PA 19560-0096	INSTALL STEAM, CONDENSATE, AND WATER PIPING; REPIPE STEAM/CONDENSATE LINES ON SMALL BLANCHER	IN HOUSE	100%	100 %	5/14	$ 27,300.00
7-17-14	MUHLENBERG COLLEGE	TIM KORN 484-664-3404 2400 CHEW STREET ALLENTOWN, PA 18104-5586	PREVENTIVE MAINTENANCE OF HEATING EQUIPMENT	IN HOUSE	100%	100 %	1/15	$ 26,287.00
7-18-14	WYOMING VALLEY WEST SD	JAMES ROBERTS 570-938-0900 450 NORTH MAPLE AVENUE KINGSTON, PA 18704-3630	BOILER RETUBINGS AND MISC REPAIRS	A + E GROUP 570-822-8500	100%	100 %	10/14	$ 80,837.00
9-23-14	GIORGIO FOODS INC	AL LISZEWSKI 610-916-4135 1161 PARK ROAD PO BOX 96 TEMPLE, PA 19560-0096	PIPING TO NEW HOT WATER HEATER	IN HOUSE	100%	100 %	1/15	$ 36,650.00
10-28-14	HAZLETON AREA SCHOOL DIST	ED SHEMANSKY 570-233-0155 1515 WEST 23RD STREET HAZLE TOWNSHIP, PA 18202-1647	BOILER REPAIR PROJECT	ALFRED BENESCH & CO 570-454-2750	100%	100 %	1/15	$ 24,886.00

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12-8-14	DAUPHIN CO HOUSING AUTHORITY	DAVID VARNICLE 717-939-9301 501 MOHN STREET PO BOX 7598 STEELTON, PA 17113-0598	BOILER REPLACEMENT	KCI TECHNOLOGIES JOHN AZAMAR 717-691-1340	95%	100 %	2/16	$ 512,745.00
12-22-14	INTERNATIONAL PAPER	KEVIN STRAWSBURG 717-677-3146 136 EAST YORK STREET PO BOX 808 BIGLERVILLE, PA 17307	FURNISH AND INSTALL HIGH PRESSURE RECEIVER	IN HOUSE	95%	100 %	7/15	$ 139,000.00
1-13-15	SACRED HEART HOSPITAL	JIM ZERNHELT 610-776-4500 421 CHEW STREET ALLENTOWN, PA 18102-3406	FURNISH/INSTALL NEW DEAERATOR TANK	IN HOUSE	50%	100 %	6/2015	$ 98,885.00
4-22-15	NORTHEASTERN SCHOOL DISTRICT	DALE KNEPPER 717-266-3667 41 HARDING STREET MANCHESTER, PA 17345	BOILER REPLACEMENT	BARTON ASSOCIATES - ROBERT SELLS RAS@BA-INC.COM	100%	100 %	10/15	$ 147,420.00
5-8-15	NORTHAMPTON COMMUNITY COLLEGE	WILLIAM SMITH 610-861-5301 3835 GREEN POND ROAD BETHLEHEM, PA 18020-7568	CAPITAL PROJECTS PHASE II - HVAC UPGRADES	HB ENGINEERS INC - THOMAS HOFFMAN 610-395-0130	90%	100 %	11/15	$ 879,270.00
6-1-15	HARLEYSVILLE MUTUAL INS	ANDY SHEILDS 215-256-5068 355 MAPLE AVENUE HARLEYSVILLE, PA 19438	REPLACE WATER HEATER	IN HOUSE	100%	100 %	6/15	$ 67,435.00
6-15-15	LEDERER GREENHOUSES, INC.	JOSEPH LEDERER 610-495-6293 95 WELLS ROAD PO BOX 425 PARKERFORD, PA 19457-0425	GAS CONVERSION OF 150HP CB BOILER	IN HOUSE	100%	100 %	11/15	$ 26,750.00
11-18-15	MARIANO CONSTRUCTION INC VERIZION WORK CENTER	JIM KOFSKIE 570-759-9580 EXT 203 72 EDWARDS DRIVE BLOOMSBURG, PA 17815-8783	NEW WEIL MCLAIN SLIM FIT BOILER	IN HOUSE	100%	100 %	12/15	$ 55,785.00
12-15-15	DOWNINGTOWN AREA SCHOOL DISTRICT	JOSEPH FRAIM 610-269-8460 EXT 6222 540 TRESTLE PLACE DOWNINGTOWN, PA 19335	REPLACEMENT OF WATER HEATER	IN HOUSE	100%	100 %	2/16	$ 46,415.00
12-16-15	HAFER PETROLEUM	GREGG HAFER 610-376-9738 34 ANGSTADT LANE BIRDSBORO, PA 19508-8410	NEW HEATING BOILER	IN HOUSE	100%	100 %	1/16	$ 26,885.00
12-21-15	MECHANICSBURG AREA SCHOOL DISTRICT	BOB MECK 717-691-3224 1298 SOUTH MARKET STREEET MECHANICSBURG, PA 17055	INSTALL THREE NEW BURNERS	INHOUSE	100%	100 %	4/16	$ 87,445.00
1-8-16	NPI	GUY MARKUS 805-455-7099 100 GIBRALTAR ROAD READING, PA 19606	NEW STEAM HEATING BOILER	IN HOUSE	100%	100 %	2/16	$ 32,700.00
1-18-16	COOPERS CREEK CHEMICAL CORP	JOHN KINAST 610-828-0375 XT22 884 RIVER ROAD WEST CONSHOHOCKEN, PA 19428-2699	FURNISH AND INSTALL NEW BOILER	IN HOUSE	100%	100 %	4/16	$ 55,690.00
3-17-16	DAUPHIN CO HOUSING AUTHORITY	DAVID VARNICLE 717-939-9301 501 MOHN STREET PO BOX 7598 STEELTON, PA 17113-0598	INSTALL EXHAUST BREECHING	IN HOUSE	100%	100 %	5/16	$ 10,890.00
4-26-16	NORTHEASTERN SCHOOL DISTRICT	DALE KNEPPER 717-266-3667 41 HARDING STREET MANCHESTER, PA 17345	YORK HAVEN AND ORENDORF ELEMENTARY SCHOOLS - BOILER REPLACEMENT PROJECTS	BARTON ASSOCIATES - ROBERT SELLS	100%	100 %	10/16	$ 287,450.00
4-28-16	CUMBERLAND PERRY AVTS	JONI RUDY 717-269-0354 XT 100 110 OLD WILLOW MILL ROAD MECHANICSBURG, PA 17050	INSTALLATION OF TWO (2) HASTINGS MAKE UP AIR WITH NATURAL GAS REHEAT UNIT REPLACEMENTS	IN HOUSE	100%	100 %	10/16	$ 58,825.00
5-13-16	ALLENTOWN SCHOOL DISTRICT	RICHARD KLOCEK 484-765-4980 31 SOUTH PENN STREET P.O. BOX 328 ALLENTOWN, PA 18105	BOILER REPLACEMENT PROJECTS AT ADMIN AND FACILITIES; BOILER REPAIR AT SOUTH MOUNTAIN MIDDLE SCHOOL	IN HOUSE	95%	100 %	2/17	$ 322,310.00

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5-17-16	ARKEMA, INC.	GARY PICCONE 610-528-0163 1112 LINCOLN ROAD BIRDSBORO PA 19508	REPLACE REFRACTORY ON DOWTHERM HEATER #1	IN HOUSE	95%	100 %	6/16	$ 80,000.00
5-27-16	LITTLESTOWN SCHOOL DISTRICT	VICTOR TRONE 717-359-4146 162 NEWARK STREET LITTLESTOWN, PA 17340	WATER HEATER REPLACEMENT AT HIGH SCHOOL	MOORE ENGINEERING CO TIM DELLINGER	100%	100 %	9/16	$ 59,285.00
12-8-16	JAINDL TURKEY FARMS	RICHARD REINHART 610-395-3333 3150 COFFEETOWN ROAD OREFIELD, PA 18069	SEMINARY BUILDING - BOILER CONVERSION TO PROPANE FIRING	IN HOUSE	100%	100 %	12/16	$ 27,860.00
1-30-17	COOPERS CREEK CHEMICAL CORP	MARK MORRIS/JOHN KINAST 610-828-0375 884 RIVER ROAD WEST CONSHOHOCKEN, PA 19428-2699	GAS PIPING PROJECT FOR NEW HOT OIL HEATER	IN HOUSE	98%	100 %	5/17	$ 30,885.00
4-11-17	DOWNINGTOWN SCHOOL DISTRICT	JEFFREY KOBERNICK 610-269-8460 XT 6072 540 TRESTLE PLACE DOWNINGTOWN, PA 19335	REPLACE HOT WATER HEAT PUMPS - DOWNINGTOWN EAST HIGH SCHOOL	DIMITRI J VERVERELLI, INC 211 N 13TH ST, 9TH FLOOR PHILADELPHIA, PA 19107 215-496-0000	100%	100 %	7/17	$ 67,435.00
4-12-17	BUCKS COUNTY HOUSING	TRACY MELLOR 215-394-8259 626 JACKSONVILLE ROAD, SUITE 140 WARMINSTER, PA 18974-4871	BOILER REPLACEMENT AT ROBERT MORRIS APARTMENTS - BUILDING N	IN HOUSE	100%	100 %	7/17	$ 66,375.00
5-7-17	PATRICK WALBORN	PATRICK WALBORN 610-780-0232 1220 RITTERS ROAD READING, PA 19606	INSTALL NEW HIGH EFFICIENCY BOILER	IN HOUSE	100%	100 %	8/17	$ 46,950.00
5-30-17	HOLY GUARDIAN ANGEL	JOE JAGIELSKI 610-929-4124 3121 KUTZTOWN ROAD READING, PA 19605	BOILER REPLACEMENT	IN HOUSE	100%	100 %	11/17	$ 40,150.00
5-30-17	STEVENS FEED MILL	DELVIN MARTIN 717-587-7800 PO BOX 7, 28 STEVENS ROAD STEVENS, PA 17578	STEAM AND CONDENSATE PIPING AT THE NEW MILL	IN HOUSE	100%	100 %	10/17	$ 42,980.00
6-20-17	CENTRAL DAUPHIN SCHOOL DISTRICT	SCOTT UDIT 717-545-4703 EXT 225 600 RUTHERFORD ROAD HARRISBURG, PA 17109	EAST HIGH SCHOOL DOMESTIC HOT WATER SYSTEM	BARTON ASSOCIATES - ROBERT SELLS- RAS@BA-INC.COM	100%	100 %	8/17	$ 77,725.00
6-20-17	LITTLESTOWN SCHOOL DISTRICT	VICTOR TRONE 717-359-4146 162 NEWARK STREET LITTLESTOWN, PA 17340	MAPLE AVENUE MIDDLE SCHOOL WATER HEATER REPLACEMENT	MOORE ENGINEERING CO TIM DELLINGER	100%	100 %	9/17	$ 38,825.00
8-15-17	POTTSTOWN MEDICAL CENTER	DENNIS DESANTO (610) 970-3136 1600 EAST HIGH STREET POTTSTOWN, PA 19464-5008	RETUBE 500 HP CLEAVER BROOKS BOILER	IN HOUSE	100%	100 %	10/17	$ 46,648.00
9-13-2017	UPPER MERION AREA SCHOOL DISTRICT	FREDERICK REMELIUS 610-205-6433 435 CROSSFIELD ROAD KING OF PRUSSIA, PA 19406	GAS CONVERSION	IN HOUSE	100%	100 %	1/18	$ 37,870.00
12-4-2017	EMBASSY SUITES	MATT BURKE (610) 647-6700 888 CHESTERBROOK BOULEVARD CHESTERBROOK, PA 19087	HOT WATER STORAGE TANKS REPLACEMENT	IN HOUSE	100%	100 %	12/17	$ 32,850.00
10-19-17	TOPPAN INTRAMERICA	DAVE HAGUE 610-286-3100 378 THOUSAND OAKS BLVD MORGANTOWN, PA 19543	FURNISH/INSTALL NEW 700 HP SUPERIOR BOILER	IN HOUSE	100%	100 %	11/18	$ 265,815.00
10-25-2017	HENRY COMPANY	GIL AUDETTE 484-923-2319 336 COLD STREAM ROAD KIMBERTON, PA 19442	NEW HOT WATER HEATING BOILER WAREHOUSE BLDG	IN HOUSE	100%	100 %	6/18	$ 27,790.00
11-14-2017	ALBRIGHT COLLEGE	JOSH WILLIAMS (610) 921-7899 13TH AND EXETER STREETS 1601 NORTH 13TH STREET READING, PA 19612-5234	NEW BOILER/BURNER AND VALVE REPLACEMENT	IN HOUSE	100%	100 %	11/18	$ 49,949.00

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12-14-17	CITY OF BETHLEHEM	JEFFREY ANDREWS (610) 865-7072 10 EAST CHURCH STREET BETHLEHEM, PA 18018	WATER FILTRATION PLANT BOILER SYSTEM REPLACEMENT	IN HOUSE	100%	100 %	5/18	$ 62,200.00
12-23-17	COOPERS CREEK CHEMICAL CORP	MARK MORRIS/JOHN KINAST 610-828-0375 884 RIVER ROAD WEST CONSHOHOCKEN, PA 19428-2699	FURNISH AND INSTALL STEAM PIPING INSULATION	IN HOUSE	100%	100 %	6/18	$ 62,850.00
5-30-17	AVON GROVE SCHOOL DISTRICT	STEVE CROCKETT 484-614-5542 375 SOUTH JENNERSVILLE ROAD WEST GROVE, PA 19390	FURNISH AND INSTALL TWO (2) NEW WEBSTER GAS/OIL BURNERS AT PENN LONDON ELEMENTARY SCHOOL	IN HOUSE	100%	100 %	12/18	$ 37,975.00
5-30-17	AVON GROVE SCHOOL DISTRICT	STEVE CROCKETT 484-614-5542 375 SOUTH JENNERSVILLE ROAD WEST GROVE, PA 19390	CONVERSION OF THREE (3) BURNERS TO GAS FIRING	IN HOUSE	100%	100 %	12/18	$ 84,390.00
12-7-17	PALISADES SCHOOL DISTRICT	ALAN CROUTHAMEL (610) 847-5131 39 THOMAS FREE DRIVE KITNERSVILLE, PA 18930-9657	NEW BOILER AND BURNER	IN HOUSE	100%	100 %	3/18	$ 50,932.00
9-14-18	BOEING COMPANY	ERIK HOET 610-591-2376 DEFENSE, SPACE & SECURITY SYSTEMS PO BOX 16858 PHILADELPHIA, PA 19142	BLDG 3-43 BVWT HEAT EXCHANGER REPAIRS	IN HOUSE	98%	100 %	11/18	$ 42,396.00
1-3-17	COOPERS CREEK CHEMICAL CORP	MARK MORRIS/JOHN KINAST 884 RIVER ROAD 610-828-0375 WEST CONSHOHOCKEN, PA 19428-2699	GAS PIPING PROJECT FOR NEW HOT OIL HEATER	IN HOUSE	100%	100%	10/19	$ 35,345.00
1-30-18	DAIRY FARMERS OF AMERICA	JOHN NOVELLI 610-929-5736 EXT 286 100 MCKINLEY AVENUE MUHLENBERG PARK READING, PA 19605	FURNISH/INSTALL NEW 800 HP CLEAVER BROOKS BOILER AND REPAIRS TO EXISTING BOILER	IN HOUSE	75%	100%	9/19	$ 779,463.00
8-7-18	LEIDY'S INC	GARY BABEL 215-723-4606 226 WEST CHERRY LANE SOUDERTON, PA 18964	FURNISH/INSTALL NEW BOILER AND AUXILIARY EQUIPMENT ALONG WITH ADDITIONAL STEAM/CONDENSATE WORK	IN HOUSE	100%	100%	4/19	$ 231,370.00
10-30-18	ST LUKE'S UNIVERSITY HEALTH NETWORK	RALPH DIMMICH 610-776-4632 SACRED HEART CAMPUS 421 CHEW STREET ALLENTOWN, PA 18102	FURNISH/INSTALL NEW CONTINUOUS WATER SOFTENER SYSTEM	IN HOUSE	100%	100%	11/19	$ 50,723.00
8-10-18	DOWNINGTOWN AREA SCHOOL DISTRICT	DALE LAUVER 484-667-9430 540 TRESTLE PLACE DOWNINGTOWN, PA 19335	FURNISH/INSTALL NEW HIGH EFFICIENCY BOILER AND FURNISH 8" EXHAUST VENT AT STEM ACADEMY	IN HOUSE	100%	100%	5/19	$ 129,925.00
8-29-18	WYOMING VALLEY WEST SCHOOL DISTRICT	FRANK GREVERA 570-779-5361 450 NORTH MAPLE AVENUE KINGSTON, PA 18704	FURNISH/INSTALL B&G CHILLED WATER PUMP	IN HOUSE	100%	100%	3/19	$ 25,000.00
3-5-19	GREAT VALLEY SCHOOL DISTRICT	KEN MORRIS 610-695-0903 47 CHURCH ROAD MALVERN, PA 19355	FURNISH/INSTALL TWO (2) NEW WATER HEATERS	IN HOUSE	100%	100%	1/20	$ 163,989.69
3-7-19	PALISADES SCHOOL DISTRICT	ALAN CROUTHAMEL (610) 847-5131 39 THOMAS FREE DRIVE KITNERSVILLE, PA 18930-9657	HIGH SCHOOL - FURNISH/INSTALL NEW HOT WATER BOILERS	IN HOUSE	100%	100%	8/19	$ 386,665.00
3-14-19	DOWNINGTOWN AREA SCHOOL DISTRICT	DALE LAUVER 484-667-9430 540 TRESTLE PLACE DOWNINGTOWN, PA 19335	BOILER REPLACEMENTS AT HIGH SCHOOL - WEST	DIMITRI J VERVERELLI, INC 211 N 13TH ST, 9TH FLOOR PHILADELPHIA, PA 19107 215-496-0000	75%	95%	8/19	$ 767,000.00

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3-14-19	DOWNINGTOWN AREA SCHOOL DISTRICT	DALE LAUVER 484-667-9430 540 TRESTLE PLACE DOWNINGTOWN, PA 19335	BOILER REPLACEMENTS AT SHAMONA CREEK ELEME	DIMITRIJ VERVERELLI, INC 211 N 13TH ST, 9TH FLOOR PHILADELPHIA, PA 19107 215-496-0000	75%	100%	8/19	$ 247,000.00
3-28-19	POTTSTOWN MEDICAL CENTER	VINCE CICCHINO 610-327-7064 1600 EAST HIGH STREET POTTSTOWN, PA 19464	DEARATOR REPLACEMENT PROJECT	IN HOUSE	100%	100%	2/20	$ 218,800.00
4-3-19	UNIVERSAL COMPANIES	TARIQ ALI 800 SOUTH 15TH STREET PHILADELPHIA, PA 19146	UNIVERSAL CREIGHTON - BOILER FEED SYSTEM REPLACEMENT PROJECT	IN HOUSE	100%	100%	8/19	$ 35,971.00
4-3-19	UNIVERSAL COMPANIES	TARIQ ALI 800 SOUTH 15TH STREET PHILADELPHIA, PA 19146	UNIVERSAL ALCORN - BOILER FEED SYSTEM REPLACEMENT PROJECT	IN HOUSE	100%	100%	8/19	$ 40,916.00
5-6-19	SPRINGFIELD SCHOOL DISTRICT	FREDERICK REMELIUS 610-205-6433 435 CROSSFIELD ROAD KING OF PRUSSIA, PA 19406	ET RICHARDSON MIDDLE SCHOOL - FURNISH/INSTALL TWO (2) WEBSTER BURNERS	IN HOUSE	100%	100%	11/19	$ 49,640.00
5-13-19	NORTHEASTERN SCHOOL DISTRICT	DALE KNEPPER 717-266-3667 41 HARDING STREET MANCHESTER, PA 17345	MT. WOLF ELEMENTARY SCHOOL - FURNISH/INSTALL (2) NEW LOCHINVAR BOILERS	IN HOUSE	100%	100%	8/19	$ 187,400.00
6-24-19	OLEY VALLEY SCHOOL DISTRICT	EVELYN MEYER 610-987-4100 XT 1209 17 JEFFERSON STREET OLEY, PA 19547	HIGH SCHOOL - DOMESTIC HOT WATER HEATER REPLACEMENT PROJECT	IN HOUSE	100%	100%	8/19	$ 77,265.00
8-27-19	MAPLE GARDEN CONDO'S	FOREST HARMAN 610-585-9013 200 MAPLEWOOD DRIVE POTTSTOWN, PA 19464	RETUBE LEFT HAND BOILER	IN HOUSE	100%	100%	7/19	$ 31,781.00
9-30-19	LINCOLN UNIVERSITY	HENRY SMITH 1570 BALTIMORE PIKE LINCOLN UNIVERSITY, PA 19352	LUCY LANEY - STEAM/CONDENSATE REPAIRS	IN HOUSE	100%	100%	10/19	$ 28,925.00
10-8-19	CHESTER, COUNTY OF	JOHN DARGAY 610-344-4315 313 WEST MARKET STREET WEST CHESTER PA 19380-0031	CHESTER COUNTY PRISON - FURNISH/INSTALL NEW WATER HEATER	CUSTOMER PROVIDED	100%	100%	1/20	$ 38,620.00
12-24-19	OLEY VALLEY SCHOOL DISTRICT	EVELYN MEYER 610-987-4100 XT 1209 17 JEFFERSON STREET OLEY, PA 19547	ELEMENTARY SCHOOL - FURNISH/INSTALL OIL FIRED WATER HEATER	IN HOUSE	100%	100%	1/20	$ 43,850.00
5-31-19	TYSON FOODS, INC	ROGER GOOD 717-354-4211 403 S. CUSTER AVENUE NEW HOLLAND, PA 17557	DA REPLACEMENT PROJECT	IN HOUSE	100%	100%	4/20	$ 141,920.00
1-20-20	EMBASSY SUITES	MATT BURKE (610) 647-6700 888 CHESTERBROOK BOULEVARD CHESTERBROOK, PA 19087	NEW BOILER REPLACEMENT/BOILER REPAIR PROJEC	IN HOUSE	100%	100%	5/20	$85,627.00
2-11-20	CITY OF READING	RALPH JOHNSON 815 WASHINGTON STREET READING, PA 19601	PENDORA PARK - BOILER REPLACEMENT PROJECT	IN HOUSE	100%	100%	2/20	$ 23,850.00

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BURNER SERVICE & REPAIRS
COMBUSTION ANALYSIS
WATER SOFTENERS

NEW/USED BOILER INSTALLATIONS
"R" STAMP BOILER REPAIRS
RENTAL BOILERS

3B SERVICES, INC.

#11

P.O. BOX 15183
READING, PA 19612-5183

PHONE 610-373-3701
FAX 610-373-3722

3B Services, Inc. is a commercial, industrial, and institutional boiler, burner, hot water heater replacement service and installation contractor located in the City of Reading since 1982. We originally started out as Blanski, Inc. but changed our name approximately 6 years ago.

Our primary mission is to provide quality 24 hour Service, 365 days per year to our clients. This includes installation service on the all of the above mentioned equipment.

As you can see by the attached list, we are very familiar with all different types of heating equipment used in the commercial, industrial, and institutional fields. Our projects are performed by our in house work force which has many years experience in not only service but installations.

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BURNER SERVICE & REPAIRS
COMBUSTION ANALYSIS
WATER SOFTENERS

NEW/USED BOILER INSTALLATIONS
"R" STAMP BOILER REPAIRS
RENTAL BOILERS

3B SERVICES, INC.

P.O. BOX 15183
READING, PA 19612-5183

PHONE 610-373-3701
FAX 610-373-3722

#17

TO WHOM IT MAY CONCERN:

In regards to the acceptable disposal method of Solid Waste, the means we employ are as follows:

- Disposal of all cast iron sections and metal will be at Royal Green, 30 West Huller Lane, Reading, PA 19605
- Disposal of all oil removed from site will be to Eastern Rigging, 1100 Montgomery Street, Reading, PA 19601. The oil will be put into proper transporting containers.

Regards
Matthew Blanski
President

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NON DISCRIMINATION STATEMENT

The undersigned hereby certifies that it shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, handicap, familial status, or national origin. The undersigned shall take affirmative action to insure that applicants for employment are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, handicap, familial status, or national origin.

Matthew Blanski

NAME Matthew Blanski

3B Services, Inc.

BIDDER

President

TITLE

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

CERTIFICATE OF ACKNOWLEDGMENT OF RECEIPT OF ADDENDUM

THE CITY OF READING

ADDENDUM NO.1

RFP: Reading Fire Department 3rd and Court Electrical Service, Generator and Boiler Replacement

DUE DATE: July 7, 2020
3:00 P.M. Prevailing Time

NOTICE

This addendum must be signed, attached to, and returned with your proposal to the City of Reading by the time and date indicated ABOVE:

THE NEW BID DUE DATE FOR THIS PROJECT IS 3:00 P.M., PREVAILING TIME, ON JULY 14, 2020 VIA PENN BID.

I, HEREBY CERTIFY THAT THE CHANGES COVERED BY THIS ADDENDUM HAVE BEEN TAKEN INTO ACCOUNT.

Firm Name (Type or Print) 3B Services, Inc.

Authorized Signature Matthew Blanski

Title President

Name (Type or Print) Matthew Blanski

Date July 14, 2020

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

CERTIFICATE OF ACKNOWLEDGMENT OF RECEIPT OF ADDENDUM

THE CITY OF READING

ADDENDUM NO.2

RFP: Reading Fire Department 3rd and Court Electrical Service, Generator and Boiler Replacement

DUE DATE: July 14, 2020
3:00 P.M. Prevailing Time

NOTICE

This addendum must be signed, attached to, and returned with your proposal to the City of Reading by the time and date indicated ABOVE:

Q1. May we have a range of probable cost?

A1. Probable cost of the project is approximately $250,000 to 270,000.

Q2. What is the estimated cost?

A2. Mechanical portion estimated at $ 120,000 and Electrical portion $ 150,000

Q3. Does this project involve asbestos removal?

A3. Asbestos will be removed by the City prior to the work starting

Q4. Is this job a prevailing wage project? There is one specification that says "N/A" and one that specifies to adhere to prevailing wages.

A4. Yes

Q5. What is the process on seeking approval for an alternate generator manufacturer?

A5. Generator MFGs are NOT predetermined. Provide basis of design or named alternate manufacturers.

Q6. Please provide the prevailing wage rates.

A6. Here are the prevailing wage rates:
https://www.dlisecureweb.pa.gov/PrevWage/Pages/Project.aspx?ID=137270&PageType

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I, HEREBY CERTIFY THAT THE CHANGES COVERED BY THIS ADDENDUM HAVE BEEN TAKEN INTO ACCOUNT.

Firm Name (Type or Print) 3B Services, Inc.

Authorized Signature Matthew Blanski

Title President

Name (Type or Print) Matthew Blanski

Date July 14, 2020

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

FORM OF BID BOND

BOND

KNOW ALL MEN BY THESE PRESENTS that we, the undersigned, _____ 3B Services, Inc. _____, as Principal (the "Principal"), and _____ Travelers Casualty and Surety Company of America _____ a corporation organized and existing under laws of the State _____ of Connecticut _____, as Surety (the "Surety"), are held and firmly bound unto City of Reading _____ as Obligee (the "Obligee"), as hereinafter set forth, in the full and just sum of ten percent of the total amount bid and all add alternates _____ Dollars ($ 10% _____), lawful money of the United States of America, for the payment of which sum we bind ourselves, our heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WITNESSETH THAT:

WHEREAS, the Principal herewith is submitting a Proposal to the Obligee to perform the Work in connection with the construction of _____ 3rd and Court Streets Boiler Replacement Project _____ pursuant to plans, specifications and other documents constituting the Contract Documents which are incorporated into said Proposal by reference (the "Contract Documents"), as prepared by the Department of Public Works, City Hall, 815 Washington Streets, Reading, PA 19601.

WHEREAS, it is a condition of the receipt and consideration by the Obligee of said Proposal that it shall be accompanied by proposal guaranty to be held by the Obligee on terms hereinafter set forth.

NOW, THEREFORE, the condition of this Bond shall be such that, if the Principal, within ten (10) days after mailing of contract document by the City to Principal, shall furnish to the Obligee a Performance Bond, Payment Bond and a Wage Rate Compliance Bond, and upon award of a contract to him by the Obligee, shall execute and deliver the Agreement and furnish to the Obligee proper evidence of effectiveness of insurance coverage, respectively within the time, in the forms and in the amounts, as appropriate, required by the Contract Documents, then this Bond shall be void, otherwise, this Bond shall remain in full force and effect.

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The Principal and the Surety agree to pay to the Obligee the difference between the amount of said Proposal, as accepted by the Obligee, and any higher amount for which the required work shall be contracted for by the Obligee, together with any additional advertising costs, architect's fees, legal fees and any all other fees and expenses incurred by the Obligee by reason of the failure of the Principal to enter into such Agreement with the obligee, or to furnish such Contract Bonds, or to furnish evidence of effectiveness of such insurance coverage; provided, however, that (1) the obligation of the Surety shall not exceed the stated principal amount of this Bond; and (2) if the Obligee should not procure an executed contract with any other person for the performance of the work contemplated in said Proposal, as accepted by the Obligee, upon the same terms and conditions, other than price, as provided in the Contract Documents, within the period provided in the Contract Documents during which no proposals of bidders may be withdrawn, whether because of the lack of other proposals, or because of the inability or refusal of any other bidder to enter into an appropriate contract, or because the cost under any higher proposal would be greater than the Obligee shall determine, in its sole discretion, that it can afford, then the Principal and the Surety agree to pay to the Obligee the full amount of this Bond as liquidated damages.

IN WITNESS WHEREOF, the Principal and the Surety cause this Bond to be signed, sealed and delivered this 7th day of July, 2020.

(INDIVIDUAL PRINCIPAL)

_____(Seal)
(Signature of Individual)

Witness:

_____

Trading and Doing Business as:

_____

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(PARTNERSHIP PRINCIPAL)

_____ (Seal)
(Name of Partnership)

Witness:

_____ By: _____(Seal)
(Partner)

Witness:

_____ By: _____(Seal)
(Partner)

Witness:

_____ By: _____(Seal)
(Partner)

Witness:

_____ By: _____(Seal)
(Partner)

(CORPORATION PRINCIPAL)

Attest:

Joan Blanski
(Secretary)

3B Services, Inc.
(Name of Corporation)

By: Matthew Blanski
(President/~~Vice President~~)

(CORPORATE SEAL)

or (if appropriate)

_____
(Name of Corporation)

By: _____
Authorized Representative

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*Attach appropriate proof, dated as of the same date as the Bond, evidencing authority to execute in behalf of the corporation.

Signed _____

_____
(Title)

Subscribed and sworn to before me on

this ___ day of _____, 20 ___

_____

_____
(Title)

My commission expires:

_____

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(CORPORATION SURETY)

Travelers Casualty and Surety Company of America
(Name of Corporation)

By: _____
**/ (Attorney-in-fact)
Morgan S. Ellis, Attorney-in-Fact

Witness:

_____
Sarah E. Jordan, Witness

(Corporate Seal)

**Attach an appropriate power of attorney, valid and in effect as of the date of this affidavit, evidencing the authority of the Attorney-In-Fact to act in behalf of the corporation.

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EHD
1857 William Penn Way
PO Box 11600
Lancaster, PA 17601

717.394.5681 or
800.544.7292
(F): 717.394.0842
ehd-ins.com

Manage Risk.
Maximize Performance.

Consent of Surety

City of Reading
815 Washington Street
Reading PA 19601

RE: 3B Services, Inc.
3rd and Court Streets Boiler Replacement Project

To Whom It May Concern:

We are pleased to be the surety agent for the above-referenced contractor. In the event this firm enters into a contract with you for this project, Travelers Casualty and Surety Company of America is prepared to execute the required Performance and Payment bonds in the full amount of the contract.

Signed and Sealed Date: 7/7/2020

Travelers Casualty and Surety Company of America

Morgan S. Ellis
Attorney-In-Fact

Best Practices
2018 Best Practices Agency

OVER 120 YEARS OF EXCEPTIONAL CLIENT SERVICE

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TRAVELERS

Travelers Casualty and Surety Company of America
Travelers Casualty and Surety Company
St. Paul Fire and Marine Insurance Company

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company are corporations duly organized under the laws of the State of Connecticut (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint **Sarah E. Jordan, Kylee A. Lantz, Jon K. Miles, Mariah C. Landis, Matthew J. Swanick, Morgan S. Ellis, Jessica A. Weidenhammer, Astra M. Marx, and Valerie Sassaman of Lancaster, Pennsylvania** their true and lawful Attorney-in-Fact to sign,execute, seal andacknowledge any and all bonds, recognizances,conditional undertakings and other writings obligatory in the nature thereof on behalf of theCompanies in their business of guaranteeing the fidelity ofpersons, guaranteeing the performance of contracts and executing or guaranteeing bondsand undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed, and their corporate seals to be hereto affixed, this **3rd** day of **February, 2017.**

State of Connecticut

City of Hartford ss.

By: _____
Robert L. Raney, Senior Vice President

On this the **3rd** day of **February, 2017**, before me personally appeared **Robert L. Raney**, who acknowledged himself to be the Senior Vice President of Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

In Witness Whereof, I hereunto set my hand and official seal.

My Commission expires the **30th** day of **June, 2021**

Marie C Tetreault
Marie C. Tetreault, Notary Public

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, **Kevin E. Hughes**, the undersigned, Assistant Secretary of Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company, do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which remains in full force and effect.

Dated this 7th day of July , 2020

Kevin E. Hughes, Assistant Secretary

To verify the authenticity of this Power of Attorney, please call us at 1-800-421-3880.
Please refer to the above-named Attorney-in-Fact and the details of the bond to which the power is attached.

Bid Response Summary

Bid Number	City of Reading, Berks County
Bid Title	Reading Fire Department 3rd and Court Electrical Service, Generator and Boiler Replacement
Due Date	Tuesday, July 14, 2020 3:00:00 PM [(UTC-05:00) Eastern Time (US & Canada)]
Bid Status	Awarded
Company	3B Services Inc
Submitted By	Matthew Blanski - Tuesday, July 14, 2020 11:24:26 AM [(UTC-05:00) Eastern Time (US & Canada)] judy@servicesby3b.com 6103733701
Comments	

Question Responses

Group	Reference Number	Question	Response
Project Documents			
	1	Upload Support Document(s)	City of Reading Proposal.pdf
	2	Upload Support Document(s)	City of Reading Non Collusion.pdf
	3	Upload Support Document(s)	City of Reading Bidders Qualifications.pdf
	4	Upload Support Document(s)	City of Reading Non Discrimination.pdf
	5	Upload Support Document(s)	City of Reading Addendums 1 and 2.pdf
Bidder Acknowledgements			
	1	In conformity with City Plans and specifications, all as prepared by the Public Works Department and after an examination of the site of the work, and the Contract Documents, including the instructions to Bidders, Form of Proposal, Bid Bond and Conditions, the undersigned submits this proposal, and encloses herewith as proposal guaranty, a Certified or Treasurer's Check, or Bid Bond, in an amount not less than ten percent (10%) of the bid herein submitted, which it is understood will be forfeited if this proposal is accepted by the City of Reading, and the undersigned fails to furnish approved bonds and execute the contract within the time stipulated; otherwise, the guarantee will be returned. (Enter I Agree or I Do Not Agree)	I Agree
	2	The Bidder declares that no Member of Council, Director of Department, Division Manager, deputy thereof or clerk therein, or other officer of the City of Reading, is directly or indirectly interested as principal, surety of otherwise in this proposal or has any supervision or overall responsibility for the implementation in administration of the contract. (Enter I Agree or I Do Not Agree)	I Agree
	3	It is certified that the Bidder is the only person(s) interested in this proposal as principal and that the proposal is made without collusion with any person, firm, or corporation. (Enter I Agree or I Do Not Agree)	I Agree

	4	It is hereby agreed to execute the contract and furnish surety company bonds, on the forms enclosed in the Contract Documents, in the amount of one hundred percent (100%) of the contract price within ten (10) days of mailing of the contract documents from the City to the Principal, and to begin work within ten (10) days after receipt of Notice to Proceed from the City of Reading. (Enter I Agree or I Do Not Agree)	I Agree
	5	Bidder hereby acknowledges receipt of the following Addenda: Enter Addendum Number and Date(s)	#1 - 6-29-2020 and #2 7-1-2020
	6	Bidder will complete the Work in accordance with the Contract Documents for the price(s) submitted. (Enter I Agree or I Do Not Agree)	I Agree
Multi-Prime Project			
	1	Bidder understands that this is a multi-prime project. Bidder can submit a bid on any number of contracts. (Enter I Agree or I Do Not Agree)	I Agree
	2	Bidder will check the "No Bid" box on all line items within a prime not being bid. (Enter I Agree or I Do Not Agree)	I Agree
	3	Bidder will provide pricing on all line items contained within a prime contract in which they are bidding. (Enter I Agree or I Do Not Agree)	I Agree

Pricing Responses

Group	Reference Number	Description	Type	Unit Of Measure	Quantity	Unit Price	Ext Base Price	Comment	User Field 1	User Field 2
Basis of Bid - Boiler Replacement										
	1	Bidder will complete the Work in accordance with the Contract Documents for the following lump sum price:	Base	Lump Sum	1.00	$97,325.00	$97,325.00			
	2	Bidder will complete the Work in accordance with the Contract Documents for the following contingency lump sum price:	Base	Lump Sum	1.00	$5,000.00	$5,000.00			
Basis of Bid - Electrical										

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	1	Bidder will complete the Work in accordance with the Contract Documents for the following lump sum price:	Base	Lump Sum	1.00	
	2	Bidder will complete the Work in accordance with the Contract Documents for the following contingency lump sum price:	Base	Lump Sum	1.00	
Total Base Bid	$102,325.00					

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2. Requests for Proposals and Addenda

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Project Manual

Department of Public Works

City of Reading, Pennsylvania

Reading Fire Department
3rd and Court
Electrical Service, Generator and Boiler Replacement

Prepared by:

Buchart Horn Architects
445 West Philadelphia Street
York, PA 17401

Released for Bidding
June 12, 2020

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TABLE OF CONTENTS

NOTICE AND INSTRUCTIONS

Notice to Contractors
Instructions to Bidders

DOCUMENTS TO BE SUBMITTED WITH BID

Bid Proposal Form
Bid Bond
Non-Collusion Affidavit
Statement of Bidder's Qualification
Non-Discrimination Statement

CONTRACT DOCUMENTS

Contract
Performance Bond
Payment Bond
Maintenance Bond
Statement Accepting Provisions of PA Workers' Compensation Act
Stipulation Against Liens
Indemnity Agreement
Notice to Proceed

GENERAL PROVISIONS

TECHNICAL SPECIFICATIONS

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

NOTICE AND INSTRUCTIONS

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

CITY OF READING, PENNSYLVANIA

NOTICE TO CONTRACTORS

The City of Reading will receive proposals for the 3rd & Court Electrical Service, Generator and Boiler Replacement Project submitted electronically via the PennBid Program (https://pennbid.procureware.com). Proposals shall be received until 3:00 p.m., prevailing time on July 7, 2020.

Proposals received via PennBid after the hour specified will not be considered.

A mandatory pre-bid conference will be held at 11:00 a.m. local time on June 24, 2020 at the project site, 3rd and Court Streets, Reading, PA.

Specifications and bid forms, upon which all bids must be submitted, can be obtained via Penn Bid at https://pennbid.procureware.com.

Each proposal shall be accompanied by bid surety in the amount of ten percent (10%) of the proposal. A certified check or bid bond will be accepted.

Attention is called to the fact that prevailing minimum wage rates are a provision of this contract. Employees shall not be discriminated against because of race, color, age religion, sex or national origin.

The City of Reading reserves the right to accept or reject any or all bids, and to accept or reject any part of a bid that may not be in the public interest.

Tammi Reinhart
Purchasing Coordinator

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INSTRUCTIONS TO BIDDERS

PROPOSAL SUBMISSION

Proposals shall be submitted via the PennBid Program (https://pennbid.procureware.com).
This shall be submitted on or before the time stated in the NOTICE TO CONTRACTORS.

Proposals received via PennBid after the hour specified will not be considered.

BONDS

Bid security, in the amount of ten percent (10%) of the bid price shall accompany each proposal. This bid security may be a Certified or Cashier's Check, or a bid bond furnished by a surety company, satisfactory to the City of Reading. The Contractor shall furnish a performance bond in an amount equal to one hundred percent (100%) of the Contract Sum as security for the faithful performance of this Contract and also a labor and material payment bond in an amount not Less than one hundred percent (100%) of the Contract Sum as security for the payment of persons performing labor on the Project under this Contract and furnishing materials in connection with this Contract. The successful bidder, upon award of contract, shall furnish at the time of execution of the same, a Maintenance Bond by a surety company acceptable to the City of Reading, in an amount equal to one hundred percent (100%) of the contract, to guarantee satisfactory performance. All bonds are subject to approval by the City Solicitor.

Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall permit a copy to be made.

The bonds shall be executed on the forms provided in the Bid Documents. The bonds shall be executed by a corporate surety licensed and qualified to do business in the Commonwealth of Pennsylvania. The surety company shall be named in the current list of companies holding certificates of authority as accepted sureties on federal bonds and as acceptable re-insuring companies as published in Circular 570 (as amended) by the audit staff, Bureau of Government Financial Operations, U.S. Treasury Department, and the amount of the bonds shall not exceed the underwriting risk of such surety as set forth in said Circular or revision thereof The bonds shall be accompanied by a current and certified power of attorney evidencing the authority of the agent of the surety to execute the bonds as of the date of the bonds.

In case the contract is awarded to a bidder who fails to enter the contract or to deliver all required bonds and affidavits, the cash or check deposited shall become absolute property of the City; or if a bond has been deposited, it shall become payable immediately. Cash, checks or bonds deposited will be returned to unsuccessful bidders as soon as the contract is awarded, or all bids rejected.

INSURANCE

The Contractor, at the time of execution of the contract, shall also furnish the City with insurance certificates of adequate limits, as later indicated, to protect the City of Reading, its agents, and employees from any litigation involving Workers' Compensation, Public Liability and Property Damage, involved

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in the work. All subcontractors must also furnish copies of their liability insurance and Workers' Compensation Insurance certificates to the City. The City will allow no subcontractor to perform any work under this contract unless such certificates are submitted to and approved by the City beforehand.

CONTRACTOR'S LIABILITY INSURANCE

The status of the Contractor in the work to be performed by the Contractor is that of any independent Contractor and as such, he shall properly safeguard against any and all injury or damage to the public, to public and private property, materials and things, and as such he alone shall be responsible for any and all damage, loss or injury to persons or property that may arise, or be incurred, in or during the conduct or progress of said work without regard to whether or not the Contractor, his sub-contractors, agents, or employees have been negligent, and the Contractor shall keep the City free and discharged of and from any and all responsibility and liability therefore of any sort or kind. The Contractor shall assume all responsibility for risks or casualties of every description, for any or all damage, loss or injury to persons or property arising out of the nature of the work from the action of the elements, or from any unforeseen or unusual difficulty. The Contractor shall assume and be liable for all blame and loss of whatsoever nature by reason of neglect or violation of any Federal, State, County or Local laws, regulations, or ordinances; the Contractor shall indemnify and save harmless the City from all suits or actions of law of any kind whatsoever in connection with this work and shall if required by the City, produce evidence of settlement of any such action before final payment shall be made by the City. Contractor's Liability Insurance Certificate shall include the save harmless clause and shall be filed with the City.

The Contractor shall maintain such insurance as will protect him from claims under worker's compensation acts and from claims for damages because of bodily injury, including death, and property damage, which may arise from and during operations under this Contract, whether such operations be by himself, by any subcontractor or anyone directly or indirectly employed by either of them. Contractor's liability insurance shall be in the names of the Contractor and the City, as their respective interests may appear. Certificates of such insurance shall be filed with the City Risk and Safety Manager.

The minimum amount of liability insurance to be maintained by the Contractor during the life of the contract shall be as follows:

> **Comprehensive General Liability** – for bodily injury and property damage – including any liability normally covered by a general liability policy with limits of not less than $1,000,000 per occurrence and $2,000,000 in the annual aggregate.
>
> **Business Automobile Liability** – For owned, non-owned, leased and hired vehicles with a combined single limit of not less than $1,000,000 for bodily injury and property damage.
>
> **Worker's Compensation** – Statutory limits in each state in which Service Provider is required to provide Worker's Compensation coverage including "All States" and "Voluntary Compensation" endorsement, and a Waiver of Subrogation endorsement in favor of the County.

Prior to commencement of performance of this Agreement, Contractor shall furnish to the City a certificate of insurance evidencing all required coverage in at least the limits required herein, **naming the City of Reading, its elected officials, agents, and employees as additional insureds under the Comprehensive General Liability coverage**, and providing that no policies may be modified or cancelled without thirty

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(30) days advance written notice to the City. Such certificate shall be issued to***: City of Reading, 815 Washington Street, Reading, PA 19601.*** All policies shall be in effect with companies holding an A.M. Best rating of "A-" or better and shall be licensed to do business in the Commonwealth of Pennsylvania. Such companies shall also be acceptable to the City.

Please forward a certificate of insurance verifying these insurance requirements.

Liability insurance shall include automobile coverage, including "hired automobiles and non-ownership automobiles."

Liability insurance shall include the hazard of collapse, damage to underground utilities, underground blasting, and excavation. Prior to any blasting which may be required, blasting insurance shall be obtained by the Contractor in an amount satisfactory to the City Engineer.

Liability insurance shall include the hazard of building collapse and of damage to adjoining properties and/or to individuals located within or adjacent to each project site.

All subcontractors performing work under this contract must furnish to the City a copy of their Certificate of Insurance for Workers' Compensation and liability for bodily injury and property damage.

WAGES AND EMPLOYMENT REQUIREMENTS - N/A

EQUAL EMPLOYMENT OPPORTUNITY

During the performance of this Contract, the Contractor agrees as follows:

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

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

The Contractor will send to each labor union or representative of workers with which the Contractor has a collective bargaining agreement or other contract or understanding, a notice advising the labor union or workers' representatives of the Contractor, commitments under this Section and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
In the event of the Contractor's noncompliance with the non-discrimination clauses of this Contract or with any of the said rules, regulations, or orders, this Contract may be cancelled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further City contracts.

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

The Contractor will include the provisions of these paragraphs in every subcontract or purchase order unless exempted.

EMPLOYMENT OF CERTAIN PERSONS PROHIBITED

No person who, at the time, is serving sentence in a penal or correctional institution shall be employed on the work covered by this Contract.

SUPERVISION OF WORKERS

The Contractor shall provide qualified supervision of each crew at all times while working under this contract. Each supervisor shall be authorized by the Contractor to accept and act upon all directives issued by the City. Failure for the supervisor to act on said directives shall be sufficient cause to give notice that the Contractor is in default of the contract unless such directives would create potential personal injury or safety hazards.

This contract will be under the direct supervision of the City or its authorized representatives. Any alterations or modifications of the work performed under this contract shall be made only by written agreement between the Contractor and the City authorized representatives and shall be made prior to commencement of the altered or modified work. No claims for extra work or materials shall be allowed unless covered by written agreement.

SUBCONTRACTS

The Contractor will not be allowed to subcontract work under this contract unless the City grants written approval. The Subcontractor, as approved, shall be bound by the conditions of the contract between the City and the Contractor. The authorization of a Subcontractor is to perform in accordance with all terms of the contract and specifications. All required notices, work orders, directives, and requests for emergency services will be directed to the Contractor. All directions given to the Subcontractor in the field shall bind the Contractor as if the notice had been given directly to the Contractor.

QUALITY

Where the specification asks for a certain article or "Approved Equal" and the bidder intends to furnish an article which the bidder considers equal to the one named, the bidder must specify in the bid the name and grade of said article. All disputes concerning grade and quality of materials or work shall be determined by a person duly authorized by the Director of Public Works.

TIME OF COMPLETION

The bidders are herewith cautioned that they must complete all work within 100 calendar days from the date of the notice to proceed. To insure timely completion, the successful bidder will be required to furnish adequate equipment and qualified personnel in sufficient numbers at all times.

Where a date is set for delivery of materials or the performance of work, said materials must be delivered or work performed, in accordance with the specifications or description herein contained on or before said date, or the order to the delinquent party will be cancelled and awarded to the next lowest responsible

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

bidder.

BUSINESS PRIVILEGE TAX

The City of Reading imposes a Business Privilege License, at $55.00 per calendar year. In addition, a Business Privilege Tax is imposed at the rate of 2¼ mills upon the gross receipts attributable to business conducted within the City of Reading.

PERMITS/LICENSES

The Contractor shall, at his/her expense, pay all fees and procure all necessary licenses and permits needed to conduct the work required under the terms of this contract. The Contractor shall give any and all necessary formal notices required in conjunction with the lawful prosecution of the work of this contract.

BASIS OF PAYMENT

All prices to be quoted F.O.B. Reading, PA destination. The City of Reading is tax exempt.

OBSERVANCE OF LAWS, ORDINANCES AND REGULATIONS

The Contractor at all times during the term of this contract shall observe and abide by all Federal, State, and Local laws which in any way affect the conduct of the work and shall comply with all decrees and orders of courts of competent jurisdiction. The Contractor shall comply fully and completely with any and all applicable State and Federal statutes, rules and regulations as they relate to hiring, wages and any other applicable conditions of employment.

MANDATORY PRE-BID MEETING

A mandatory pre-bid meeting has been scheduled for June 24, 2020 at 11:00 a.m. at the project site, 3rd & Court Street, Reading, PA. A site inspection is part of the technical specification, and required prior to submitting a proposal. For the purpose of familiarizing Bidders with the project, answering questions, and issuing addenda as needed for clarification of the bidding document, all questions shall be submitted via the PennBid Program (https://pennbid.procureware.com).

QUESTIONS REGARDING SPECIFICATIONS ON PROPOSAL PROCESS

To ensure fair consideration for all proposers, the City prohibits communication to or with any department director, division manager or employee during the submission process with the exception of those questions relative to interpretation of specifications or the proposal process. No interpretations of the meaning of the Bid documents will be made to any bidder orally.

Every request for such interpretation shall be submitted via the "Questions" tab within PennBid to be given consideration must be sent in prior to 10:00 a.m. on June 26, 2020.

Any and all such interpretation will be in the form of an Addendum to the Contract Documents and will be issued via PennBid to all prospective proposers no later than June 30, 2020.

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

Additionally, the city prohibits communications initiated by a proposer to any City Official or employee evaluating or considering the proposals prior to the time an award decision has been made. Any communication between proposer and the City will be initiated by the appropriate City Official or employee in order to obtain information or clarification needed to develop a proper, accurate evaluation of the proposal. Such communications initiated by a proposer may be grounds for disqualifying the offending proposer from consideration for award of the proposal and/or any future proposal.

WITHDRAWAL OF PROPOSALS/BIDS

After a bid has been opened, it may not be withdrawn except as provided by Act of January 23, 1974, P.L. 9 No. 4 as same may be amended.

No bids may be withdrawn for a period of ninety (90) days following the formal opening and receipt of bids by the City of Reading.

BID REJECTION

The City of Reading reserves the right to reject any or all bids and to accept or reject any part of any bid. It also reserves the right to waive any technical defects or minor irregularities, which in its discretion, is determined to be in the best interest of the City.

EXECUTION OF CONTRACT

The successful Bidder shall, within ten (10) calendar days after mailing of contract documents by the City to the Principal, enter into contract with the City on form as included within the bidding documents for the appropriate bonds, indemnities and insurances required hereunder.

The contract, when executed, shall be deemed to include the entire agreement between the parties; the Contractor shall not base any claim for modification of the contract upon any prior representation or promise made by the representatives or the City, or other persons.

All attachments are considered as part of this document.

METHOD OF PAYMENT

Payments shall be based on an invoice submitted by the General Contractor or approved representative (Construction Manager). The City shall have the right to withhold disbursement funds if in the City's opinion the construction work for which payment has been requested is of poor workmanship, contrary to any applicable codes and contract specifications, is in violation of appropriate paperwork requirements that are not up to date and approved for this billing period, General Contractor fails to comply with this Agreement, or for other conditions or circumstances which the City deems not to be in the best interest of the public.

Ten percent (10%) of each General Contractor invoice request shall be retained by the City on this contract until it is completed up to City codes and contract specifications and approved by a City Official or person representing a City Official (Architect or Engineer).

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

ACCESS TO ACCOUNTING RECORDS

The contractor shall certify that all materials, equipment and labor charged to the City are accounted for and shall keep such full and detailed accounts as may be necessary for proper financial management under this Agreement. The City or its representative shall be afforded access to all the Contractor's records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to this contract, and the Contractor shall preserve all such records for a period of three (3) years, or for such longer period as may be required by law, after the final payment.

ASSIGNMENT OF REFUND RIGHTS

The City is not subject to federal, state or local sales or use tax or federal excise tax. Contractor hereby assigns to City all of its rights, title, and interest in any sales or use tax which may be refunded as a result or the purchase of any materials purchased in connection with the contract and contractor, unless directed by City, shall not file a claim for any sales or use tax refund subject to this assignment. Contractor authorizes City, in its own name or the name of contractor, to file a claim for a refund of any sales or use tax subject to this assignment.

CONTRACTS WITH SUBCONTRACTORS

The Contractor agrees to include the above references paragraphs in any contracts with subcontractors.

NOTICE TO PROCEED

The Contractor shall begin work on the job site within ten (10) days after receiving Notice to Proceed from the City.

DISCONTINUANCE OF WORK

The Contractor upon receipt of either written or oral notice to discontinue such practice shall immediately discontinue any practice obviously hazardous as determined by the City.

CONTRACT TERMINATION

The City shall have the right to terminate a contract or a part thereof before the work is completed in the event:

1. Previous unknown circumstances arise making it desirable in the public interest to void the contract.

2. The contractor is not adequately complying with the specifications.

3. The contractor refuses, neglects, or fails to supply properly trained or skilled supervisory personal and/or workers or proper equipment.

4. The contractor in the judgment of the City is unnecessarily or willfully delaying the performance and

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

completion of the work.

5. The contractor refuses to proceed with work when and as directed by the City.

6. The contractor abandons the work.

Contractors who have questions concerning various aspects of this Contract should contact the following persons: Tammi Reinhart, Purchasing Coordinator at Tammi.Reinhart@readingpa.gov.

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

DOCUMENTS TO BE SUBMITTED WITH BID

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

PROPOSAL

FOR

READING FIRE DEPARTMENT
3RD AND COURT
ELECTRICAL SERVICE, GENERATOR & BOILER REPLACEMENT

CITY OF READING, PENNSYLVANIA

Proposal of

_____
(name)

_____
(address)

TO: Mayor Eddie Moran
City of Reading
815 Washington Street
Reading, PA 19601

Dear Mayor Moran:

In conformity with City Plans and specifications, all as prepared by the Public Works Department and after an examination of the site of the work, and the Contract Documents, including the instructions to Bidders, Form of Proposal, Bid Bond and Conditions, the undersigned submits this proposal, and encloses herewith as proposal guaranty, a Certified or Treasurer's Check, or Bid Bond, in an amount not less than ten percent (10%) of the bid herein submitted, which it is understood will be forfeited if this proposal is accepted by the City of Reading, and the undersigned fails to furnish approved bonds and execute the contract within the time stipulated; otherwise, the guarantee will be returned.

The undersigned declares that no Member of Council, Director of Department, Division Manager, deputy thereof or clerk therein, or other officer of the City of Reading, is directly or indirectly interested as principal, surety of otherwise in this proposal or has any supervision or overall responsibility for the implementation in administration of the contract.

It is certified that the undersigned is the only person(s) interested in this proposal as principal and that the proposal is made without collusion with any person, firm, or corporation.

It is hereby agreed to execute the contract and furnish surety company bonds, on the forms enclosed in the Contract Documents, in the amount of one hundred percent (100%) of the contract price within ten (10) days of mailing of the contract documents from the City to the Principal, and to begin work within ten (10) days after receipt of Notice to Proceed from the City of Reading.

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

CONTRACT 1

BASIS OF BID – BOILER REPLACEMENT

LUMP SUM BID

Bidder will complete the Work in accordance with the Contract Documents for the following lump sum (stipulated) price:

Contingency: $ 5,000.00

Lump Sum Bid Price: $ _____

TOTAL BID PRICE $ _____

RECEIPT OF ADDENDA

Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Addendum Date

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

CONTRACT 2

BASIS OF BID – ELECTRICAL

LUMP SUM BID:

Bidder will complete the Work in accordance with the Contract Documents for the following lump sum (stipulated) price:

Contingency: $ 20,000.00
Lump Sum Bid Price: $_____

TOTAL $_____

RECEIPT OF ADDENDA

Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Addendum Date

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

IN WITNESS WHEREOF, this proposal has been executed this ____ day of _____, 20 __, by the setting hereunto of his or its hand and seal.

FOR INDIVIDUAL:

_____(Seal)

FOR CORPORATION:

_____
(Name of Corporation)

By:

_____
(Official Title)

Attest:

_____
(Secretary)

FOR PARTNERSHIP:

_____
(Name of Partnership)

By:

_____(Seal)

_____(Seal)
Partners

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

FORM OF BID BOND

BOND

KNOW ALL MEN BY THESE PRESENTS that we, the undersigned, _____ _____, as Principal (the "Principal"), and _____ _____ a corporation organized and existing under laws of the _____ of _____, as Surety (the "Surety"), are held and firmly bound unto_____ as Obligee (the "Obligee"), as hereinafter set forth, in the full and just sum of _____ Dollars ($_____), lawful money of the United States of America, for the payment of which sum we bind ourselves, our heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WITNESSETH THAT:

WHEREAS, the Principal herewith is submitting a Proposal to the Obligee to perform the Work in connection with the construction of _____ _____ pursuant to plans, specifications and other documents constituting the Contract Documents which are incorporated into said Proposal by reference (the "Contract Documents"), as prepared by the Department of Public Works, City Hall, 815 Washington Streets, Reading, PA 19601.

WHEREAS, it is a condition of the receipt and consideration by the Obligee of said Proposal that it shall be accompanied by proposal guaranty to be held by the Obligee on terms hereinafter set forth.

NOW, THEREFORE, the condition of this Bond shall be such that, if the Principal, within ten (10) days after mailing of contract document by the City to Principal, shall furnish to the Obligee a Performance Bond, Payment Bond and a Wage Rate Compliance Bond, and upon award of a contract to him by the Obligee, shall execute and deliver the Agreement and furnish to the Obligee proper evidence of effectiveness of insurance coverage, respectively within the time, in the forms and in the amounts, as appropriate, required by the Contract Documents, then this Bond shall be void, otherwise, this Bond shall remain in full force and effect.

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

The Principal and the Surety agree to pay to the Obligee the difference between the amount of said Proposal, as accepted by the Obligee, and any higher amount for which the required work shall be contracted for by the Obligee, together with any additional advertising costs, architect's fees, legal fees and any all other fees and expenses incurred by the Obligee by reason of the failure of the Principal to enter into such Agreement with the obligee, or to furnish such Contract Bonds, or to furnish evidence of effectiveness of such insurance coverage; provided, however, that (1) the obligation of the Surety shall not exceed the stated principal amount of this Bond; and (2) if the Obligee should not procure an executed contract with any other person for the performance of the work contemplated in said Proposal, as accepted by the Obligee, upon the same terms and conditions, other than price, as provided in the Contract Documents, within the period provided in the Contract Documents during which no proposals of bidders may be withdrawn, whether because of the lack of other proposals, or because of the inability or refusal of any other bidder to enter into an appropriate contract, or because the cost under any higher proposal would be greater than the Obligee shall determine, in its sole discretion, that it can afford, then the Principal and the Surety agree to pay to the Obligee the full amount of this Bond as liquidated damages.

IN WITNESS WHEREOF, the Principal and the Surety cause this Bond to be signed, sealed and delivered this _____day of _____, 20__.

(INDIVIDUAL PRINCIPAL)

_____(Seal)
(Signature of Individual)

Witness:

_____

Trading and Doing Business as:

_____

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

(PARTNERSHIP PRINCIPAL)

_____ (Seal)
(Name of Partnership)

Witness:

_____ By: _____(Seal)
(Partner)

Witness:

_____ By: _____(Seal)
(Partner)

Witness:

_____ By: _____(Seal)
(Partner)

Witness:

_____ By: _____(Seal)
(Partner)

(CORPORATION PRINCIPAL)

Attest:

_____
(Secretary)

_____
(Name of Corporation)

By: _____
(President/Vice President)

(CORPORATE SEAL)

or (if appropriate)

_____
(Name of Corporation)

By: _____
Authorized Representative

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

*Attach appropriate proof, dated as of the same date as the Bond, evidencing authority to execute in behalf of the corporation.

Signed _____

_____
(Title)

Subscribed and sworn to before me on

this ___ day of _____, 20 ___

_____

_____
(Title)

My commission expires:

_____

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

(CORPORATION SURETY)

_____
(Name of Corporation)

By: _____
** (Attorney-in-fact)

Witness:

_____

(Corporate Seal)

**Attach an appropriate power of attorney, valid and in effect as of the date of this affidavit, evidencing the authority of the Attorney-In-Fact to act in behalf of the corporation.

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

NON-COLLUSION AFFIDAVIT

INSTRUCTIONS FOR NON-COLLUSION AFFIDAVIT

This Non-Collusion Affidavit is material to any contract pursuant to this bid. According to the Pennsylvania Antibid-Rigging Act, 73 P.S. 1611 et seq., governmental agencies may require Non-Collusion Affidavits to be submitted together with bids.

This Non-Collusion affidavit must be executed by the member, officer, or employee of the bidder who is authorized to legally bind the bidder.

Bid rigging and other efforts to restrain competition, and the making of false sworn statements in connection with the submission of bids are unlawful and may be subject to criminal prosecution. The person who signs the Affidavit should examine it carefully before signing and assure himself or herself that each statement is true and accurate, making diligent inquiry, as necessary, of all other persons employed by or associated with the bidder with responsibilities for the preparation, approval, or submission of the bid.

In the case of a bid submitted by a joint venture, each party to the venture must be identified in the bid documents, and an Affidavit must be submitted separately on behalf of each party.

The term "complementary bid" as used in the Affidavit has the meaning commonly associated with that term in the bidding process, and includes the knowing submission of bids higher than the bid of another firm, any intentionally high or noncompetitive bid, and any form of bid submitted for the purpose of giving a false appearance of competition.

Failure to file an Affidavit in compliance with these instructions will result in disqualification of the bid.

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

NON-COLLUSION AFFIDAVIT OF PRIME BIDDER

State of _____

County of _____

_____, being first duly sworn, deposes and says that:

He/She is_____
(Owner, Partner, Officer, Representative or Agent)
of _____, the Bidder that has submitted the attached Bid or Bids;

He/She is fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such Bid;

Such Bid is genuine and is not a collusive or sham Bid;

Neither the said Bidder nor any of its officers; partners, owners, agents, representatives, employees or parties in interest, including this affidavit, has in any way colluded, conspired, connived or agreed, directly or indirectly, with any other Bidder, firm or person to submit a collusive or sham Bid in connection with the Contract for which the attached Bid has been submitted or to refrain from bidding in connection with such Contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication of conference with any other Bidder, firm or person to fix the price or prices in the attached Bid or of any other Bidder, or to fix any overheld, profit or cost element of the Bid price or the Bid price of any other Bidder, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the City of Reading or any person interested in the proposed Contract;

The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, including this affidavit; and,

Neither the said Bidder nor any of its officers, partners, owners, agents or parties in interest, have any interest, present or prospective, that can be reasonably construed to result in a conflict of interest between them and the City of Reading, which the Bidder will be required to perform.

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

I state that _____ understands
(Name of Firm)
and acknowledges that the above representations are material and important, and will be relied on by the City of Reading in awarding the contract(s) for which this bid is submitted. I understand and my firm understands that any misstatement in this affidavit is and shall be treated as fraudulent concealment from the City of Reading of the true facts relating to the submission of bids for this contract.

_____
(Name and Company Position)

SWORN TO AND SUBSCRIBED
BEFORE ME THIS _____
DAY OF _____, 20___

_____ My Commission Expires
Notary Public

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

STATEMENT OF BIDDER'S QUALIFICATIONS

All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized. If necessary, questions may be answered on separate attached sheets. The Bidder may submit any additional information he desires.

1. Name of Bidder:_____

2. Permanent main office address:_____

3. When organized:_____

4. If a corporation, where incorporated:_____

5. How many years have you been engaged in the contracting business under your present firm or trade name:_____

6. Contracts on hand: (Schedule these on an attached sheet, showing amount of each contract and the appropriate anticipated dates of completion.)

7. Have you ever failed to complete any work awarded to you? If so, where and why?

   _____

8. Have you ever defaulted on a contract ?_____. If so, where and why?

   _____

9. List the more important projects recently completed by your company on an attached sheet, stating the approximate cost of each, and the month and year completed.

10. List your major equipment available for this contract.

    _____

    _____

11. Describe experience in construction work similar in importance to this project on an attached sheet.

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

Statement of Bidder's Qualifications

12. Background and experience of the principal members of your organization, including the officers.

_____

_____

_____

13. Credit available: $_____

14. Give Bank reference:_____

15. Will you, upon request, fill out a detailed financial statement and furnish any other information that may be required by the City? _____

16. (A) Have you ever been a party to or otherwise involved in any action or legal proceeding involving matters related to race, color, nationality or religion?_____

    If so, give full details. _____

    _____

    (B) Have you ever been accused of discrimination based upon race, color, nationality or religion in any action or legal proceeding including any proceeding related to any Federal Agency? _____. If so, give full details _____

    _____

    _____

    _____

17. <u>All prospective bidders</u> are required to present proof of an acceptable disposal method approved by the Pennsylvania Department of Environmental Resources. The proof may consist of a copy of a State Solid Waste Disposal Permit issued to the prospective bidder by the Pennsylvania Department of Environmental Resources, or a letter of approval from the Pennsylvania Department of Environmental Resources for the use of a proposed or existing disposal facility which has a permit or is under review for a permit. Same to be in accordance with Section 7 (a) application and permits, Pennsylvania Solid Waste Management - "Act 241."

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Statement of Bidder's Qualifications

18. Name, address, phone number, and contact person at surety company who will provide bonding for this contract:

_____

_____

19. Name, address, phone number, and contact person at insurance company who will provide insurance coverage for this contract:

_____

_____

20. The undersigned hereby authorizes any person, firm or corporation to furnish any information requested by the City of Reading in verification of the recitals comprising this Statement of Bidder's Qualifications.

DATED at _____ this _____ day of _____, 20 ____.

_____
(NAME OF BIDDER)

BY: _____

TITLE: _____

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NON DISCRIMINATION STATEMENT

The undersigned hereby certifies that it shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, handicap, familial status, or national origin. The undersigned shall take affirmative action to insure that applicants for employment are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, handicap, familial status, or national origin.

_____
NAME

_____
BIDDER

_____
TITLE

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CONTRACT DOCUMENTS

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C O N T R A C T

NOTE; This contract is not to be filled in until contract is awarded.

THIS AGREEMENT, made and concluded this _____ day of _____, in the year two thousand and _____, by and between the City of Reading, a municipal corporation of the Commonwealth of Pennsylvania, located in the County of Berks, said Commonwealth, party of the first part, and _____, Contractor, party of the second part, pursuant to law and to the provisions and requirements of the ordinance of the City of Reading, Pennsylvania.

WITNESSETH, that the parties to these presents, each in consideration of the agreements on the part of the other herein contained, have agreed, and hereby do agree, the party of the first part for itself, its successors and assign, and the party of the second part for itself, himself, or themselves, its successors, or his or their executors and administrators as follows:

CONTRACTOR'S GENERAL AGREEMENT. The Contractor covenant, promises and agrees to and with the party of the first part, for the consideration hereinafter mentioned and contained, and under the penalty expressed in a bond bearing date of _____ and hereto attached, to furnish all the material, machinery, equipment, tools, labor and transportation, except as hereinafter otherwise provided, at his own cost, necessary or proper for the purpose of executing the work embraced in this contract in a good, substantial and workmanlike manner, and in strict accordance with the specifications pertaining to this contract a herein contained.

PARTS OF CONTRACT. Notice to Contractors; Bid Instructions; Documents to be Submitted with Bid; Contract Documents; Documents to be Submitted During the Course of the Contract; Notice of Preconstruction Requirements and Pre-Construction Conference Questionnaire; Affirmative Action Requirements; General Provisions; Supplementary General Terms and Conditions; Technical Specifications; and Correspondence and Supportive Documentation shall each form a part of the Contract.

THE CONTRACT SUM. The City shall pay the Contractor for the performance of the Contract, subject to additions and deductions provided therein, in current funds as follows:_____ _____ (state here the lump sum amount, unit prices, or both as desired in individual cases.)

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Where the quantities originally contemplated are so changed that application of the agreed unit price to the quantity of work performed is shown to create a hardship to the Owner or the Contractor, there shall be an equitable adjustment of the Contract to prevent such hardship.

TIME & MANNER OF DOING WORK. The party of the second part agrees to commence the construction of the work to be done under this contract, within 100 calendar days upon receiving written notice from the Director of Public Works, or other applicable Director, so to do and to complete the entire work not later than 180 days after receiving written notice, with 40 consecutive days allowed for work on site**,** it being expressly agreed and understood that the time of beginning, rates of progress and time of completion of the work are essential under this contract. Time is to be considered to be the essence of this contract.

STIPULATED DAMAGES. The Contractor shall begin work within ten (10) days of receipt of written notice from the applicable Director, to do so. If the Contractor fails to complete and finish the work in conformity with the terms and provisions of this Contract within the time hereinbefore specified, he shall pay to the City the sum of ***Five Hundred Dollars ($500.00)*** for each and every day thereafter, including Sundays and holidays, that the finishing of the Contract is delayed, which sum shall be construed as stipulated and liquidated damages and not as a penalty and shall be deducted from the amount due by the terms of the Contract; provided, however, that in case of justifiable delay, the City shall extend the time for completion of said work as provided for in Article G.7, but no extension of time for any reason beyond the time fixed herein for the completion of the work shall be deemed a waiver by the City of the right to abrogate this Contract for abandonment for delay.

LIENS. Neither the final payment nor any part of the retained percentage shall become due until the Contractor, if required, shall deliver to the City a complete release of all liens arising out of this Contract, or receipts in full in lien thereof, and, if required in either case, an affidavit that so far as he has knowledge or information the release and receipts include all the labor and material for which a lien could be filed. If any lien remains unsatisfied after all payments are made, the Contractor shall refund to the City all monies that the latter may be compelled to pay in discharging such a lien, including all costs and a reasonable attorney's fee.

BASIS OF CONTRACT. This contract is founded on _____

_____

_____

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IN WITNESS WHEREOF, the said City of Reading has caused this Agreement to be executed by its Mayor, and its corporate seal to be hereunto affixed, duly attested by its City Clerk, and the party of the second part.

_____

_____

the day and year first above written.

CITY OF READING

By: _____
Mayor

ATTEST:

_____
City Clerk

Signed and Sealed in the Presence of

_____
CONTRACTOR

_____
PRESIDENT

_____
SECRETARY

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PERFORMANCE BOND

Know All Men By These Presents that we, _____
(CONTRACTOR)

hereinafter called the PRINCIPAL, and _____
(SURETY)

hereinafter called the SURETY, a corporation organized and existing under the laws of the _____ are held and firmly bound unto_____ hereinafter called the OBLIGEE, as hereinafter set forth, in the full and just sum of _____ Dollars ($_____), lawful money of the United States of America, for the payment of which sum we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WITNESSETH THAT:

WHEREAS, the PRINCIPAL heretofore submitted to the OBLIGEE a certain PROPOSAL, dated _____, 20____, to perform the WORK for the OBLIGEE, in connection with the _____ as set forth in CONTRACT DOCUMENTS.

WHEREAS, the OBLIGEE is a "contracting body" under provisions of Act No. 385 of the General Assembly of the Commonwealth of Pennsylvania, approved by the Governor on December 20, 1967, known and cited as the "Public Works Contractors Bond Law of 1967" (the "Act"); and

WHEREAS, the Act, in Section 3(a), requires that, before an award shall be made to the PRINCIPAL by the OBLIGEE in accordance with the PROPOSAL, the PRINCIPAL shall furnish this BOND to the OBLIGEE, with this BOND to become binding upon the award of the CONTRACT to the PRINCIPAL by the OBLIGEE in accordance with the PROPOSAL; and

WHEREAS, it also is a condition of the CONTRACT DOCUMENTS that this BOND shall be furnished by the PRINCIPAL to the OBLIGEE; and

WHEREAS, under the CONTRACTOR DOCUMENTS, it is provided inter alia, that if the PRINCIPAL shall furnish this BOND to the OBLIGEE, and if the OBLIGEE shall make an award to the PRINCIPAL, in accordance with the PROPOSAL, then the PRINCIPAL and OBLIGEE shall enter into a CONTRACT with respect to performance of the WORK, the form of which CONTRACT is set forth in the CONTRACT DOCUMENTS.

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NOW, THEREFORE, the terms and conditions of this BOND are and shall be that if the PRINCIPAL will truly and faithfully comply with and perform the WORK in accordance with the CONTRACT DOCUMENTS, at the time and in the manner provided in the CONTRACT DOCUMENTS, and if the PRINCIPAL shall satisfy all claims and demands incurred in or related to the performance of the WORK by the PRINCIPAL, and if the PRINCIPAL shall indemnify completely and shall hold harmless the OBLIGEE and all of its officers, agents and employees from any and all costs and damages which the OBLIGEE and all of its officers, agents and employees may sustain or suffer by reason of the failure of the PRINCIPAL to do so, and if the PRINCIPAL shall reimburse completely and shall pay to the OBLIGEE any and all costs and expenses which the OBLIGEE and all of its officers, agents or employees may incur by reason of any such default or failure of the PRINCIPAL, then this BOND shall be void; otherwise, this BOND shall remain in force and effect.

This BOND, is executed and delivered under and subject to the Act, to which reference hereby is made.

The PRINCIPAL and the SURETY agree that any alterations, changes and/or additions to the CONTRACT DOCUMENTS, and/or any alterations, changes and/or additions to the WORK to be performed in accordance with the CONTRACT DOCUMENTS, and/or any alterations, changes and/or additions to the CONTRACT , and/or any giving by the OBLIGEE of any extensions of time for the performance of the WORK in accordance with the CONTRACT DOCUMENTS, and/or any act of forbearance of either the PRINCIPAL or the OBLIGEE toward the other with respect to the CONTRACT DOCUMENTS, and/or the reduction of any percentage to be retained by the OBLIGEE as permitted by the CONTRACT DOCUMENTS, shall not release, in any manner whatsoever, the PRINCIPAL and the SURETY, or either of them, or their heirs, executors, administrators, successors and assigns, from liability and obligations under this BOND; and the SURETY, for value received, does waive notice of any such alterations, changes, additions, extensions of time, acts of forbearance and/or reduction of retained percentage.

IN WITNESS WHEREOF, the PRINCIPAL and the SURETY cause this BOND to be signed, sealed and delivered this _____ day of _____, 20____.

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

(INDIVIDUAL PRINCIPAL)

_____(Seal)
(Signature of Individual)

Witness:

_____

Trading and Doing Business as:

_____

(PARTNERSHIP PRINCIPAL)

_____ (Seal)
(Name of Partnership)

Witness:

_____ By: _____(Seal)
(Partner)

Witness:

_____ By: _____(Seal)
(Partner)

Witness:

_____ By: _____(Seal)
(Partner)

Witness:

_____ By: _____(Seal)
(Partner)

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(CORPORATION PRINCIPAL)

Attest:

_____
(Secretary)

_____
(Name of Corporation)

By: _____
(President/Vice President)

(CORPORATE SEAL)

or (if appropriate)

_____
(Name of Corporation)

By: _____
Authorized Representative

*Attach appropriate proof, dated as of the same date as the Bond, evidencing authority to execute in behalf of the corporation.

Signed _____

_____
(Title)

Subscribed and sworn to before me on

this ___ day of _____, 20 ___

_____

_____
(Title)

My commission expires:

_____

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(CORPORATION SURETY)

_____
(Name of Corporation)

By: _____
** (Attorney-in-fact)

Witness:

_____

(Corporate Seal)

**Attach an appropriate power of attorney, valid and in effect as of the date of this affidavit, evidencing the authority of the Attorney-In-Fact to act in behalf of the corporation.

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PAYMENT BOND

Know All Men by These Presents:

That We, _____ hereinafter called the PRINCIPAL, and _____
(CONTRACTOR)
_____ hereinafter called the SURETY, a corporation organized and
(SURETY)
existing under the laws of the _____ of _____ are held and firmly bound unto _____, hereinafter called OBLIGEE, as hereinafter
(OBLIGEE)
set forth, in the full and just sum of _____ Dollars ($_____), lawful money of the United States of America, for the payment of which we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents:

Witnesseth That:

WHEREAS, the PRINCIPAL heretofore submitted to the OBLIGEE a certain PROPOSAL, dated _____, 20 ____ to perform the WORK for the OBLIGEE, in connection with the _____ as set forth in the CONTRACT DOCUMENTS;

WHEREAS, the OBLIGEE is a "contracting body" under provisions of the Act of the General Assembly of the Commonwealth of Pennsylvania, approved by the Governor on December 20, 1967, known as and cited as the "Public Works Contractors" Bond Law of 1967", P L 869 (the Act"): and

WHEREAS, the Act, in section 3(a), requires that, before an award shall be made to the PRINCIPAL by the OBLIGEE in accordance with the PROPOSAL, the PRINCIPAL shall furnish this BOND to the OBLIGEE, with this BOND to become binding upon the award of a CONTRACT to the PRINCIPAL by the OBLIGEE in accordance with the PROPOSAL: and

WHEREAS, it also is a condition of the CONTRACT DOCUMENTS that this BOND shall be furnished by the PRINCIPAL to the OBLIGEE; and

WHEREAS, under the CONTRACTOR DOCUMENTS, it is provided, inter alia, that if the PRINCIPAL shall furnish this BOND to the OBLIGEE, and if the OBLIGEE shall make an award to the PRINCIPAL in accordance with the PROPOSAL then the PRINCIPAL and the OBLIGEE shall enter into a CONTRACT with respect to performance of the WORK, the form of which CONTRACT is set forth in the CONTRACT DOCUMENTS.

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NOW, THEREFORE, the terms and conditions of this BOND are and shall be that if the PRINCIPAL and any SUBCONTRACTOR of the PRINCIPAL to whom any portion of the WORK shall be subcontracted, and if all assignees of the PRINCIPAL and of any such SUBCONTRACTOR, promptly shall pay or shall cause to be paid, in full all money which may be due any claimant supplying labor or materials in the prosecution and performance of the WORK in accordance with the CONTRACT DOCUMENTS, including any amendment, extension or addition to the CONTRACT DOCUMENTS, for material furnished or labor supplied or labor performed, then this BOND shall be void; otherwise, this BOND shall be and shall remain in force and effect.

This BOND, as provided by the Act, shall be solely for the protection of claimants supplying labor or materials to the PRINCIPAL or to any SUBCONTRACTOR of the PRINCIPAL in the prosecution of the WORK covered by the CONTRACT DOCUMENTS, including any amendment, extension or addition thereto. The term "claimant", where used herein and as required by the Act, shall mean any individual, firm, partnership, association or corporation. The phrase "labor or materials", when used herein and as required by the Act, shall include public utility services and reasonable rentals of equipment, but only for periods when he equipment rented is actually used at the site of the WORK covered by the CONTRACT. As required by the Act, the provisions of this BOND shall be applicable whether or not the material furnished or labor performed enters into and becomes a component part of the public building, public work or public improvement contemplated by the CONTRACT DOCUMENTS.

As provided and required by the Act, the PRINCIPAL and the SURETY agree that any claimant, who has performed labor or furnished material in the prosecution of the WORK in accordance with the CONTRACT DOCUMENTS, including any amendment, extension or addition to the CONTRACT DOCUMENTS, and who has not been paid therefore, in full, before the expiration of ninety (90) days after the last day on which such claimant performed the last of such labor or furnished the last of such materials for which payment is claimed, may institute an action upon this BOND, in the name of the claimant, in assumpsit, to recover any amount due the claimant for such labor or material, and may prosecute such action to final judgment and may have execution upon the judgment; provided, however, that:

(a) Any claimant who has a direct contractual relationship with any SUBCONTRACTOR of the PRINCIPAL, but has no contractual relationship, express or implied, with the PRINCIPAL, may institute an action upon this BOND only if such claimant first shall have given written notice, served in the manner provided in the Act, to the PRINCIPAL, within ninety (90) days from the date upon which such claimant performed in the last of the labor or furnished the last of the materials for which payment is claimed, stating, with substantial accuracy, the amount claimed and the name of the person for whom the WORK was performed or to whom the material was furnished; and

(b) No action upon this BOND shall be commenced after the expiration of one (1) year from the day upon which the last of the labor was performed or material was supplied, for the payment of which such action is instituted by the claimant; and

(c) Every action upon this BOND shall be instituted either in the appropriate court of the County where the WORK is to be performed or of such other County as Pennsylvania statutes shall provide, or in the United States District Court for the district in which the PROJECT, to which the CONTRACT relates, is situated, and not elsewhere.

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This BOND is executed and delivered under and subject to the Act, to which reference hereby is made.

The PRINCIPAL and the SURETY agree that any alterations, changes and/or additions to the CONTRACT DOCUMENTS, and/or any alterations, changes and/or additions to the WORK to be performed in accordance with the CONTRACT DOCUMENTS, and/or any alterations, changes and/or additions to the CONTRACT, and/or any given by the OBLIGEE of any extensions of time for the performance of the WORK in accordance with the CONTRACT DOCUMENTS, and/or any act of forbearance of either the PRINCIPAL or the OBLIGEE toward the other with respect to the CONTRACT DOCUMENTS, and/or the reduction of any percentage to be retained by the OBLIGEE as permitted by the CONTRACT DOCUMENTS, shall not release, in any manner whatsoever, the PRINCIPAL and the SURETY, or either of them, or their heirs, executors, administrators, successors and assigns, from liability and obligations under this BOND; and the SURETY for value received, does waive notice of any such alterations, changes, additions, extensions of time, acts of forbearance and/or reduction of retained percentage.

If the PRINCIPAL is a foreign corporation (incorporated under the laws other than those of the Commonwealth of Pennsylvania) then further terms and conditions of this BOND are and shall be that the PRINCIPAL or the SURETY shall not be discharged from liability on this BOND, nor this BOND surrendered until such PRINCIPAL files with the OBLIGEE a certificate from the Pennsylvania Department of Revenue evidencing the payment in full of all bonus taxes, penalties and interest, and a certificate from the Bureau of Employment and Unemployment Compensation of the Pennsylvania Department of Labor and Industry, evidencing the payment of all unemployment compensation, contributions, penalties and interest due the Commonwealth from said PRINCIPAL or any foreign corporation,

SUBCONTRACTOR thereunder or for which liability has accrued but the time for payment has not arrived, all in accordance with provisions of the Act of June 10, 1947, P.L 493, of the Commonwealth of Pennsylvania.

In Witness Whereof, the PRINCIPAL and the SURETY cause this BOND to be signed, sealed and delivered this _____ day of _____, 20 __.

(INDIVIDUAL PRINCIPAL)

_____(Seal)
(Signature of Individual)

Witness:

_____

Trading and Doing Business as:

_____

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

(PARTNERSHIP PRINCIPAL)

_____ (Seal)
(Name of Partnership)

Witness:

_____ By: _____(Seal)
(Partner)

Witness:

_____ By: _____(Seal)
(Partner)

Witness:

_____ By: _____(Seal)
(Partner)

Witness:

_____ By: _____(Seal)
(Partner)

(CORPORATION PRINCIPAL)

Attest:

_____
(Secretary)

_____
(Name of Corporation)

By: _____
(President/Vice President)

(CORPORATE SEAL)

or (if appropriate)

_____
(Name of Corporation)

By: _____
Authorized Representative

*Attach appropriate proof, dated as of the same date as the Bond, evidencing authority to execute in behalf of the corporation.

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

Signed _____

_____
(Title)

Subscribed and sworn to before me on

this ___ day of _____, 20 ___

_____

_____
(Title)

My commission expires:

_____

(CORPORATION SURETY)

_____
(Name of Corporation)

By: _____
** (Attorney-in-fact

Witness:

_____

(Corporate Seal)

**Attach an appropriate power of attorney, valid and in effect as of the date of this affidavit, evidencing the authority of the Attorney-In-Fact to act in behalf of the corporation.

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MAINTENANCE BOND

Know All Men by These Presents, that we,_____
(CONTRACTOR)

hereinafter called the PRINCIPAL, and _____
(SURETY)
hereinafter called the SURETY, a corporation organized and existing under laws of the

_____ of _____, are held and

firmly bound unto _____, hereinafter called the OBLIGEE, as
(OWNER)
hereinafter set forth, in the full and just sum of _____

Dollars ($_____), lawful money of the United States of America, for the payment of which we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents,

WITNESSETH THAT:

Whereas, The PRINCIPAL heretofore submitted to the OBLIGEE a certain

PROPOSAL, dated _____, 20___to perform the WORK for the

OBLIGEE, in connection with the construction of _____

_____
as set forth in the CONTRACT DOCUNEINTS as prepared by the CITY OF READING.

Now, Therefore, the condition of this BOND shall be such that: If the PRINCIPAL shall remedy, without cost to the OBLIGEE, all defects which may develop during the period of one (1) year from the date of completion by the PRINCIPAL and final acceptance of the OBLIGEE of the WORK performed in accordance with the CONTRACT DOCUMENTS, which defects, in the sole judgment of the OBLIGEE, shall be caused by or shall result from defective or inferior materials or workmanship, and if the PRINCIPAL shall satisfy all claims and demands arising from or related to such defects or growing out of such defects. and if the PRINCIPAL shall indemnify completely and shall save harmless the OBLIGEE from any and all costs and damages which the OBLIGEE may sustain or suffer by reason of the failure so to do; and if the PRINCIPAL shall reimburse completely and shall pay to the OBLIGEE any and all costs and expenses which the OBLIGEE may incur by reason of any such default or failure of the PRIINCIPAL, then this BOND shall be void; otherwise, this BOND shall be and shall remain in full force and effect.

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The PRINCIPAL and the SURETY agree that any alterations, changes and/or additions to the CONTRACT DOCUMENTS, and/or any alterations, changes and/or additions to the WORK to be performed in accordance with the CONTRACT DOCUMENTS, and/or any alterations, changes and/or additions to the CONTRACT, and/or any giving by the OBLIGEE of any extensions of time for the performance of the WORK in accordance with the CONTRACT DOCUMENTS, and/or any act of forbearance of either the PRINCIPAL or the OBLIGEE toward the other with respect to the CONTRACT DOCUI\IENTS, and/or the reduction of any percentage to be retained by the OBLIGEE as permitted by the CONTRACT DOCUMENTS, shall not release, in any manner whatsoever, the PRINCIPAL and the SURETY, or either of them, or their heirs, executors, administrators, successors and assigns from liability and obligations under this BOND; and the SURETY for value received, does waive notice of any such alterations, changes, additions, extensions of time, acts of forbearance and/or reduction of retained percentage.

In Witness Whereof, the PRINCIPAL and the SURETY cause this BOND to be signed, sealed and delivered this _____day of _____, 20____.

(INDIVIDUAL PRINCIPAL)

_____(Seal)
(Signature of Individual)

Witness:

_____

Trading and Doing Business as:

_____

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

(PARTNERSHIP PRINCIPAL)

_____ (Seal)
(Name of Partnership)

Witness:

_____ By: _____(Seal)
(Partner)

Witness:

_____ By: _____(Seal)
(Partner)

Witness:

_____ By: _____(Seal)
(Partner)

Witness:

_____ By: _____(Seal)
(Partner)

(CORPORATION PRINCIPAL)

Attest:

_____
(Secretary)

_____
(Name of Corporation)

By: _____
(President/Vice President)

(CORPORATE SEAL)

or (if appropriate)

_____
(Name of Corporation)

By: _____
Authorized Representative

*Attach appropriate proof, dated as of the same date as the Bond, evidencing authority to execute in behalf of the corporation.

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

Signed _____

_____
(Title)

Subscribed and sworn to before me on

this ___ day of _____, 20 ___

_____

_____
(Title)

My commission expires:

_____

(CORPORATION SURETY)

_____
(Name of Corporation)

By: _____
** (Attorney-in-fact)

Witness:

_____

(Corporate Seal)

**Attach an appropriate power of attorney, valid and in effect as of the date of this affidavit, evidencing the authority of the Attorney-In-Fact to act in behalf of the corporation.

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

STATEMENT ACCEPTING PROVISIONS OF WORKERS' COMPENSATION ACT

STATE OF _____

ss.

COUNTY OF _____

The undersigned contractor has accepted the provisions of the Workers' Compensation Act of Pennsylvania, with all supplements, and has insured liability thereunder in accordance with the terms thereof with the insurance company whose signature is attached hereto.

For Individual

_____(SEAL)

For Corporation

_____
(Name of Corporation)

By:_____
(Official Title)

Attest:_____
(Secretary or Asst. Secretary)

For Partnership

_____
(Name of Partnership)

By:_____(SEAL)

_____(SEAL)
(Partners)

_____
(Name of Insurance Company)

By:_____
Attorney-in-Fact

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

STIPULATION AGAINST LIENS

WHEREAS, _____, hereinafter called the CONTRACTOR, has entered into a CONTRACT, dated _____, 20___, with _____ hereinafter called the CITY, to provide materials and perform labor necessary for the manufacture and furnishing of the: as set forth in the CONTRACT DOCUMENTS as prepared by the City of Reading.

NOW, THEREFORE, it is hereby stipulated and agreed by and between the said parties, as part of the said CONTRACT, and for the consideration therein set forth, that neither the undersigned CONTRACTOR, any SUBCONTRACTOR or material man, nor any other person furnishing labor or materials to the said CONTRACTOR under this CONTRACT shall file a lien, commonly called a mechanic's lien, for WORK done or materials furnished for the above manufacture.

This stipulation is made and shall be filed with the Berks County Prothonotary within ten (10) days after execution, in accordance with the requirements of Section 1402 of the Mechanics Lien Law of 1963 of the Commonwealth of Pennsylvania in such case provided.

IN WITNESS WHEREOF, the parties hereto have caused the signature of their proper officers to be affixed thereto on this _____ day of _____, 20___.

(SEAL)

_____ BY: _____

(CITY OF READING)

TITLE: _____

ATTEST:

BY: _____

TITLE: _____

(SEAL)

_____ BY: _____

(CONTRACTOR)

TITLE: _____

ATTEST:

BY: _____

TITLE: _____

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INDEMNITY AGREEMENT & HOLD HARMLESS

KNOW ALL MEN BY THESE PRESENTS:

WHEREAS, the undersigned has entered into a contract with the CITY OF READING, dated _____, 20 __, providing for the
_____
_____
_____
City of Reading, Pennsylvania.

NOW, THEREFORE, in consideration of the award of said contract to the undersigned, _____, as well as in further consideration of the sum of ONE DOLLAR ($1.00) in hand paid to the said _____by the City of Reading, receipt whereof is hereby acknowledged, the said _____ agrees to indemnify and save harmless the CITY OF READING, its officers, agents, servants, and employees against any and all loss, damage, costs and expenses which the said CITY may hereafter suffer, incur, be put to or pay by reason of any bodily injury (including death) or damage to property arising out of any act or omission in performance of the work undertaken under the aforesaid contract.

EXECUTED this _____ day of _____, 20__.

By: _____

Title: _____

ATTEST:

_____

_____

(Title)

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

NOTICE TO PROCEED

TO:

Project_____

Contract No._____

Amount of Contract_____

You are hereby notified to commence work on the referenced contract on or before _____, 20___, and shall fully complete all of the work of said contract within 100 consecutive calendar days thereafter. Your completion date is therefore _____, 20____.

The contract provides for an assessment of the sum of $_____
as liquidated damages for each consecutive calendar day after the above established contract completion date that the work remains incomplete.

Dated this _____day of _____, 20___.

By_____

Title_____

ACCEPTANCE OF NOTICE

Receipt of foregoing Notice to Proceed is hereby acknowledged

By _____

this _____day of _____, 20_____.

By _____

Title _____

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GENERAL PROVISIONS

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GENERAL PROVISIONS

G.1 SUB-HEADINGS. The paragraph headings are inserted in these provisions and the following specifications for convenience only and shall not be considered as interpreting or limiting the application of paragraphs.

G.2 DEFINITIONS. The following terms and expressions used in this contract and specifications shall be understood as follows:

The expression "The City" shall mean the City of Reading, Pennsylvania, the party of the first part to this contract.

The word "Engineer" shall mean the Engineer, Architect, or other official in direct charge of the work for the City or his authorized representative as designated by the applicable Director.

The word "Inspector" shall mean an inspector of the City assigned to the inspection of materials, structures and workmanship under this contract.

The word "Contractor" shall mean the party of the second part to this contract, whether a corporation, partnership, or individual.

The word "Specifications" shall mean the specifications describing the work, the drawings, and the general provisions.

The word "Drawings/Plans" shall mean the general drawings, plans, maps, diagrams or illustrations accompanying these specifications, and such supplementary drawings as may be furnished from time to time.

The term "Materials" as used herein includes, in addition, to materials incorporated in the project used or to be used in the operation thereof, equipment and other materials used and/or consumed in the performance of the work.

Wherever in the specifications the words "to be," "to be done," "if," "as," "directed," "required," "permitted," "ordered," "instructed," "designated," "considered necessary," or words of like import are used, it shall be understood that the direction, requirement, permission, order, instruction, designation or decision of the Engineer is intended, and similarly the words "approved," "acceptable," "satisfactory," or words of like import, shall mean approved by, acceptable or satisfactory to, the applicable Director or the Engineer, unless the context show that another meaning is plainly intended.

G.3 SPECIFICATIONS AND DRAWINGS. The specifications and drawings are intended to cover all of the work that is known to be required to effect a complete installation. They are intended to be mutually explanatory of each other, but should any discrepancy or inconsistency appear or any misunderstanding arise as to the import of anything contained in either the specifications or the drawings, the interpretation of the doubtful portions will be made by the Engineer, whose decision shall, in all cases, be final and binding on the Contractor.

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Any materials or workmanship obviously necessary to satisfactory completion shall be furnished and installed whether or not specifically shown or mentioned. Any corrections of errors or omissions in the specifications or drawings, or both, may be made by the Engineer when such correction is necessary for the proper fulfillment of their intention as determined by him/her. Figures shall have preference over scale in reading dimensions. Copies of the specifications and drawings shall be kept constantly at the work. Any supplementary or detail drawings which may be made by the Engineer subsequent to the date of this contract, relating to the work herein contemplated, as showing more particularly the details of the work to be done, or specifications and the drawings furnished by the Contractor and approved by the Engineer, are, and are to be held to be, controlling parts of this contract insofar as they do not conflict with other provisions of the contract.

If the Contractor, in the course of the work, finds any discrepancy between the plans and the physical conditions of the locality, or any errors or omissions in the plans or in the layout as given by the points and instructions furnished by the Engineer, it shall be his duty to inform the Engineer, in writing, and the Engineer shall promptly verify the same. Any work done after such discovery, until authorized, will be done at the Contractor's risk.

G.4 ENGINEER TO DECIDE. All work under this contract shall be done in a manner acceptable to the Engineer, who shall determine the amount, quality, acceptability and fitness of the several kinds of work and material which are to be paid for hereunder, and shall decide all questions which may arise as to measurements of quantities and the fulfillment of the conditions of this contract on the part of the Contractor.

G.5 WORK TO BE DONE IN ACCORDANCE WITH SPECIFICATIONS AND DRAWINGS. The work at all stages of its completion must conform with the specifications and drawings and with the lines and grades and other instructions of the Engineer, as given from time to time during the progress of the work. In no case will any work in excess of the requirements of the drawings as interpreted by the Engineer be paid for unless authorized in writing by the Engineer.

G.6 RIGHT TO MAKE CHANGES IS RESERVED. The City reserves the right to make alterations in the location, lines, grade, plan, form dimensions, numbers or materials of the work herein contemplated, either before or after the commencement of construction. If such alterations diminish the amount of work to be done, they shall not form the basis for a claim for damage or for loss of anticipated profits from the work which may be dispensed with; if they increase the amount of work, such increase shall be paid for according to the quantity of work actually done and at prices stipulated for such work under this contract. All work actually done under a unit price (where applicable) contract, whether more or less than the quantity estimated or specified, shall be paid for by the determined units, on the basis of the bid per unit in the proposal.

G.7 EXTENSION OF TIME. If the Contractor is delayed at any time in the progress of the work by any act or neglect of the City, or by City employees, or by any other contractor employed by the City, or by changes ordered in the work, or by strikes, lockouts, fire, unusual delay in transportation, unavoidable casualties or any causes beyond the Contractor's control, or by any cause which the Engineer shall decide to justify the delay, then the time of completion shall be extended for such reasonable time as the Engineer may decide subject to the approval of the applicable Director.

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No such extension shall be made for delay due to rejection of defective materials or workmanship or for any delay occurring more than seven (7) days before claim therefore is made in writing to the Engineer. In the case of a continuing cause of delay, only one claim is necessary.

If no schedule or agreement stating dates upon which drawings shall be furnished is made, then no claim for delay shall be allowed because of any delay in the furnishing of drawings to the Contractor.

G.8 ADEQUATE PLANT AND METHODS. The Contractor shall furnish such construction plant and use such methods and appliances as will secure a satisfactory quality of work and a rate of progress which will insure the completion of the work within the time specified. Before starting the installation of the construction plant, the Contractor shall submit to the Engineer, for approval, a plan showing the general arrangement of the plant to be installed and the proposed facilities for storage of materials and equipment. If at any time the plant or any portion of it shall appear to the Engineer to be, or likely to become, inadequate, incomplete, faulty or unsafe, the Contractor shall promptly obey the orders of the Engineer to supplement or to remove or replace the same; but the failure of the Engineer to issue such orders shall not relieve the Contractor of his responsibility for the efficiency, adequacy and safe operation of the plant.

He shall cover and protect his work from damage, and all injury to the same, before completion of the contract.

He shall be financially responsible for all damage to the party of the first part or its property, to other contractors, to the neighboring premises, or to any private or personal property, for any cause whatsoever, during the period of the contract.

G.9 WORKERS. The Contractor shall employ only competent and skillful employees to do the work, and whenever the Engineer shall notify the Contractor, in writing, that any person on the work is, in his/her opinion, incompetent, unfaithful or disorderly, uses threatening or abusive language to any official having supervision of the work, or is in any other way unsatisfactory, such person shall be discharged from the work and shall not again be employed on it except with the consent of the Engineer.

Neither party shall employ or hire any employee of the other party without the latter's consent.

G.10 WAGES. All employees directly employed on this work shall be paid wages which shall in no event be less than the minimum hourly wage rates for skilled, semi-skilled, and unskilled labor prescribed by the Commonwealth of PA Prevailing Wage Act, P.L. 987 as may be amended, if applicable.

G.11 PENALTY FOR FAILURE TO LIVE UP TO MINIMUM WAGE CONTRACT. A penalty shall be exacted from the Contractor in an amount equal to twice the difference between the minimum wage contained in the prescribed wage rates, and the wage actually paid to each laborer or mechanic for each day during which he has been employed at a wage less than that prescribed.

G.12 INSPECTORS TO REPORT VIOLATIONS. Every person assigned as an Inspector of the work to be performed under this contract, in order to aid in enforcing the fulfillment of the minimum wage requirements thereof, shall, upon observation or investigation, report to the applicable Director, all violations of minimum wage stipulations, together with the name of each laborer or mechanic who has been paid a wage less than that prescribed, and the day or days of such violation

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G.13 PENALTIES TO BE WITHHELD FROM MONEYS DUE THE CONTRACTOR.
All minimum wage violation penalties shall be withheld and deducted for the use of the City from any moneys due the Contractor by the City; provided, that if the Contractor subsequently pays to all laborers and mechanics the balance of the amounts stipulated as minimum wages, the City shall pay to the Contractor the amounts so withheld.

G.14 CONTRACTOR'S RESPONSIBILITY FOR EMPLOYEES. The Contractor hereby assumes all responsibility for himself/herself, his/her agents and employees growing out of connection with the execution of the work called for by this contract, for the violation of, City ordinances and the laws governing contract work in the Commonwealth of Pennsylvania. The Contractor further agrees to hold the City of Reading harmless from all responsibility for employees on this work under the Workmen's Compensation Act of the Commonwealth of Pennsylvania, and to carry insurance on his/her employees, as provided thereby.

G.15 CONTRACTOR REPRESENTED ON THE WORK. The Contractor shall give personal attention constantly to the faithful prosecution of the work and shall be present, either in person or by a competent superintendent, on the site of the work, continuously during its progress. Such representative shall have authority to receive and to act without delay upon all instructions of the Engineer or assistants in the prosecution of the work in conformity with the contract.

Insofar as it is practicable, all orders given by the Engineer to the Contractor shall be in writing. In those cases where orders are given orally they shall be confirmed in writing. Orders or directions, written or oral, from the Engineer, delivered to the Contractor's office shall be considered as delivered to the Contractor.

G.16 REPRESENTATIVE MUST BE PRESENT. In case the Engineer or a representative may at any time have occasion to give directions regarding the work for the reason that the same is not, in the Engineer's opinion, being carried out in accordance with the provisions of this contract, and should there be no responsible representative of the Contractor on the ground empowered to receive such instructions, the Engineer or a representative shall order that particular portion of the work to be stopped until such representative of the Contractor appears and receives instructions. It is hereby agreed that suspensions of the work for such cause shall not entitle the Contractor to claims for damage of any kind, nor to an extension of the time in which to complete the work to be done under this contract.

G.17 LEGAL ADDRESS OF CONTRACTOR. The address given in the bid or proposal upon which this contract is based is hereby designated as the legal address where all notices, letters and other communications to the Contractor shall be mailed or delivered prior to the beginning of the work provided for in this contract. The delivery at the above-named place, or depositing in a post-paid wrapper directed to the above place, in any post office box regularly maintained by the post office, of any notice, letter or other communication to the Contractor, shall be deemed sufficient service thereof upon the Contractor and the date of said service shall be the date of such delivery or mailing.

G.18 CHANGE IN ADDRESS. Such address may be changed at any time by an instrument in writing executed and acknowledged by the Contractor and delivered to the City. Nothing herein contained shall be deemed to preclude or render inoperative the service of any notice, letter or other communication upon the Contractor personally.

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G.19 LAWS, ORDINANCES AND REGULATIONS. The Contractor shall be fully informed as to all laws, ordinances and regulations in any manner affecting those engaged or employed in the work, or the materials used in the work, or in any way affecting the conduct of the work, and of all orders and decrees of bodies or tribunals having any jurisdiction over the same, if any discrepancy or inconsistency shall be discovered in this contract, specifications or drawings, in relation to any such law, ordinance, population, order or decree, the contractor shall immediately report the same in writing to the Engineer. At all times the Contractor shall observe and comply with all laws, ordinances, regulations, orders and decrees which may be in effect during the progress of this contract; and shall indemnify and save harmless the City and its officers and employees against any claim or liability arising from the violation of any legal requirement in the prosecution of this contract.

G.20 INDEMNIFICATION OF CITY. In case any action at law, proceeding in eminent domain, or suit in equity may or shall be brought against the party of the first part, or any of its offices or agents, for or on account of the failure, omission or neglect of the Contractor or the subcontractors, his/her or their employees or agents, to do and perform any of the covenants acts, matters, or things by this contract undertaken to be done or performed by the Contractor or subcontractors, his/her or their employees or agents, or for any injury or damage caused by the negligence of the Contractor or subcontractors, his/her or their employees or agents, or for damage or injury for which the Contractor undertakes responsibility under the provisions of this contract, the Contractor shall immediately assume and take charge of the defense to such actions, proceedings or suits in like manner and to all intents and purposes, as if said actions, proceedings or suits had been brought directly against the Contractor; and the Contractor shall also indemnify and save harmless the party of the first part, its officers and agents, of and from all loss, cost or damage whatever arising out of such actions, proceedings or suits as may or shall be brought as aforesaid.

G.21 SUITS AND CLAIMS. The Contractor agrees to indemnify and save harmless the City of Reading, the applicable Director, the Engineer, and their assistants, from all suits or actions of every name and description, either in law or in equity, including proceedings in eminent domain for the recovery of consequential damages, or for or on account of use of patented appliance, brought against them or either of them, or for any damage or injuries received or sustained by any party or parties, person or persons, natural or artificial, either in the performance or as a result of the work under this agreement, regardless of whether such suits, actions or proceedings brought are based or grounded upon negligence of the Contractor, the subcontractors, or his/her or their agents, servants or employees. The Contractor further agrees that all or as much of the monies due under this agreement as shall be or may be considered necessary by the applicable Director, shall or may be retained, without any liability of the City to the Contractor, for interest thereon because of the retention thereof, until all such suits, proceedings or claims have been settled or terminated, and satisfactory evidence to that effect furnished to the applicable Director, provided however, that no such monies shall be retained by the City after six (6) years following the completion and acceptance of the work under the contract, excepting for or on account of claims filed or suits or proceedings begun before the expiration of the applicable statute of limitations.

G.22 RESPONSIBILITY FOR INJURY. The Contractor shall assume all responsibility for loss, damage or injury to persons or property arising out of the nature of the work, from the actions of the elements, or from any unforeseen or unusual difficulties over which the City has no control, in addition to and without limiting the Contractor's liability under the other provisions of the contract.

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G.23 CONTRACTOR'S CLAIMS FOR DAMAGE. If the Contractor claims compensation for any damage alleged to have been sustained by reason of any act or omission on the part of the City or any of its agents, he shall, within one (1) week after the sustaining of such damage, make a written statement to the Engineer of the nature of the damage sustained, and shall, on or before the fifteenth (15th) day of the month succeeding that in which any such damage shall have been sustained, file with the Engineer an itemized statement of the details and amounts of such damage, and unless such statement shall be made as so required, the claim for compensation shall be forfeited and invalid, and the Contractor shall not be entitled to payment on account of any such damage.

G.24 LINES AND GRADES. All lines and grades will be given by the Engineer, but the Contractor shall provide such material and give such assistance therefore as may be required by the Engineer, and the marks so given shall be carefully preserved. The Contractor shall keep the Engineer informed, a reasonable time in advance, of the time and places a which he/she intends to work, in order that lines and grades may be furnished and necessary measurements for record and payment made with the minimum inconvenience to the Engineer or delay to the Contractor. No claim for extra payment will be allowed for the cost to the Contractor of any material, work or delay occasioned by giving lines and grades, or making necessary measurements or inspections, as all such cost shall be considered to have been included in the price bid for the work.

G.25 INSPECTION. The Engineer will appoint such person or persons as may be deemed necessary to inspect properly the materials furnished and the work done under this contract, and to see that the same correspond strictly with these specifications. Such materials and workmanship shall always be subject to the approval of the Engineer, but no inspection, approval or acceptance of any part of the work herein contracted for or of the materials used therein, nor any payment on account thereof, shall prevent the rejection of said work or materials at any time thereafter during the existence of this contract, should said work or materials be found to be defective, or not in accordance with the requirements of the contract.

The Contractor shall permit, or secure permission for the Engineer or a duly authorized Inspector or representative to enter any manufactory, shop or other place where any material for, or part of the work is being prepared, manufactured or constructed, at any time when such work is in progress. The Contractor shall furnish and prepare, or cause to be furnished or prepared, without charge, all such assistance, appliances, samples of materials and test specimens as may be ordered by the Engineer or such Inspector or representative for the purpose of making official tests and investigations. The Engineer shall be notified of the time and place of preparation, manufacture or construction of any material for, or part of the work which he/she may wish to inspect before delivery at the site of the work. Such notification shall be give a sufficient time in advance of the beginning of the work on such material or part to allow arrangements to be made for inspection and testing.

G.26 NIGHT WORK. No night work, except for the inspection of lighting, requiring the presence of the Engineer or Inspector will be permitted except in case of emergency, and then only with the written consent of the Engineer and to such an extent as may be judged necessary.

G.27 SUNDAY WORK. No Sunday work will be permitted, except in case of great emergency, and then only with the written consent of the Engineer, and to such extent as is absolutely necessary.

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G.28 NO WORK IN BAD WEATHER. No work shall be done under this contract when, in the opinion of the Engineer, the weather is unsuitable for good and careful work to be performed. No concrete work shall be done on days on which the temperature falls below 25 degrees Fahrenheit. Should the severity of the weather continue such that the work cannot be prosecuted successfully, the Contractor, upon order of the Engineer, shall cease all such work until directed to resume the same. In the latter case, suitable extension of time shall be allowed to compensate for time actually lost as provided for in Article G.7.

G.29. NOT TO SUBLET OR ASSIGN. The Contractor shall give personal attention constantly to the faithful prosecution of the work and shall not assign, transfer, convey, sublet or otherwise dispose of this contract, or his/her title, right or interest in or to the same or any part thereof, nor shall the Contractor assign, by power of attorney or otherwise, any of the monies due or to become due, nor issue any order or orders or drafts on the Controller or Treasurer of the City of Reading for any monies due or to become due under this contract, unless by and with the consent of the City first duly had and obtained by resolution entered upon the minutes of said City.

G.30 RIGHT OF PROPERTY IN MATERIALS. Nothing in this contract shall be considered as vesting in the Contractor any right of property in materials used, after they shall have been attached to or incorporated in the work, nor in materials which have been estimated for partial payment, but all such materials, upon being so attached, incorporated or estimated, shall become the property of the City.

G.31 DEFECTIVE MATERIALS AND WORKMANSHIP. No materials of any kind shall be used until they have been examined and approved by the Engineer, who shall have full power to condemn any work and materials not in accordance with the specifications, and to require the Contractor to remove any work or materials so condemned. Inspections of the work shall not relieve the Contractor from any of his/her obligations to fulfill the contract as herein described, and defective work shall be made good, and unsuitable materials may be rejected, notwithstanding that such work or materials may have been previously overlooked by the Engineer and accepted or estimated for payment if the work or any part thereof shall be found defective at any time before the final acceptance of the whole work, the Contractor shall immediately make good such defect in a manner satisfactory to the Engineer, and if any material brought upon the ground for use in the work shall be condemned by the Engineer as unsuitable or not in conformity with the drawings or specifications, the Contractor shall forthwith remove such materials from the vicinity of the work. If the Contractor shall fail to remove or replace any defective or damaged materials or work after reasonable notice, the Engineer may cause such material or work to be removed or replaced, and the expense thereof shall be borne by the Contractor.

G.32 RESPONSIBILITY FOR WORK. The Contractor shall be held responsible for any or all materials or work to the full amount of all payments made thereon, and shall be required to make good, at his/her own cost, any injury or damage which said materials or work may have sustained from any source or cause whatever before its final acceptance.

G.33 CONDITIONS UNDER WHICH CITY MAY COMPLETE WORK. If the work to be done under this contract shall be neglected or abandoned, or the contract or any claim thereunder shall be assigned by the Contractor otherwise than as herein specified, or if at any time the Engineer shall be of the opinion, and shall so certify in writing to the City's representative, that the rate of progress is insufficient or that the work, or any part thereof, is unnecessarily or unreasonably delayed, or that the Contractor is violating any of the provisions of this contract or carelessly executing any portion of the work, the City may notify

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the Contractor and surety in writing to fulfill the conditions of the Contract; and should the Contractor or the surety fail to comply with said notice within ten (10) days, the City may notify the Contractor and the surety to discontinue all work, or any part thereof; and thereupon the Contractor and the surety shall discontinue said work, or said part thereof as the City may designate; and the City may thereupon, by contract or otherwise, as it may determine, complete the work or such part thereof, and charge the expenses thereof to the Contractor or the surety; and may take possession of and use therein such materials, animals, machinery, equipment, implements and tools of every description as may be found upon the work. The expense so incurred shall be deducted and paid by the City out of any monies then due or to become due the Contractor under this contract; or any part thereof; and in case such expense is less than the sum which would have been payable under this contract if the same had been completed by the Contractor, the Contractor shall be entitled to receive the difference, and in case such expense shall exceed the latter sum, the Contractor or the surety shall pay the amount of such excess to the party of the first part.

G.34 ALL PARTS OF WORK COVERED. The Contractor further agrees that the following clauses relative to the construction of the work shall apply to each and all of the separate parts of the work, as though specially mentioned under the different headings in the specifications:

Delivery of Materials - The Contractor shall be entirely responsible for delivery of all materials to the site of the work, making the arrangements therefore.

Engineer Shall Measure - No work shall be covered over or filled in until it shall have been inspected by the Engineer.

Materials Properly Stored - The materials to be used in construction shall be protected from deterioration and damage, and shall be so disposed of as not to endanger the work and in such manner that full access may be had at all times to all work under construction or completed.

Surplus Materials Removed - All parts of the work shall be kept in as neat and orderly condition as circumstances will permit and upon completion of the work, all surplus materials, earth, sand, rubbish and refuse of every kind, and all tools, machinery, equipment and other materials belonging to the Contractor shall be removed from the construction works and adjoining premises so as to leave everything in an acceptable condition, within a week after receipt of final certificate.

G.35 ESTIMATED QUANTITIES APPROXIMATE. In unit price contracts, the quantities of the various classes of work to be done and materials to be furnished under this contract, as estimated by the Engineer and listed in Specifications, attached hereto, are approximate and only for the purpose of comparing, on a uniform basis, the bids offered for the work under this contract; and neither the City nor the Council nor any member of the Council of the City of Reading is to be held responsible if any of the said estimated quantities shall be found to be not even approximately correct in the construction of the work; and the Contractor shall make no claim for damages on anticipated profits or loss of profit, because of a difference between the quantities of the various items of work actually done or materials actually furnished and the estimated quantities stated in the Specifications, or because of the entire omission of any of the quantities or items stated in the Specifications.

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G.36 EXTRA WORK. The Contractor shall do any work not herein otherwise provided for which, in the opinion of the Engineer, is necessary for the proper completion of the work, but not such work will be allowed or paid for except on a written order of the Engineer, and there shall be no claim for extra work or materials or for damage sustained except under this Article. The extra work order issued by the Engineer shall specify the basis of payment for the extra work. Any extra work or changes in the work involving changes in the plans and/or specifications shall be approved by the applicable Director, prior to the execution of the work.

G.37 MONTHLY ESTIMATES. Current payments for work done under this contract will be made as follows: on invoices submitted by the Contractor and approved by the Engineer or Architect. Ten percent (10%) of each General Contractor invoice request shall be retained by the City on this contract until it is completed up to City codes and contract specifications and approved by a City Official or person representing a City Official Architect or Engineer.

It is further agreed and understood that inclusion of any portion of the work in the monthly estimate shall not be construed as final approval or acceptance of the same.

G.38 CONTRACTOR SHALL PREPARE FOR FINAL INSPECTION. Upon the completion of the work the Contractor shall tear down and remove all temporary buildings and structures built by the Contractor, remove and thoroughly clear away all debris, forms and surplus materials and leave the site of the work in a neat and satisfactory condition, and shall notify the Engineer when the work is ready for final inspection.

G.39 WORK TO BE PROPERLY PERFORMED. It is expressly understood that acceptance of work and materials during construction will not imply final acceptance of the work, if the final inspection shall disclose faulty workmanship or materials; and all work of whatever kind that, during its progress and before it is finally accepted, may become damaged from any cause, shall be repaired in a manner satisfactory to the Engineer or, if necessary, shall be broken up and removed and replaced with good and satisfactory work by the Contractor at his own expense. All work of every description shall be the best of its respective kind; and everything not particularly specified herein shall be done and finished in the best manner, and as is usual in first-class work of the several kinds.

Failure or neglect on the part of the Engineer, or any authorized agents to condemn or reject any bad or inferior work or materials shall not be construed to imply an acceptance of such work or materials, if such bad or inferior materials or work becomes evident at any time prior to the final acceptance of the work and the release of the Contractor by the Council of the City of Reading; nor shall it be construed as barring the City of Reading at any subsequent time from the recovery for damages of such sum of money as may be needed to build a new all portions of the work in which fraud was practiced or improper materials hidden, whenever found.

G.40 ACCEPTANCE AND FINAL PAYMENT. Upon receipt of written notice that the work is ready for final inspection and acceptance, the Engineer or Architect shall promptly make such inspection, and when he/she finds the work acceptable under the contract fully performed he/she shall promptly issue a final certificate, over his/her own signature, stating that the work provided for in this contract has been completed and is accepted under the terms and conditions thereof, and the entire balance found to be due the Contractor, including the retained percentage, shall be paid to the Contractor within (30) days after the

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execution of said final certificate.

G.41 WAIVER. Neither acceptance by the City, or any of its officers or employees, nor any order, measurement or certificate by the Engineer, nor any order by the City Council for payment of money, nor any payment for, nor any extension of time, nor any possession taken by the City or its officers or employees, shall operate as a waiver of any portion of this contract or of any power herein reserved to the City, or of any right to damage herein provided; nor shall any waiver of any breach of this contract be held to be a waiver of any other or subsequent breach. All remedies provided in this contract shall be taken and construed as cumulative; that is, in addition to each and every other remedy herein provided.

G.42 ACCEPTANCE OF FINAL CERTIFICATE. The acceptance by the Contractor of payment of the final estimate shall be conclusive evidence of acceptance and approval of estimates, accounting and deductions, and of full payment by the City for all work, labor, materials and services done or furnished hereunder, and of full satisfaction, discharge, release and waiver of all claims and demand of; or on behalf of the Contractor against the City, arising out of this agreement and the execution thereof. It is hereby further agreed that the Contractor shall not be entitled to demand or receive payment except in the manner set forth in this contract; and the Contractor further agrees that the final payment of the amount due under this contract and payment of the bills rendered for work done and materials furnished in accordance with any alterations of the same, shall release the City of Reading from any and all claims and liabilities on account of the work performed and materials furnished under said contract, or any alteration thereof.

G.43 MAINTENANCE AFTER COMPLETION. The Performance Bond shall remain in force for one (1) year from the date of completion and acceptance of the work under this contract, as security against any and all damage which may result from defects of materials or workmanship which may become apparent prior to the expiration of the one-year maintenance period. During this period the Contractor shall, promptly upon notification from the Engineer, repair all breaks and failures due to defects of material or workmanship at his own expense. If the Engineer shall deem it necessary and shall so direct, such repairs shall be made within twenty-four (24) hours after service of notice. If the Contractor unnecessarily delays making repairs ordered, or if delay would cause serious loss or damage, the City may undertake to have such repairs made or defects repaired without previous notice, and the expense of such repairs shall be borne by the Contractor or the surety. The Contractor shall be responsible for any damage resulting to any person or property from any violation of the guarantee and from unnecessary delays in making repairs.

G.44 PRICES. The City agrees to pay, and the Contractor agrees to receive, the price specified in the proposal submitted, as full compensation for furnishing all the materials called for, and for all labor and use of all machinery, equipment and tools necessary for executing the work contemplated in this contract; for all royalties, for patents and patented materials, appliances and processes; also for all loss or damage arising out of the nature of the work, or from the action of the elements, or from any unforeseen reasons, obstructions or difficulties which may be encountered in the prosecution of the work, for all risks of every description connected with the work, and for all expenses incurred by or in consequence of the suspension of discontinuance of said work as herein specified, and for well and faithfully completing the work, and the whole thereof, according to the specifications and drawings and the requirements of the Engineer under them.

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G.45 NO EXTRA COMPENSATION. The Contractor further agrees not to ask, demand, sue for, or recover for any extra compensation, for any materials furnished or work done under this contract, beyond the amounts payable for the several classes of work or kinds of materials herein enumerated, which shall be actually performed and furnished at the prices therefore herein agreed upon and fixed.

G.46 CONTRACTOR TO TAKE OUT ALL PERMITS. The Contractor shall take out all necessary permits required by agencies of the City of Reading and/or all other governmental agencies; shall give all notices required by law or ordinances; shall pay all fees and charges incident to the due and lawful prosecution of the work covered by the contract, and shall comply with all laws and regulations relating to buildings and public highways. All permits shall be at his expense.

G.47 NO CLAIM FOR EXTRA WORK. No claim for extra work or material shall be allowed to the Contractor, unless before the performance of all such extra work the applicable Director shall have first authorized the same in writing, and the price or prices to be paid therefore shall first have been agreed upon in writing between the Director and the Contractor, and the same shall have been done or furnished under a written order from the Director given before the performance of such extra work or the furnishing of such extra materials. All claims for extra work or materials in any month shall be made to the Director in writing before the fifteenth (15th) day of the following month, and failing to make such claim within the time required, the right of the Contractor to extra pay for such extra work or materials shall be deemed to have been waived and forfeited.

G.48 WORK TO BE DONE TO THE SATISFACTION OF THE CITY ENGINEER. All the work under this contract shall be done to the satisfaction of the City Engineer, who shall in all cases determine the amount, quality, acceptability and fitness of the several amounts of work and materials which are to be paid for hereunder and shall decide all questions which may arise as to the measurement of quantities in the fulfillment of this contract on the part of the Contractor, and shall determine all questions respecting the true construction or meaning of the plans and specifications, and the determination and decision thereon shall be final and conclusive; and such determination and decision, in case any question shall arise, shall be a condition precedent to the right of the Contractor to receive any money hereunder.

G.49 ENGINEER TO INSPECT AND REJECT. The Engineer shall inspect the materials furnished and the work done, and see that the same strictly correspond to the specifications, and he shall at all times have free access to the works, storehouse and yard of the Contractor, and shall be privileged to take such samples therefrom as he may deem necessary; and if the work, or any material brought on the grounds for the use of the work, or selected for the same, shall be condemned by the Engineer, as unsuitable or not in conformity with the specifications, the Contractor shall forthwith remove such materials from the work.

Before issuance of the final certificate the Contractor shall furnish evidence satisfactory to the Engineer that all payrolls, materials, bills and other indebtedness connected with the work have been paid.

It is understood and agreed by the parties hereto that the final estimate of the Engineer shall be evidence of the amount of work performed by the Contractor under and by virtue of this agreement, and shall be taken as the full measure of the compensation to be received by the Contractor. The aforesaid estimate shall be based upon the contract price for the furnishing of all the different materials and labor, and the performance of all the work mentioned in this contract, including the specifications, and where there may be any ambiguity therein, the Engineer's instructions shall be considered explanatory and the decision

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shall be final.

No inspection, approval or acceptance of any of the work herein contracted for, or of the materials used herein, or any payment on account thereof shall prevent the party of the first part from objecting to the acceptance of said work or materials at any time during the existence of this contract. Neither the inspection of the applicable Director, or Division Head, or the City Engineer or any of their employees nor any order, measurement or certificate by the City Engineer nor any order by the Director for the payment of money, nor any payment for, or acceptance of, the whole or any part of the work, by the Director of the Division of Planning, nor any extension of time, nor any possession taken by the Director or his employees, shall operate as a waiver of any provision of this contract, or any power herein reserved to the party of the first part, or of any right to damage herein provided; nor shall any waiver of any breach of this contract be held to be a waiver of any other subsequent breach.

Any remedy provided in this contract shall be taken and construed as cumulative; that is, in addition to each and every other remedy herein provided; and in addition to all other suits, actions or legal proceedings the party of the first part shall be entitled to as of right.

G.50 CONTRACTOR NOT TO DISCOMMODE PRIVATE COMPANIES. The Contractor shall afford while the work is underway, the necessary facilities to any and all companies owning railway tracks, pipes, subway ducts, or other surface, sub-surface or super-surface construction on the line of the work, in the preservation of the same from injury, all without charge therefore the expense to the City.

G.51 EXAMINATIONS. At any time before or after completion of the work, should the City Engineer require it, the Contractor shall make such openings, and to such extent, through such part or parts of the work, as the City Engineer may direct, and shall restore the work so distributed to the satisfaction of the City Engineer; and should the work, in the opinion of the City Engineer, whose decision shall be final and conclusive therein, be found faulty in any respect, the whole of the expense incurred thereby shall be defrayed by the Contractor, according to and upon the prices herein set forth, but if otherwise, by the City.

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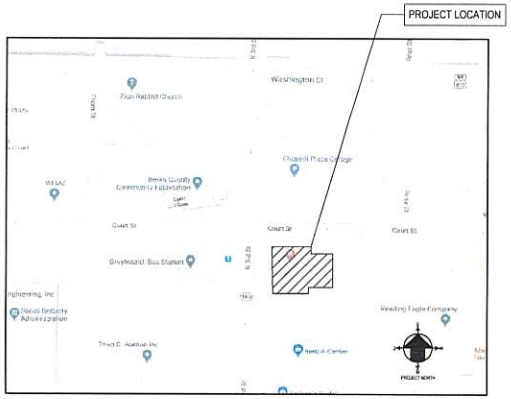
TECHNICAL SPECIFICATIONS

READING FIRE DEPARTMENT
ENGINE 3
READING PENNSYLVANIA

GENERATOR / BOILER REPLACEMENT

PROJECT NO. 81083-01
JUNE 2020



DRAWING INDEX

SHEET NO.	SHEET TITLE
GENERAL	
G-1	COVER SHEET
MECHANICAL	
M-101	BOILER ROOM FLOOR PLAN
M-102	CONTROL DIAGRAMS
M-103	SPECIFICATIONS
ELECTRICAL	
E-001	ELECTRICAL SYMBOLS LEGEND
E-002	ELECTRICAL ABBREVIATIONS AND GENERAL INFORMATION
E-003	ELECTRICAL SITE PLAN
E-011	FLOOR PLANS - ELECTRICAL DEMOLITION
E-101	FLOOR PLANS - POWER
E-501	ELECTRICAL DETAILS
E-601	ONE LINE DIAGRAM
E-602	PANEL SCHEDULES
E-603	PANEL SCHEDULES

PRELIMINARY - NOT FOR CONSTRUCTION

BUCHART HORN

ARCHITECTS
BUCHART-HORN Architects
2151 Hampton Avenue
York, PA 17402
(717) 812-1400

READING FIRE DEPARTMENT ENGINE 3, 3 rd & COURT
GENERATOR / BOILER REPLACEMENT
15 N 3 rd STREET
READING, PA
DEPARTMENT OF PUBLIC WORKS, CITY OF READING, PENNSYLVANIA
815 ELEVENTH ST
READING, PA

REVISIONS

SHEET	ISSUED DATE	DESCRIPTION

PROJECT NO: 81083-01
ISSUED DATE: 06/12/20
DRAWN BY: WCA
CHECKED BY: JJG
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SHEET TITLE:
COVER SHEET
SHEET NO: G-1

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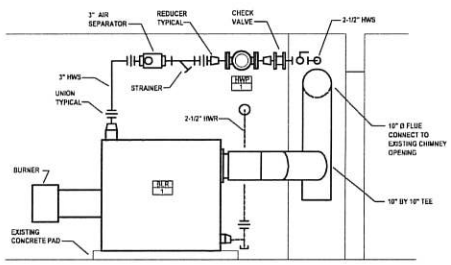
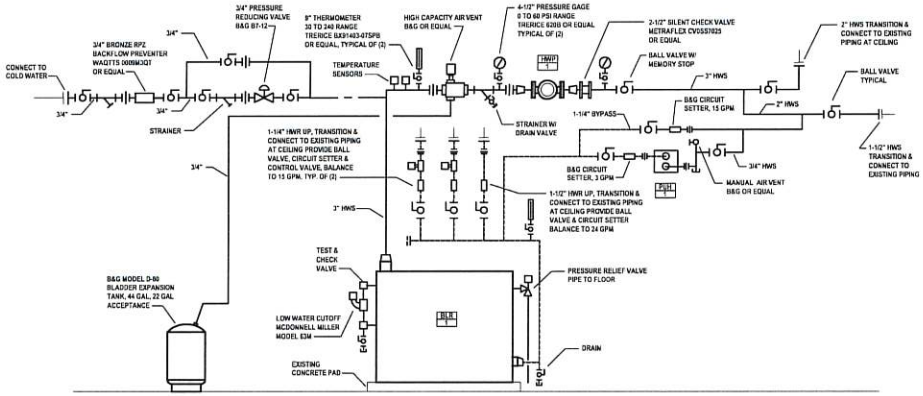


SECTION "A" BOILER ELEVATION

SCALE : 1/2" = 1' - 0"

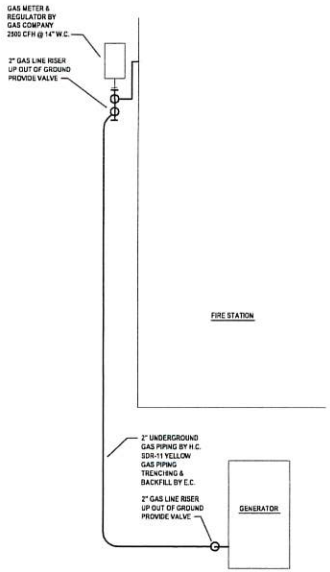


SCHEMATIC HOT WATER PIPING DIAGRAMS

NO SCALE

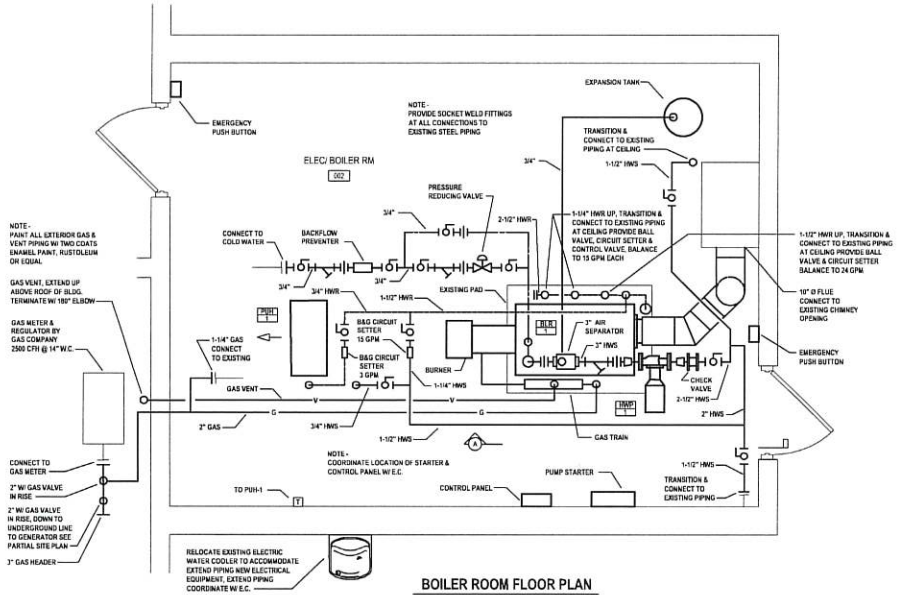
SYMBOLS LIST

HWS	HOT WATER SUPPLY PIPING
HWR	HOT WATER RETURN PIPING
CW	DOMESTIC COLD WATER PIPING
G	GAS PIPING
V	VENT PIPING
	BALL VALVE
	STRAINER
	UNION
	PIPE TURNED UP
	PIPE TURNED DOWN
H.C.	HEATING CONTRACTOR
E.C.	ELECTRICAL CONTRACTOR



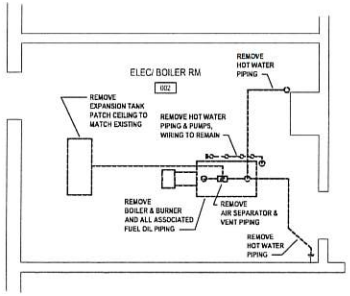
PARTIAL SITE PLAN

SCALE : 1/4" = 1' - 0"



BOILER ROOM FLOOR PLAN

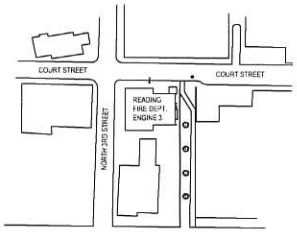
SCALE : 1/2" = 1' - 0"



BOILER ROOM DEMOLITION PLAN

SCALE : 1/4" = 1' - 0"

KEY PLAN



PRELIMINARY - NOT FOR CONSTRUCTION

BUCHART HORN

M.E.P. ENGINEERS
Architecture & Interiors
401 North Pleasant St. Street
York, PA 17401
717-852-1400

READING FIRE DEPARTMENT ENGINE 3, 3 rd & COURT
GENERATOR / BOILER REPLACEMENT
1 & 1 st STREET
READING, PA
DEPARTMENT OF PUBLIC WORKS, CITY OF READING, PENNSYLVANIA
8 WORKSHOP ST.
READING PA

REVISIONS			
MARK	ISSUED DATE	DESCRIPTION	

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DRAWN BY:	RCM
CHECKED BY:	RCM

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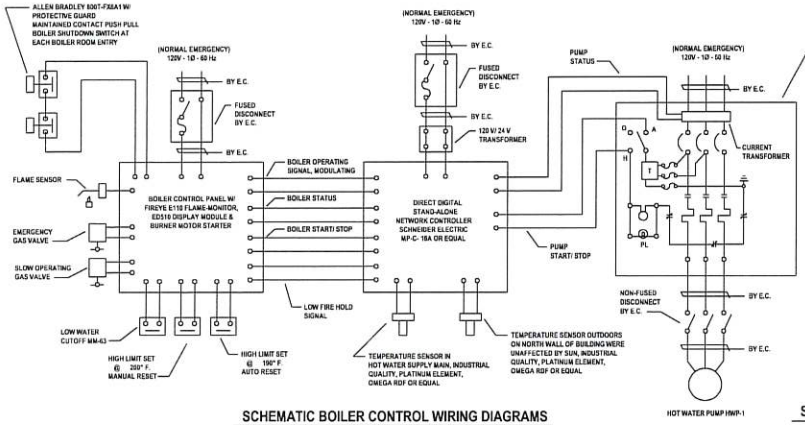
SHEET TITLE:

BOILER ROOM FLOOR PLAN

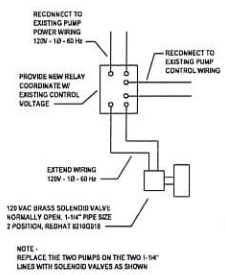
SHEET NO:

M-101



SCHEMATIC BOILER CONTROL WIRING DIAGRAMS

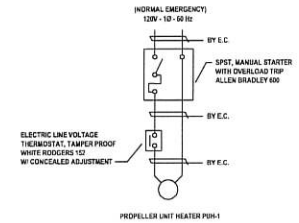
NO SCALE



NOTE -
REPLACE THE TWO PUMPS ON THE TWO 1-1/4" LINES WITH SOLENOID VALVES AS SHOWN

SCHEMATIC ZONE VALVE CONTROL WIRING DIAGRAMS

NO SCALE



SCHEMATIC UNIT HEATER CONTROL WIRING DIAGRAMS

NO SCALE

BOILER SCHEDULE

MARK	MBH INPUT	MBH OUTPUT	GAS PRESSURE	BURNER HP	POWER	BASIS OF DESIGN	MODEL
BLR-1	935	753	10" W.C. TO 14"W.C.	1/2	120 V - 1 Ø - 60 Hz	WEIL MCLAIN	780

HOT WATER PUMP SCHEDULE

MARK	GPM	OPERATING HEAD (FT.)	SHUTOFF HEAD (FT.)	MOTOR HP	POWER	BASIS OF DESIGN	MODEL
HWP-1	72	44	46	2	208 V - 3 Ø - 60 Hz	BELL & GOSSETT	60 - 2 x 2 x 7
HWP-2	72	44	46	2	208 V - 3 Ø - 60 Hz	BELL & GOSSETT	60 - 2 x 2 x 7
PROVIDE HWP-2 LOOSE IN A BOX TO OWNER FOR A SPARE							

PROPELLER UNIT HEATER SCHEDULE

MARK	MBH CAPACITY	CFM	GPM	MOTOR HP	MOTOR RPM	POWER	HEIGHT	BASIS OF DESIGN	MODEL
PUH-1	34	400	3	1/20	1050	120 V - 1 Ø - 60 Hz	11-1/2"	MODINE	HHD30

HOT WATER RESET SCHEDULE

OUTDOOR AIR TEMPERATURE	HOT WATER SUPPLY TEMPERATURE
5	180
30	160
55	140

SEQUENCE OF CONTROL

UPON ANY BOILER EMERGENCY PUSHBUTTON SWITCH BEING ACTIVATED BOILER SHALL SHUT DOWN. BOILERS SHALL NOT RESTART UNTIL SWITCH IS MANUALLY RESET.

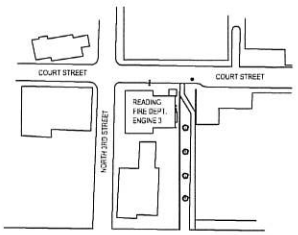
CONTROL PANEL SHALL MONITOR OUTDOOR AIR TEMPERATURE. UPON A DROP IN OUTDOOR AIR TEMPERATURE TO 55 DEGREES BOILER SYSTEM SHALL INITIATE. HOT WATER PUMP SHALL BE INDEXED TO START. CONTROL PANEL SHALL MONITOR STATUS OF PUMP. BOILER OPERATION SHALL NOT BE INITIATED UNTIL PUMP OPERATION IS CONFIRMED.

ONCE PUMP OPERATION IS CONFIRMED CONTROL PANEL SHALL SIGNAL BOILER TO START. IF HOT WATER SUPPLY TEMPERATURE IS BELOW 140 DEGREES BOILER SHALL START ON LOW FIRE AND HOLD LOW FIRE UNTIL THE HOT WATER SUPPLY TEMPERATURE REACHES 140 DEGREES.

ONCE THE BOILER SUPPLY WATER TEMPERATURE REACHES 140 DEGREES CONTROL PANEL SHALL SEND A MODULATION SIGNAL TO BOILER BOILER CONTROL PANEL TO ACHIEVE THE HOT WATER SUPPLY TEMPERATURE SHOWN IN THE HOT WATER RESET SCHEDULE.

BOILER SHALL CONTINUE TO OPERATE UNTIL THE OUTDOOR AIR TEMPERATURE RISES TO 60 DEGREES. AT 60 DEGREES THE CONTROL PANEL SHALL INDEX THE BOILER OFF. THE HOT WATER PUMP SHALL CONTINUE TO RUN FOR THREE MINUTES AFTER THE BOILER IS INDEXED OFF.

KEY PLAN



PRELIMINARY - NOT FOR CONSTRUCTION

BUCHART HORN

MEP/FP
Buchart Horn Inc. Architects
401 Penn Parkway Suite
York, PA 17402
717-854-4567

READING FIRE DEPARTMENT ENGINE 3, 3 rd & COURT
GENERATOR / BOILER REPLACEMENT
15 N 3rd STREET
READING, PA
DEPARTMENT OF PUBLIC WORKS, CITY OF READING, PENNSYLVANIA
BYERS, WASHINGTON ST.
READING PA

REVISIONS		
MARK	ISSUED DATE	DESCRIPTION

PROJECT NO: 81083-01
ISSUED DATE: 06/05/20
DRAWN BY: RCM
CHECKED BY: RCM
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SHEET TITLE:
CONTROL DIAGRAMS
SHEET NO:
M-102

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ELECTRICAL, COMMUNICATION, PROCESS CONTROL, AND ELECTRONIC SAFETY AND SECURITY SYMBOL LEGEND

LIGHTING

LIGHT FIXTURE : GENERAL
- CEILING SURFACE MOUNTED
- CEILING RECESSED
- CEILING PENDANT
- WALL MOUNTED

NIGHT LIGHT : FIXTURE WITH "NIGHT LIGHT" CONNECTED TO NORMAL OR NORMAL/EMERGENCY CIRCUIT
- CEILING SURFACE MOUNTED
- CEILING RECESSED
- CEILING PENDANT
- WALL MOUNTED

EMERGENCY : LIGHT FIXTURE CONNECTED TO NORMAL/EMERGENCY, EMERGENCY ONLY OR BATTERY INVERTER CIRCUIT
- CEILING SURFACE MOUNTED
- CEILING RECESSED
- CEILING PENDANT
- WALL MOUNTED

EMERGENCY BALLAST : LIGHT FIXTURE WITH EMERGENCY BATTERY BALLAST
- CEILING SURFACE MOUNTED
- CEILING RECESSED
- CEILING PENDANT
- WALL MOUNTED

EMERGENCY SOCKET : LIGHT FIXTURE WITH EMERGENCY ONLY SOCKET
- CEILING SURFACE MOUNTED
- CEILING RECESSED
- CEILING PENDANT
- WALL MOUNTED

FLOOD OR SPOT LIGHT : CLG, WALL

EXIT SIGN :
- ILLUMINATED FACE
- WALL MOUNTED - DIRECTIONAL ARROW AS REQUIRED
- SINGLE FACE, CEILING MOUNTED - DIRECTIONAL ARROW AS REQUIRED
- DUAL FACE, CEILING MOUNTED - DIRECTIONAL ARROWS AS REQUIRED

EMERGENCY LIGHTING UNIT :
- EMERGENCY LIGHTING UNIT - BATTERY TYPE WITH NUMBER OF HEADS AS INDICATED
- EMERGENCY LIGHTING UNIT - REMOTE HEAD WITH NUMBER OF HEADS AS INDICATED

TRACK LIGHTING:
- TRACK MOUNTED LIGHT FIXTURES - WITH FLOOD AND/OR SPOT TYPES
- FLOOD: M - MEDIUM; N - NARROW; W - WIDE SPOT; S - NORMAL
- FEED END
- HORIZONTAL/VERTICAL RUN

POWER DISTRIBUTION

SURFACE, FLUSH
- PANEL BOARD
- EQUIPMENT CABINET

CLG, FLOOR, WALL
- JUNCTION BOX
- BLANK OUTLET
- JUNCTION BOX OR BLANK OUT - ABOVE FLOOR, IN CAST BOX ON RIGID CONDUIT
- JUNCTION BOX OR BLANK OUT - ABOVE COUNTER
- CONTACTOR
- RELAY
- METER
- SURGE PROTECTION DEVICE
- ENCLOSED CIRCUIT BREAKER
- SAFETY SWITCH - NON-FUSED, 3-POLE, 30A, 600V UNO
- SAFETY SWITCH - FUSED, 3-POLE, 30A, 600V UNO
- COMBINATION STARTER / DISCONNECT - 3 PHASE
- MANUAL MOTOR STARTER (HP RATED) THE LETTERS ADJACENT TO THE SYMBOL INDICATE STARTER TYPE
  - M - TOGGLE
  - MK - KEY OPERATED
  - MB - PUSHBUTTON
  - MT - TOGGLE WITH THERMAL OVERLOADS
- TRANSFORMER - 120V AND GREATER
- TRANSFORMER - LOW VOLTAGE
- MOTOR OR EQUIPMENT
- ELECTRIC SOLENOID VALVE - BY OTHERS (H-HOT WATER, C-COLD WATER, G-GAS)
- MAST HEAD
- CONDUIT SLEEVE - QUANTITY AND SIZE AS REQUIRED
- CABLE TRAY - WALL HUNG
- CABLE TRAY - CENTER HUNG
- EMPTY CONDUIT - SEALED & CAPPED
- CIRCUIT
- HOMERUN TO PANELBOARD: PROVIDE 3 #12, #12 GRD, 3/4"C UNLESS NOTED OTHERWISE ON DRAWING, ON PANEL SCHEDULES, OR ONE LINE DIAGRAMS
- CIRCUIT - EQUIPMENT ON SAME CIRCUIT BUT SEPARATELY CONTROLLED

SITE

- POLE MOUNTED H.I.D. LIGHT FIXTURE - SINGLE HEAD WITH ARM BRACKET
- POLE MOUNTED H.I.D. LIGHT FIXTURE - DUAL HEAD WITH ARM BRACKET
- POLE MOUNTED H.I.D. LIGHT FIXTURE - SINGLE HEAD POST MOUNT
- BUILDING UPLIGHT FIXTURE
- BOLLARD LIGHT FIXTURE
- UNDERGROUND ELECTRICAL ENCLOSURE
- PAD MOUNT TRANSFORMER
- UTILITY POLE
- MANHOLE/VAULT
- UGE — UNDERGROUND EMERGENCY/STANDBY GENERATOR SERVICE
- UPE — UNDERGROUND ELECTRIC SERVICE (PRIMARY)
- USE — UNDERGROUND ELECTRIC SERVICE (SECONDARY)
- UTC — UNDERGROUND CATV & TELEPHONE SERVICE
- SL — UNDERGROUND SITE LIGHTING CONDUIT
- EC — UNDERGROUND EMPTY CONDUIT
- BC — UNDERGROUND BRANCH CIRCUIT CONDUIT
- TC — TELECOMMUNICATION CONDUIT

WIRING DEVICES

SWITCH:
- $ — SINGLE POLE
- $3 — THE LETTERS/NUMBERS ADJACENT TO THE SYMBOL INDICATE SWITCH TYPE. SWITCHES ARE SINGLE POLE UNLESS IDENTIFIED OTHERWISE
  - 3 - THREE-WAY
  - 4 - FOUR-WAY
  - B - TOUCHDIOLT
  - CK - CARD KEY
  - D - DIMMER - INCANDESCENT
  - DF - DIMMER - FLUORESCENT
  - DL - DIMMER - LOW VOLTAGE
  - ET - ELECTRONIC TAP
  - K - KEY OPERATED
  - MC - MAINTAINED CONTACT
  - P - PILOT LIGHT
  - R - LOCAL REMOTE CONTROL
  - WP - WEATHERPROOF
  - X - EXPLOSION PROOF

OCCUPANCY SENSOR:
- $OC — SWITCH - PIR WITH PUSHBUTTON
- $OC — THE LETTERS/NUMBERS ADJACENT TO THE SYMBOL INDICATE SWITCH SENSOR TYPE. SWITCH SENSORS ARE PIR TYPE UNLESS IDENTIFIED OTHERWISE.
  - OC1 - DUAL TECHNOLOGY WITH 1 PUSHBUTTON
  - OC2 - DUAL TECHNOLOGY WITH 2 PUSHBUTTONS FOR DUAL CONTROL

CLG, WALL
- RADIAL - AUTO ON/OFF
- DIRECTIONAL - AUTO ON/OFF
- THE LETTERS ADJACENT TO THE SYMBOL INDICATES SENSOR TYPE. WHERE SENSOR SYMBOL IS SHOWN WITHOUT IDENTIFICATION, PROVIDE PIR FOR WALL TYPES AND DT FOR CEILING TYPES.
  - DT - DUAL TECHNOLOGY (COMBINATION PIR & US)
  - ER - EXTENDED RANGE
  - HB - HIGHBAY
  - HH - HIGH HUMIDITY / LOW TEMPERATURE
  - HW - HALLWAY
  - PIR - PASSIVE INFRARED
  - R - RELAY
  - US - ULTRASONIC OR MICROPHONIC
  - WP - WEATHERPROOF
  - WV - WIDE VIEW

- P — POWER PACT

PHOTO/DAYLIGHT SENSOR:
- PHOTO SENSOR - WALL MTD (MOUNTED ON NORTH FACE OF BUILDING)
- PHOTO SENSOR - CEILING MTD

RECEPTACLE:

CLG, FLOOR, WALL
- SINGLE
- DUPLEX
- DOUBLE DUPLEX
- GFCI
- GFCI DOUBLE DUPLEX
- SPD (ISOLATED GROUND)
- SPD DOUBLE DUPLEX
- TAMPER RESISTANT
- SPLIT WIRED
- 20A, 30A, 50A — SINGLE PHASE, 480V RATED WITH AMPERAGE AS INDICATED
- 40A, 60A, 60A — THREE PHASE, 480V RATED WITH AMPERAGE AS INDICATED
- 17" — NUMBER ADJACENT TO SYMBOL INDICATES MOUNTING HEIGHT A.F.F.
- C — LETTER "C" ADJACENT TO SYMBOL INDICATES RECEPTACLE ABOVE COUNTER
- ABOVE FLOOR, IN CAST BOX ON RIGID CONDUIT - RECEPTACLE TYPE AS SHOWN

WIRING DEVICES (CONTINUED)

PUSHBUTTON:
- STANDARD
- E — THE LETTER ADJACENT TO THE SYMBOL INDICATES TYPE. PUSHBUTTONS ARE STANDARD UNLESS IDENTIFIED OTHERWISE.
  - E - EMERGENCY
  - K - EMERGENCY, KEY OPERATED
  - P - PANIC/ENTRANCE

MISCELLANEOUS:
- POWER POLE - WITH WIRING DEVICES AS INDICATED
- POWER/TELECOM POLE - WITH WIRING DEVICES AS INDICATED
- FURNITURE PEDESTAL - WITH WIRING DEVICES AS INDICATED
- FIRE RATED POKE-THROUGH - WIRING DEVICES AND TELECOM OUTLETS AS INDICATED
- FLUSH FLOOR BOX - WIRING DEVICES AND TELECOM OUTLETS AS INDICATED
- SURFACE RACEWAY WITH WIRING DEVICES AS INDICATED
  - VERTICAL DROP
  - HORIZONTAL RUN
- SURFACE MOUNTED RACEWAY MOUNTED - WIRING DEVICES AS INDICATED
  - SURFACE RACEWAY

FIRE ALARM

CLG, WALL
- SMOKE DETECTOR
- HEAT DETECTOR
- CARBON MONOXIDE DETECTOR
- NUMBER ADJACENT TO SYMBOL INDICATES ZONE, IF REQUIRED. LETTER ADJACENT TO SYMBOL INDICATES PREFERRED DETECTOR TYPE.
  - D -DOOR
  - P -PREACTION
  - R -ELEVATOR RECALL
  - RE - SHAFT & EXHAUST ELEVATOR RECALL
  - RS - ELEVATOR RECALL & SPRINKLER ACTIVATION
- DUCT DETECTOR - SMOKE (NUMBER INDICATES ZONE, IF REQUIRED)
- DUCT DETECTOR - HEAT (NUMBER INDICATES ZONE, IF REQUIRED)

CLG, WALL
- AUDIBLE WITH VISUAL UNIT
- AUDIBLE ONLY UNIT
- VISUAL ONLY UNIT
- MANUAL PULL STATION (NUMBER INDICATES ZONE IF REQUIRED)
- MANUAL PULL STATION - KEY OPERATED
- MANUAL PULL STATION WITH CLEAR PROTECTIVE COVER DOOR HOLDER (F-FLOOR, C-CEILING, W-WALL)
- CONTROL MODULE - ZONE
- CONTROL MODULE - ADDRESSABLE
- REMOTE TEST STATION - WALL MTD
- REMOTE TEST STATION - CEILING MTD
- LETTER L INDICATES TEST LIGHT
- FIRE SUPPRESSION FLOW SWITCH - BY OTHERS
- FIRE SUPPRESSION TAMPER SWITCH - BY OTHERS

SURFACE, FLUSH
- FACP, FACP — FIRE ALARM CONTROL PANEL

TELECOMMUNICATION/NETWORK

CLG, FLOOR, WALL
- VOICE/DATA OUTLET - BLANK
- DATA OUTLET - BLANK
- TELEPHONE (VOICE) OUTLET - BLANK
- W — TELEPHONE OUTLET - LETTER "W" ADJACENT TO SYMBOL INDICATES OUTLET FOR WALL HUNG PHONE
- 4 — NUMBER ADJACENT TO SYMBOL INDICATES NUMBER OF ACTIVE PORTS: 2, 4, 6 OR 8
- C — LETTER "C" ADJACENT TO SYMBOL INDICATES OUTLET ABOVE COUNTER
- F — LETTER "F" ADJACENT TO SYMBOL INDICATES FIBER OPTIC OUTLET
- 47" — NUMBER ADJACENT TO SYMBOL INDICATES MOUNTING HEIGHT A.F.F.
- D — VOICE/DATA POLE - TELECOM OUTLETS AS INDICATED
- POWER/TELECOM POLE - TELECOM OUTLETS AS INDICATED
- FURNITURE PEDESTAL - TELECOM OUTLETS AS INDICATED
- SURFACE MOUNTED RACEWAY MOUNTED - TELECOM OUTLETS AS INDICATED
  - SURFACE RACEWAY

SURFACE, FLUSH
- TELECOM/NETWORK EQUIPMENT CABINET
- 19" 4 POST RACK — TELECOM/NETWORK EQUIPMENT RACK
- TELECOM/NETWORK BACKBOARD

PROCESS CONTROL DEVICES

MCC 1 1 — MCC-3 PNL
- TYPE LETTER SHOWN IN LIST BELOW
- NUMBER OF #14 DIGITAL SIGNAL WIRES INCLUDING A #14 GRD IN 3/4"C UNG (BLANK IF NONE). CONDUITS TO/FROM SAME AREA MAY BE COMBINED. EC TO CONFORM TO NEC FOR CONDUIT SIZES. 24V AND 120V SHALL BE SEPARATED INTO SEPARATE CONDUITS. WIRES NOT USED ARE SPARES
- ASSOCIATED POWER SOURCE (BLANK IF NONE)
- NUMBER OF 2/C #16 TSP ANALOG SIGNAL CABLES IN 3/4"C UNG (BLANK IF NONE). CONDUITS TO/FROM SAME AREA MAY BE COMBINED. EC TO CONFORM TO NEC FOR CONDUIT SIZES. CABLES NOT USED ARE SPARES

* - SEE INSTRUMENTATION DEVICE LIST ON EACH SHEET FOR DIGITAL AND ANALOG SIGNAL DESTINATION

LIST OF COMMON PROCESS DEVICES

BTS	-	BOILER TEMPERATURE SWITCH
CGS	-	COMBUSTIBLE GAS SENSOR/TRANSMITTER
CTS	-	CABINET TEMPERATURE SWITCH
DPS	-	DIFFERENTIAL PRESSURE SWITCH
DSD	-	OVERHEAD DOOR SAFETY DEVICE
EL	-	EMERGENCY STOP LANYARD
ESP	-	EMERGENCY STOP PUSH BUTTON
FLS	-	FLOODING LEVEL SENSOR
FS	-	FLOW SWITCH
GFM	-	GAS FLOW METER
LS	-	LEVEL SWITCH (FLOAT)
LTS	-	LIMIT SWITCH
MM	-	MAGNETIC FLOW METER
MOG	-	MOTOR OPERATED GATE
MOV	-	MOTOR OPERATED VALVE
MT	-	MOTOR TEMPERATURE SWITCH
OLS	-	OIL LEVEL SWITCH
POS	-	POSITION SWITCH
PS	-	PRESSURE SWITCH
PT	-	PRESSURE TRANSMITTER
RL	-	RADAR LEVEL PROBE
S	-	SOLENOID VALVE
SL	-	SUBMERSIBLE LEVEL PROBE
SLP	-	SEAL LEAK PROBE
SM	-	SUCTION MONITOR
T	-	TRANSMITTER
TP	-	TEMPERATURE PROBE
UF	-	ULTRASONIC FLOW METER
UL	-	ULTRASONIC LEVEL PROBE
VFM	-	VENTRUI FLOW METER
ZS	-	ZERO SPEED SWITCH

WIRING DIAGRAMS

- WIRES NOT CONNECTED
- CONNECTING WIRES

SECURITY/ACCESS/SURVEILLANCE

CLG, WALL
- AUDIBLE WITH VISUAL UNIT
- AUDIBLE ONLY UNIT
- VISUAL ONLY UNIT
- 110 — THE NUMBER ADJACENT TO THE SYMBOL INDICATES PREFERRED CANDELA VALUE. VISUAL SYMBOL WITHOUT IDENTIFICATION SHALL BE AS FOLLOWS:
  - CORRIDORS / HALLWAYS - 30 CANDELA
  - ROOMS <= 2,000 SQFT - 75 CANDELA
  - ROOMS > 2,000 SQFT - 110 CANDELA

CLG, WALL
- MONITOR
- CAMERA
- 72" — NUMBER ADJACENT TO SYMBOL INDICATES MOUNTING HEIGHT A.F.F.

CLG, WALL
- MOTION DETECTOR (NUMBER INDICATES ZONE IF REQUIRED)
- SS — SPEAKER
- INTERCOM STATION - WALL MTD
- INTERCOM STATION - MASTER
- MAGNETIC DOOR CONTACTS (NUMBER INDICATES ZONE IF REQUIRED)
- B — PUSHBUTTON
- K — KEYPAD
- CR — CARD/PROXIMITY READER
- BR — BIOMETRIC READER
- MP — MULTIPLEXER
- L — ELECTRIC LOCK - BY OTHERS
- S — ELECTRIC STRIKE - BY OTHERS

SURFACE, FLUSH
- SECURITY EQUIPMENT CABINET

GENERAL

- RISER, OR ONE LINE NOTE NUMBER (E.G., SEE RISER NOTE NO. E1) — E1
- SHEET KEYNOTE (NEW CONSTRUCTION) — 1
- DEMOLITION KEYNOTE — 1
- REVISION SEQUENCE NUMBER — 1
- ROOM TAG (ROOM NO NOT ALWAYS SHOWN) — ROOM NAME, 01 1
- EQUIPMENT TAG — AHU 2
- SECTION/ ELEVATION REFERENCE — VIEW REF 1; SHEET REF A-XXX
- INTERIOR ELEVATION REFERENCE — VIEW REF; SHEET REF AXXX
- DETAIL / CALLOUT REFERENCE — VIEW REF 1; SHEET REF 1

BOX TAG/NOTE REFERENCE
BOXED TAG(S)/NOTE(S) BELOW THE ROOM NAME/NUMBER OR PLACED IN THE SPACE INDICATE THAT THE INFORMATION IN THE BOX APPLIES TO ALL FIXTURES AND/OR RECEPTACLES IN THE ROOM/SPACE UNLESS NOTED OTHERWISE.

- PANEL NAME — RA - 60; P1 | 5; 10A | 5
- KEY NOTE (TYP.) — 2 | 4
- LIGHT FIXTURE DESIGNATOR (ONLY ON LIGHTING PLANS)
- POWER CIRCUIT FOR RECEPTACLES OR LIGHTING FIXTURES
- EMERGENCY CIRCUIT (IF REQUIRED)

SYMBOLS LEGEND NOTES:
- A. NOT ALL SYMBOLS INDICATED MAY APPEAR ON THESE CONTRACT DRAWINGS.
- B. DASHED SYMBOLS REPRESENT EXISTING EQUIPMENT OR EQUIPMENT NOT IN CONTRACT.

PRELIMINARY - NOT FOR CONSTRUCTION

BUCHART HORN

ARCHITECT
BUCHART HORN ARCHITECTS
401 West Philadelphia Street
York, PA 17401
717.854.3910

READING FIRE DEPARTMENT ENGINE 3, 3 rd & COURT
GENERATOR / BOILER REPLACEMENT
15 N 5 th STREET
READING, PA
DEPARTMENT OF PUBLIC WORKS, CITY OF READING, PENNSYLVANIA
815 PENN STREET
READING PA

REVISIONS			
NUMBER	ISSUED DATE	DESCRIPTION	

PROJECT NO:	B10E3-01
ISSUED DATE:	06/15/20
DRAWN BY:	JGA
CHECKED BY:	JJG

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SHEET TITLE:
ELECTRICAL SYMBOLS LEGEND

SHEET NO:
E-001

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

ELECTRICAL ABBREVIATIONS, MOUNTING HEIGHTS, AND GENERAL LAYOUT NOTES

ELECTRICAL ABBREVIATIONS

NUMBER	
1PH	SINGLE-PHASE
1Ø	SINGLE-PHASE
1P	SINGLE POLE
2C	TWO-CONDUCTOR
2WAY	TWO-WAY
3C	THREE-CONDUCTOR
3PH	THREE-PHASE
3Ø	THREE PHASE
4C	FOUR-CONDUCTOR
4PDT	FOUR-POLE DOUBLE THROW
4PST	FOUR-POLE SINGLE THROW
4W	FOUR-WIRE
A	
A	AMPERE
A/E	ARCHITECT/ENGINEER
ABBRV	ABBREVATION
AC	ALTERNATING CURRENT
ADA	AMERICANS WITH DISABILITES ACT
AF	AMPERE FRAME
AFC	ABOVE FINISHED COUNTER
AFF	ABOVE FINISHED FLOOR
AFFF	ABOVE FINISHED FIRST FLOOR
AFG	ABOVE FINISHED GRADE
AHR	ABOVE FINISHED ROOF
AFS	ABOVE FINISHED SLAB
AHJ	AUTHORITY HAVING JURISDICTION
AIC	AMPERE INTERRUPTING CAPACITY
ALT	ALTERNATE
ALT NO	ALTERNATE NUMBER
AMP	AMPERE
APPROX	APPROXIMATE
AT	AMPERE TRIP
ATC	AUTOMATIC TEMP CONTROL
ATS	AUTOMATIC TRANSFER SWITCH
AUX	AUXILIARY
AV	AUDIO VISUAL
AVG	AVERAGE
AWG	AMERICAN WIRE GAUGE
B	
BAS	BUILDING AUTOMATION SYSTEM
BFF	BELOW FINISH FLOOR
BFG	BELOW FINISHED GRADE
BHP	BRAKE HORSEPOWER
BKBD	BACKBOARD
BKR	BREAKER
BLDG	BUILDING
BLW	BELOW
BOS	BOTTOM OF STEEL
C	
C	CELSIUS OR CONDUIT
CATV	COMMUNITY ANTENNA TELEVISION
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CFM	CUBIC FEET PER MINUTE
CL	CENTER LINE
CLF	CURRENT LIMITING FUSE
CLG	CEILING
CMU	CONCRETE MASONRY UNIT
CO	COMPANY
COAX	COAXIAL CABLE
COL	COLUMN
COMM	COMMUNICATION
CPT	CONTROL POWER TRANSFORMER
CRI	COLOR RENDERING INDEX
CT	CURRENT TRANSFORMER
CU	COPPER
CU FT	CUBIC FEET
CU YD	CUBIC YARD
D	
D	DEEP or DEPTH
DB	DECIBEL
DC	DIRECT CURRENT
DDC	DIRECT DIGITAL CONTROL
DEG	DEGREE
DEG C	DEGREES CELSIUS
DEG F	DEGREES FAHRENHEIT
DEMO	DEMOLITION
DIA	DIAMETER
DISC	DISCONNECT

DISTR	DISTRIBUTION
DIV	DIVISION
DL	DAMP LOCATION
DN	DOWN
DPDT	DOUBLE POLE, DOUBLE THROW
DPST	DOUBLE POLE, SINGLE THROW
DT	DOUBLE THROW
DWG	DRAWING
E	
E	EAST OR EMERGENCY
EA	EACH
EC	ELECTRICAL CONTRACTOR
EFF	EFFICIENCY
ELEC	ELECTRIC
EMER	EMERGENCY
EMI	ELECTROMAGNETIC INTERFERENCE
EMS	ENERGY MANAGEMENT SYSTEM
ENCL	ENCLOSURE
EO	ELECTRICALLY OPERATED
EPA	ENVIRONMENTAL PROTECTION AGENCY
EPO	EMERGENCY POWER OFF
EP	EXPLOSION PROOF
EQ	EQUAL
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
ETC	AND SO FORTH or ET CETERA
EW	EACH WAY
EXIST or EXIST	EXISTING
F	
F	FAHRENHEIT
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FC	FOOTCANDLE
FDR	FEEDER
FED	FEDERAL
FFA	FROM FLOOR ABOVE
FFB	FROM FLOOR BELOW
FLA	FULL LOAD AMPS
FLR	FLOOR
FM	FACTORY MUTUAL
FPC	FIRE PROTECTION CONTRACTOR
FREQ	FREQUENCY
FT	FEET OR FOOT
FVNR	FULL VOLTAGE NON REVERSING
FVR	FULL VOLTAGE REVERSING
G	
G	GROUND
GC	GENERAL CONTRACTOR
GEN	GENERATOR
GFCI	GROUND FAULT CIRC INTERRUPTER
GRD	GROUND
H	
H	HIGH
HAZ	HAZARD
HD	HEAVY DUTY
HDPE	HIGH DENSITY POLYETHYLENE
HOA	HAND OFF AUTOMATIC
HP	HORSEPOWER
HR	HOUR
HT	HEIGHT
HV	HIGH VOLTAGE
Hz	HERTZ (FREQUENCY)
I	
I/O	INPUT/OUTPUT
IBC	INTERNATIONAL BUILDING CODE
ID	INSIDE DIAMETER
ID NO	IDENTIFICATION NUMBER
IN	INCHES
INTERCOM	INTERCOMMUNICATION
INV	INVERTER
IR	INFRARED
J	
JB	JUNCTION BOX
K	
K	KILO OR KELVIN OR THOUSAND
KHZ	KILOHERTZ
KO	KNOCKOUT
KV	KILOVOLT
KVA	KILOVOLT AMPERE

KVAR	KILOVOLT AMPERE PER HOUR
KVAR	KILOVOLT AMPERE REACTIVE
KW	KILOWATT
KWH	KILOWATT HOUR
KWHM	KILOWATT HOUR METER
L	
L	LONG OR LOCKABLE
LA	LIGHTNING ARRESTER
LB or LBS	POUND(S)
LED	LIGHT EMITTING DIODE
LF	LINEAR FEET (FOOT)
LIN	LINEAR
LP	LIGHT POLE
LPW	LUMENS PER WATT
LRA	LOCKED ROTOR AMPS
LT	LEFT
LTG	LIGHTING
LV	LOW VOLTAGE
M	
mA	MILLIAMPERE
MAT	MATERIAL
MATV	MASTER ANTENNA TV SYSTEM
MAX	MAXIMUM
MCB	MAIN CIRCUIT BREAKER
MC	MECHANICAL CONTRACTOR
MCA	MINIMUM CIRCUIT AMPS
MCC	MOTOR CONTROL CENTER
MECH	MECHANICAL
MFA	MAXIMUM FUSE AMPS
MFR	MANUFACTURER
MG	MOTOR GENERATOR
MH	MANHOLE OR METAL HALIDE
MHz	MEGAHERTZ
MIC	MICROPHONE
MIN	MINIMUM OR MINUTE
MISC	MISCELLANEOUS
MLO	MAIN LUGS ONLY
MOCP	MAX OVERCURRENT PROTECTION
MOD	MOTOR OPERATED DAMPER
MOP	MAX OVERCURRENT PROTECTION
MTD	MOUNTED
MTS	MANUAL TRANSFER SWITCH
MV	MILLIVOLT
MVA	MEGAVOLT AMPERE
mW	MILLIWATT
MW	MEGAWATT
MWH	MEGAWATT HOUR
N	
N	NORTH OR NEUTRAL
NA or N/A	NOT APPLICABLE
NC or N/C	NORMALLY CLOSED
NE	NORMAL/EMERGENCY
NEC	NATIONAL ELECTRICAL CODE
NEG	NEGATIVE
NEUT	NEUTRAL
NFPA	NATIONAL FIRE PROTECTION ASSOC
NF	NONFUSED
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO	NUMBER
NO or N/O	NORMALLY OPEN
NOM	NOMINAL
NTS	NOT TO SCALE
O	
OC	ON CENTER
OD	OUTSIDE DIAMETER
OL	OVERLOAD
P	
P	PENDANT OR POLE
PA	PUBLIC ADDRESS
PB	PULL BOX OR PUSHBUTTON
PC	PLUMBING CONTRACTOR
PCU	POWER CONDITIONING UNIT
PE	PROFESSIONAL ENGINEER
PEC	PHOTOELECTRIC CELL
PF	POWER FACTOR
PFB	PROVISION FOR FUTURE BREAKER
PH	PHASE
PL	PROPERTY LINE
PN	PART NUMBER

PNL	PANEL
PO	PURCHASE ORDER
POCC	POINT OF COMMON COUPLING
PRELIM	PRELIMINARY
PRI	PRIMARY
PT	POTENTIAL TRANSFORMER
PV	PHOTOVOLTAIC
PWR	POWER
Q	
QAQC	QUAL ASSURANCE/QUAL CONTROL
QTY	QUANTITY
R	
R	RADIUS
RCP	REFLECTED CEILING PLAN
RECPT	RECEPTACLE
REV	REVISION
RF	RADIO FREQUENCY
RFI	REQUEST FOR INFORMATION
RM	ROOM
ROW	RIGHT OF WAY
RPM	REVOLUTIONS PER MINUTE
RT	RIGHT
S	
S	SOUTH
SCH or SCHED	SCHEDULE
SCR	SEMICONDUCTOR CONTROLLED RECTIFIER
SEC	SECOND OR SECONDARY
SPD	SURGE PROTECTION DEVICE
SPDT	SINGLE POLE, DOUBLE THROW
SPEC	SPECIFICATION
SPST	SINGLE POLE, SINGLE THROW
SQ	SQUARE
SQ FT	SQUARE FOOT (FEET)
SQ IN	SQUARE INCH
SQ YD	SQUARE YARD
ST	SHUNT TRIP OR SINGLE THROW
STD	STANDARD
STP	SHIELDED TWISTED PAIR
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
T	
TEL	TELEPHONE
TEMP	TEMPERATURE
TFA	TO FLOOR ABOVE
TFB	TO FLOOR BELOW
TL	TWIST LOCK
TV	TELEVISION
TYP	TYPICAL
U	
UL	UNDERWRITERS LABORATORIES
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTIBLE POWER SUPPLY
UTP	UNSHIELDED TWISTED PAIR
V	
V	VOLT
VA	VOLT AMPERE
VAM	VOLT AMMETER
VAR	VARIES
VAR	VOLT AMPERE REACTIVE
VD	VOLTAGE DROP
VF	VARIABLE FREQUENCY
VFD	VARIABLE FREQUENCY DRIVE
VOLTS	VOLTAGE
VR	VOLTAGE REGULATOR
W	
W	WATT OR WIRE
W/	WITH
W/O	WITHOUT
WL	WET LOCATION
WP	WEATHERPROOF
WT	WATERTIGHT OR WEIGHT
X	
XFER	TRANSFER
XFMR	TRANSFORMER
Y	
Y	WYE
YR	YEAR
Z	

NOTE: NOT ALL ABBREVIATIONS OR TERMS INDICATED ARE USED ON THESE CONTRACT DOCUMENTS.

EQUIPMENT ABBRV

A	
AHU	AIR HANDLING UNIT
B	
B	BOILER
BC	BLOWER COIL UNIT
BFWP	BOILER FEEDWATER PUMP
C	
CFU	CHEMICAL FEED UNIT
CH	CHILLER
CHWP	CHILLED WATER PUMP
CT	COOLING TOWER
CU	CONDENSING UNIT
CUH	CABINET UNIT HEATER
D	
DH	DUCT HEATER
DWH	DOMESTIC WATER HEATER
E	
EBB	ELECTRIC BASEBOARD
ECU	EVAPORATIVE COOLING UNIT
EF	EXHAUST FAN
EHC	ELECTRIC HEATING COIL
EHD	ELECTRIC HAND DRYER
EHP	ELECTRIC HEATING PANEL
ELEV	ELEVATOR
ERU	ENERGY RECOVERY UNIT
EUH	ELECTRIC UNIT HEATER
EWC	ELECTRIC WATER COOLER
F	
FCU	FAN COIL UNIT
FOP	FUEL OIL PUMP
G	
GUH	GAS FIRED UNIT HEATER
H	
H	HUMIDIFIER
HC	HEATING COIL
HP	HEAT PUMP
HRU	HEAT RECOVERY UNIT
HWCP	HOT WATER CIRC PUMP
HWP	HOT WATER PUMP
I	
IF	INTAKE FAN
IRH	INFRARED HEATER
IWH	INSTANTANEOUS WATER HTR
J	
JP	JOCKEY PUMP
L	
L	AUTOMATIC FAUCET SENSOR
M	
MAU	MAKE UP AIR UNIT
MOD	MOTOR OPERATED DAMPER
O	
OHD	OVERHEAD DOOR
P	
P	PUMP
PHC	PREHEAT COIL
R	
RAF	RETURN AIR FAN
REF	REFRIGERATOR
RHC	REHEAT COIL
RTU	ROOF TOP UNIT
S	
SCU	SELF CONTAINED UNIT
SD	SMOKE DAMPER
SF	SUPPLY FAN
SP	SUMP PUMP
SS	SPLIT SYSTEM FAN
T	
TC	TRASH COMPACTOR
TMV	THERMOSTATIC MIXING VALVE
U	
UH	UNIT HEATER
UV	UNIT VENTILATOR
V	
VAV	VARIABLE AIR VOLUME BOX
VRP	VACUUM RETURN PUMP
W	
WH	WALL HEATER

WIRE SEPARATION NOTES

1. ANALOG, DIGITAL, AND LOW VOLTAGE POWER CIRCUITS TO BE RUN IN SEPARATE RACEWAYS OR CABLE SETS AS INDICATED.
2. SEPARATE WIRING BY LEVEL AS OUTLINED BELOW:

   LEVEL 1-1 ANALOG SIGNALS LESS THAN 50V AND LESS THAN 50mA
   4-20mA SHIELDED INSTRUMENTATION
   SHIELDED LOW VOLTAGE INSTRUMENTATION.
   VARIABLE SPEED DRIVE SPEED SIGNALS

   LEVEL 1-2 DIGITAL SIGNAL AND DATA BUSSES
   PROGRAMMABLE LOGIC CONTROLLER BUSSES
   METER SYSTEM DATA BUS.
   INSTRUMENTATION REMOTE TERMINAL UNIT BUS.

   LEVEL 2-1 ANALOG SIGNALS OVER 50V AND LESS THAN 240V
   TACHOMETER GENERATORS.

   LEVEL 2-2 DIGITAL AND DISCRETE INPUTS TO PROGRAMMABLE LOGIC CONTROLLERS AND REMOTE TERMINAL UNITS. ALL OUTPUTS SUPPLYING RELAY COILS SHALL HAVE SURGE SUPPRESSION

   LEVEL 3-1 POWER CIRCUITS OF 20A OR LESS AND 120V OR LESS
   LIGHTING AND RECEPTACLE CIRCUITS TO BE IN A SEPARATE CONDUIT UNO.
   CLASS 1 CONTROL CIRCUITS ORIGINATING IN AN MCC COMPARTMENT OR A MOTOR STARTER CAN BE ROUTED WITH POWER CIRCUIT FROM SAME COMPARTMENT.

   LEVEL 4-1 POWER CIRCUITS OVER 20A UP TO 400A, LESS THAN 600V. EACH SHALL BE RUN IN SEPARATE CONDUITS

   LEVEL 5-1 FEEDERS OVER 400A.
3. EACH LEVEL INDICATED ABOVE TO BE INSTALLED IN SEPARATE RACEWAY OR CABLE SET UNLESS NOTED OTHERWISE OR INDICATED BY THESE CONTRACT DOCUMENTS.
4. WHERE DIFFERENT LEVEL SYSTEMS ARE INSTALLED IN PARALLEL RUNS EXCEEDING FIVE (5) FEET OR LONGER, PROVIDE PHYSICAL SEPARATION AS SHOWN IN THE TABLE.
5. IN ALL JUNCTION/PULL BOXES WITH MULTIPLE VOLTAGES, PROVIDE GROUNDED METALLIC BARRIERS TO MAINTAIN SEPARATION.
6. ONLY EXTERNAL INTERFACE SIGNALS ARE SHOWN FOR MOTOR/CONTROLLER STARTERS, PROGRAMMABLE DEVICES, AND VARIABLE SPEED DRIVES (VFD). INTERNAL SIGNALS NECESSARY FOR CORRECT FUNCTIONING MUST BE PROVIDED AND COORDINATED WITH ALL REQUIREMENTS.
7. ALL INTERCONNECTING WIRING AND TERMINATIONS BETWEEN EQUIPMENT BY CONTRACTOR UNO.
8. CONTRACTOR SHALL PROVIDE THE OWNER WITH A FULL SIZE SET OF LOOP AND INTERFACE WIRING DIAGRAMS WITH FILLED IN TERMINAL BLOCK AND WIRE NUMBERS.
9. REFER TO WIRE SEPARATION NOTED FOR COMBINING WIRING.

	LEVEL 1	2	3	4	5
LEVEL 1	0	1"	3"	12"	12"
2	1"	0	3"	9"	12"
3	3"	3"	0	3"	6"
4	12"	9"	3"	0	0

GENERAL ELECTRICAL NOTES

A. COORDINATE INSTALLATION OF NEW ITEMS AND EQUIPMENT WITH THE OWNER'S REPRESENTATIVE, MAINTENANCE STAFF, AND THE WORK OF OTHER CONTRACTORS. THE CONTRACTOR SHALL INCUR ALL COSTS ASSOCIATED WITH THE RELOCATION OF EQUIPMENT CONFLICTING WITH NEW WORK BY OTHER DISCIPLINES THAT HAS NOT BEEN COORDINATED.

B. FIELD VERIFY ALL DIMENSIONS. DRAWINGS ARE ILLUSTRATIVE AND MAY NOT REFLECT EXACT CONDITIONS OR DIMENSIONS.

C. DO NOT SCALE THE DRAWINGS. DRAWINGS ARE DIAGRAMMATIC AND SHOW THE GENERAL ARRANGEMENT OF EQUIPMENT AND SYSTEMS. THEY ARE NOT INTENDED TO SHOW EVERY OFFSET, FITTING AND COMPONENT. DO NOT USE THE PLANS FOR EXACT LOCATION OF EQUIPMENT, FIXTURES OR ARCHITECTURAL ITEMS SUCH AS WALLS, WINDOWS, SOFFITS, AND PLASTERS. SPECIFIC LOCATIONS, MOUNTING HEIGHTS AND OVERALL DIMENSIONS OF DEVICES AND FIXTURES ARE TO BE OBTAINED FROM THE ARCHITECTURAL DRAWINGS AND DETAILS WHEN AVAILABLE.

D. DRAWINGS SPECIFIC TO THIS TRADE DO NOT LIMIT THE RESPONSIBILITY OR WORK REQUIRED BY THE CONTRACT DOCUMENTS. REFER TO DRAWINGS AND SPECIFICATIONS OF OTHER TRADES FOR COMPLETE INFORMATION PRIOR TO BID.

E. WHERE CONFLICTS EXIST AMONG DRAWINGS, SPECIFICATIONS AND EQUIPMENT SCHEDULES, THE MOST STRINGENT SHALL APPLY. NOTIFY THE ENGINEER OF ALL CONFLICTS FOR RESOLUTION OR INTERPRETATION.

F. NOTIFY THE OWNER IN WRITING AND FIELD VERIFY CONDITIONS BEFORE PERFORMING ANY SAWCUTTING, TRENCHING, CORING OR ANY OTHER STRUCTURAL MODIFICATIONS. INSURE THAT NO ADVERSE EFFECT TO THE BUILDING'S STRUCTURAL INTEGRITY WILL OCCUR.

G. BRANCH CIRCUIT SIZING FROM DISCONNECT, STARTER OR VFD, OR CONTROL PANEL TO MOTOR/EQUIPMENT SHALL MATCH WHAT IS SHOWN FROM MCC/PANELBOARD TO DISCONNECT, STARTER OR VFD, OR CONTROL PANEL UNO. MOTOR BRANCH CIRCUITS FED FROM VFD SHALL BE VFD CABLE IN APPROPRIATELY SIZED CONDUIT.

H. ALL EQUIPMENT INSTALLED WITHIN AREAS THAT ARE LISTED AS CLASSIFIED AREAS SHALL BE UL LISTED AND LABELED FOR INSTALLATION IN THAT AREA. ALL CONDUIT TRANSITIONING FROM CLASSIFIED AREAS TO UNCLASSIFIED AREAS SHALL HAVE PROPER SEAL OFF FITTINGS.

I. ALL WORK SHOWN IN BOLD IS NEW WORK OR MODIFICATION OF EXISTING INSTALLATIONS TO BE COMPLETED BY THE CONTRACTOR UNDER THIS PROJECT. SEE PROJECT SPECIFICATIONS, SEQUENCE / PHASING OF WORK, AND DIVISION 1 FOR ADDITIONAL REQUIREMENTS FOR THIS PROJECT. CONTRACTOR SHALL READ AND UNDERSTAND THE REQUIREMENTS BEFORE SUBMITTING BID OR COMPLETING CONTRACTOR WORK.

MOUNTING HEIGHTS

LIGHTING

EMERGENCY BATTERY UNIT - WALL
18" BELOW CEILING OR 8'-0" ABOVE FINISHED FLOOR, WHICHEVER IS LOWER

EMERGENCY LIGHT - REMOTE HEAD
12" BELOW CEILING OR 8'-0" ABOVE FINISHED FLOOR, WHICHEVER IS LOWER

EXIT SIGN - WALL
6" ABOVE DOOR JAMB BUT NO HIGHER THAN 8'-0" ABOVE FINISHED FLOOR

LIGHT FIXTURE - WALL
SEE SPECIFICATIONS OR LIGHT FIXTURE SCHEDULE FOR MOUNTING HEIGHT

LIGHTING CONTROL PANEL - WALL
TOP OF TRIM 6'-0" ABOVE FINISHED FLOOR. IF CABINET IS OVER 6'-0" TALL, MOUNT BOTTOM EDGE 6" ABOVE FINISHED FLOOR

WIRING DEVICES

CLOCK RECEPTACLE
7'-0" ABOVE FINISHED FLOOR

MOTION SENSOR - WALL
8'-0" ABOVE FINISHED FLOOR OR AS RECOMMENDED BY MANUFACTURER

PHOTOELECTRIC CELL - WALL
12" FROM TOP OF ROOM ON NORTH FACE OF BUILDING

PUSHBUTTON - WALL
SAME AS LIGHTING SWITCHES

RECEPTACLE - WALL
RECEPTACLES OCCURRING IN STRUCTURAL TILE, BRICK, OR BLOCK WALL SHALL BE LOCATED ABOVE MASONRY JOINTS NEAREST THE APPROPRIATE MOUNTING HEIGHT AS INDICATED BELOW

FINISHED SPACE STANDARD
18" ABOVE FINISHED FLOOR. WHERE INTERFERENCE WITH HEATING EQUIPMENT REQUIRES HIGHER MOUNTING, MOUNT AS DIRECTED BY THE ENGINEER

COUNTERS
6" ABOVE BACK SPLASH OR COUNTER. CONSTRUCTION OF COUNTERS AND HEIGHTS OF BACKS SHALL BE VERIFIED BY THE CONTRACTOR BEFORE ROUGH-IN

UNFINISHED SPACE
42" ABOVE FINISHED FLOOR EXCEPT WHERE INTERFERENCE WITH MECHANICAL EQUIPMENT REQUIRES HIGHER MOUNTING

EXTERIOR - WALL
24" ABOVE FINISHED FLOOR. IF RECEPTACLE IS LESS THAN 24" ABOVE FINISHED GRADE, INCREASE MOUNTING HEIGHT TO MAINTAIN 24" ABOVE FINISHED GRADE

ROOF - WALL
24" ABOVE FINISHED FLOOR

RECEPTACLE - SPECIAL PURPOSE
SAME AS RECEPTACLES

SWITCH - LIGHTING
42" ABOVE FLOOR ON STRIKE SIDE OF DOOR. WHERE SWITCHES OCCUR IN BRICK, TILE, OR BLOCK WALLS, THEY SHALL BE MOUNTED AT VERTICAL MASONRY JOINT AND IN EITHER TOP OR BOTTOM HORIZONTAL JOINT, WHICHEVER IS CLOSEST TO THE MOUNTING HEIGHT. WHERE SWITCH HEIGHT OCCURS AT POINT OF CHANGE OF FINISH, THEY SHALL BE RAISED OR LOWERED TO OCCUR IN ONE FINISH

TELEVISION RECEPTACLE - WALL
7'-0" ABOVE FINISHED FLOOR OR SAME HEIGHT AS TELEVISION OUTLET

FIRE ALARM

AUDIBLE - WALL
6" BELOW CEILING OR 80" ABOVE FINISHED FLOOR, WHICHEVER IS LOWER

CONTROL PANEL - WALL
TOP OF TRIM 6'-0" ABOVE FINISHED FLOOR. IF CABINET IS OVER 6'-0" TALL, MOUNT BOTTOM EDGE 6" ABOVE FINISHED FLOOR

PULL STATION
42" ABOVE FINISHED FLOOR

REMOTE ANNUNCIATOR STATION
5'-0" ABOVE FINISHED FLOOR

REMOTE DUCT DETECTOR TEST STATION - WALL
5'-0" ABOVE FINISHED FLOOR

VISUAL - WALL
6" BELOW CEILING OR 80" ABOVE FINISHED FLOOR, WHICHEVER IS LOWER

VISUAL / AUDIBLE (COMBINATION TYPE) - WALL
6" (CENTER OF VISUAL) BELOW CEILING OR 80" ABOVE FINISHED FLOOR, WHICHEVER IS LOWER

MOUNTING HEIGHT NOTES:

1. UNLESS INDICATED OTHERWISE ON THE PLANS OR AS DIRECTED BY THE ENGINEER, CENTERLINE OF DEVICE SHALL BE AS INDICATED ABOVE.
2. WHERE MOUNTING HEIGHTS ARE NOT DETAILED OR DIMENSIONED, THE CONTRACTOR SHALL INSTALL SYSTEMS, MATERIALS, AND EQUIPMENT TO PROVIDE THE MAXIMUM HEADROOM POSSIBLE AND COMPLY WITH THE REQUIREMENTS OF THE EQUIPMENT MANUFACTURER. WHERE EQUIPMENT IS INTENDED, SPECIFIED, OR NOTED TO BE MOUNTED OTHER THAN INDICATED ABOVE, MOUNT IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND AS DIRECTED.
3. WHERE MULTIPLE DEVICES ARE INSTALLED WITHIN CLOSE PROXIMITY TO EACH OTHER, THEY SHALL BE INSTALLED AT SAME HEIGHT.
4. NOT ALL EQUIPMENT INDICATED WITH MOUNTING HEIGHTS ARE ON THESE CONTRACT DOCUMENTS.

DISTRIBUTION EQUIPMENT

BLANK OUTLET - WALL
SAME AS RECEPTACLES

CABINET (EQUIPMENT) - WALL
TOP OF TRIM 6'-0" ABOVE FINISHED FLOOR. IF CABINET IS OVER 6'-0" TALL, MOUNT BOTTOM EDGE 6" ABOVE FINISHED FLOOR

CIRCUIT BREAKER - ENCLOSED
2'-0" ABOVE FINISHED FLOOR

CONTACTOR
5'-0" ABOVE FINISHED FLOOR

DISCONNECT SWITCH
2'-0" ABOVE FINISHED FLOOR

GENERATOR REMOTE ANNUNCIATOR STATION
5'-0" ABOVE FINISHED FLOOR

PANELBOARD / TRANSFER SWITCH
TOP OF TRIM 6'-0" ABOVE FINISHED FLOOR. IF PANELBOARD IS OVER 6'-0" TALL, MOUNT BOTTOM EDGE OF PANELBOARD 6" ABOVE FINISHED FLOOR

SURFACE RACEWAY - HORIZONTAL RUN
SAME AS RECEPTACLES

THERMAL SWITCH - WALL
SAME AS LIGHT SWITCHES

TELECOMMUNICATION / NETWORK

AREA OF RESCUE ASSISTANCE SIGN
6" BELOW CEILING OR 80" ABOVE FINISHED FLOOR, WHICHEVER IS LOWER

AREA OF RESCUE ASSISTANCE INTERCOM MASTER STATION
42" ABOVE FINISHED FLOOR

AREA OF RESCUE ASSISTANCE INTERCOM STATION
42" ABOVE FINISHED FLOOR

BELL
80" ABOVE FINISHED FLOOR

DATA / VOICE OUTLET - WALL
SAME AS RECEPTACLES

HORNS - OUTDOOR
12" BELOW EDGE OF ROOM

TELEPHONE OUTLET - WALL
LOW: SAME AS RECEPTACLES
HIGH: 48" ABOVE FINISHED FLOOR

SECURITY / ACCESS CONTROL / SURVEILLANCE

AUDIBLE (BUZZER) - WALL
6" BELOW CEILING OR 80" ABOVE FINISHED FLOOR, WHICHEVER IS LOWER

BIOMETRIC READER
48" ABOVE FINISHED FLOOR

CAMERA - WALL
7'-6" ABOVE FINISHED FLOOR

CARD / PROXIMITY READ
48" ABOVE FINISHED FLOOR

HORNS - OUTDOOR
12" BELOW EDGE OF ROOF

INTERCOM STATION
48" ABOVE FINISHED FLOOR

MONITOR - WALL
7'-6" ABOVE FINISHED FLOOR

PUSHBUTTON - WALL
SAME AS LIGHTING SWITCH

OCCUPANCY SENSOR - WALL
8'-0" ABOVE FINISHED FLOOR OR AS RECOMMENDED BY MANUFACTURER

SPEAKER - WALL
7'-6" ABOVE FINISHED FLOOR

VISUAL (STROBE) - WALL
6" BELOW CEILING OR 80" ABOVE FINISHED FLOOR, WHICHEVER IS LOWER

BUCHART HORN
ARCHITECTS ENGINEERS

A/E FIRM
BUCHART HORN Architects Engineers Consultants
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717 372 1000

READING FIRE DEPARTMENT ENGINE 3, 3 rd & COURT
GENERATOR / BOILER REPLACEMENT
15 N 3 rd STREET
READING, PA

DEPARTMENT OF PUBLIC WORKS, CITY OF READING, PENNSYLVANIA
815 WASHINGTON ST
READING, PA

REVISIONS			
MARK	ISSUED DATE	DESCRIPTION	

PROJECT NO: 51083-01
ISSUED DATE: 06/05/20
DRAWN BY: WCA
CHECKED BY: JJG

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SHEET TITLE:
ELECTRICAL ABBREVIATIONS AND GENERAL INFORMATION

SHEET NO:
E-002

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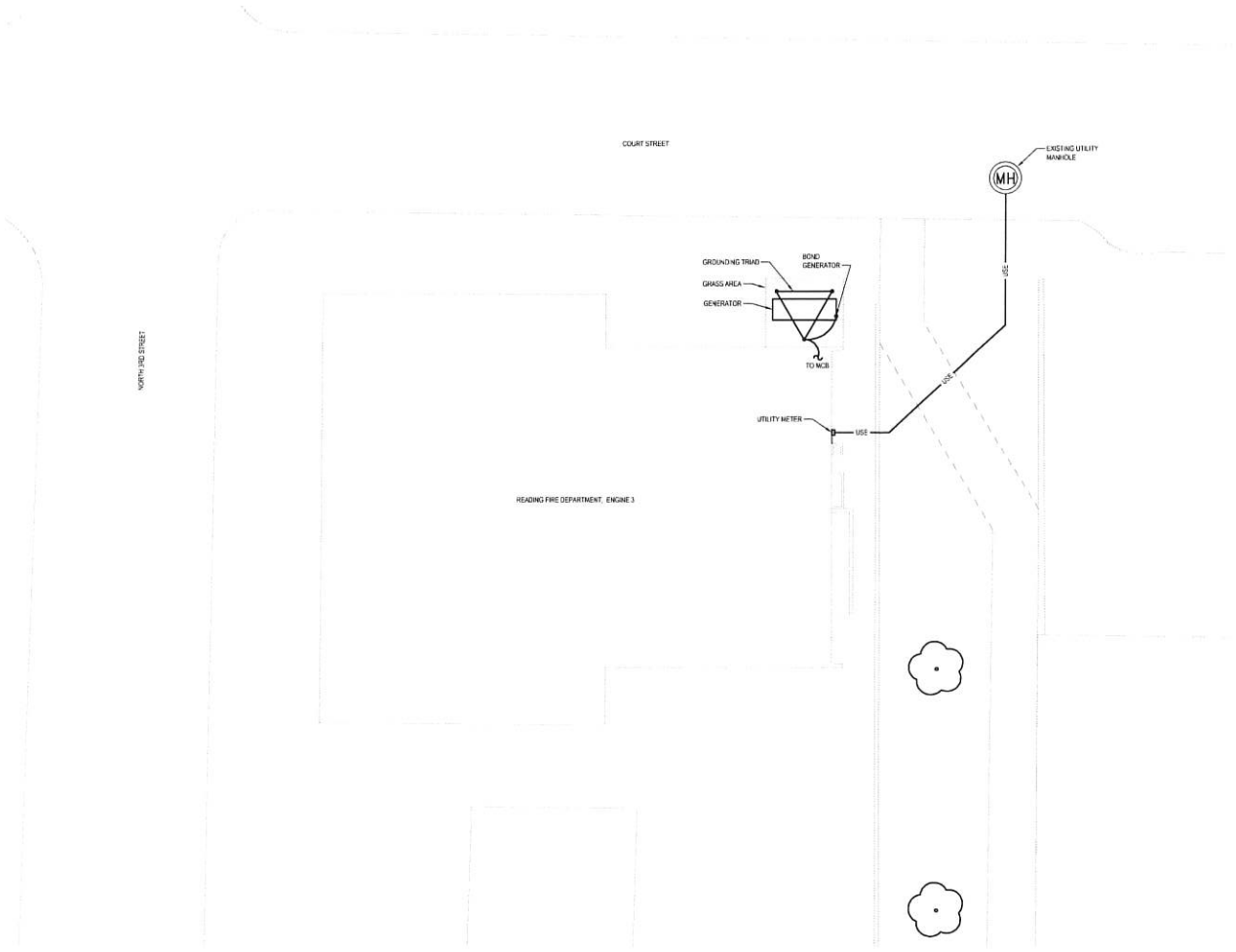

1 ELECTRICAL SITE PLAN

SCALE: 1" = 10'

0 10' 20'

PROJECT NORTH

GENERAL NOTES

1. SEE ONE LINE DIAGRAM ON SHEET E-601 FOR SERVICE INFORMATION.
2. SEE DUCT BANK AND GROUNDING DETAILS ON SHEET E-501.

PRELIMINARY - NOT FOR CONSTRUCTION

BUCHART HORN

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Buchart Horn Architects
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717 854 4667

READING FIRE DEPARTMENT ENGINE 3, 3 rd & COURT
GENERATOR / BOILER REPLACEMENT
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DEPARTMENT OF PUBLIC WORKS, CITY OF READING, PENNSYLVANIA
815 WASHINGTON ST.
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REVISIONS			
MARK	ISSUED DATE	DESCRIPTION	

PROJECT NO:	51083-01
ISSUED DATE:	06/05/09
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SHEET TITLE:

ELECTRICAL SITE PLAN

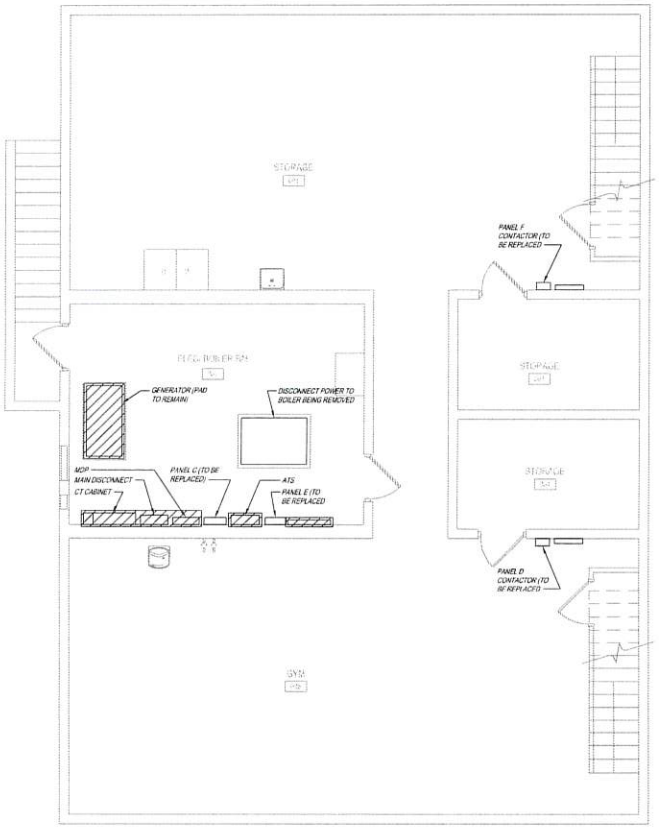
SHEET NO:

E-003

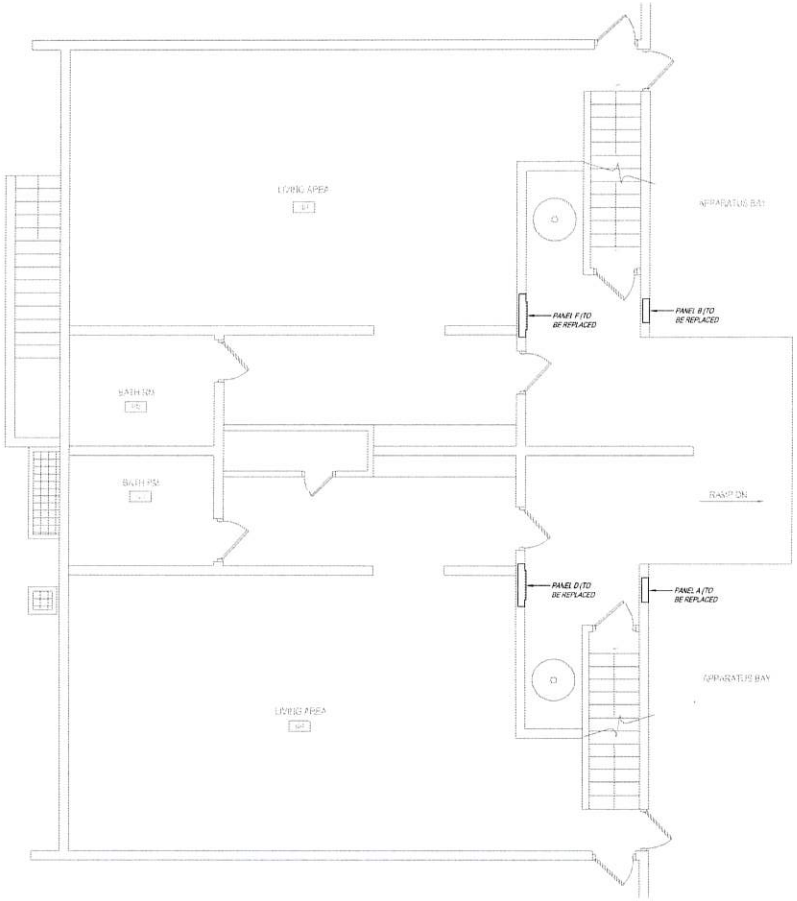
DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

GENERAL NOTES

1. SEE ONE LINE DIAGRAM ON SHEET E-601 FOR DEMOLITION STAGING INFORMATION.
2. ALL BRANCH CIRCUITS FROM PANELS AND SUB PANELS NOT MARKED FOR DEMOLITION ON SHEET 601 SHALL BE MADE SAFE FOR RECONNECTION IN NEW PANELS.
3. CONTRACTOR SHALL UTILIZE EXISTING PANEL BOARD CANS WHEREVER POSSIBLE TO FACILITATE QUICKER INSTALLATION OF NEW PANELS IN EXISTING LOCATIONS.
4. CONTRACTOR SHALL VISIT THE SITE TO CONFIRM EXISTING FEEDER ROUTES AND LENGTHS PRIOR TO ASSEMBLING BID OR COMPLETING WORK.



1 BASEMENT ELECTRICAL DEMOLITION PLAN
SCALE: 1/4" = 1'-0"



2 FIRST FLOOR ELECTRICAL DEMOLITION PLAN
SCALE: 1/4" = 1'-0"

PRELIMINARY - NOT FOR CONSTRUCTION

BUCHART HORN

ARCHITECTS / ENGINEERS
BUCHART HORN ARCHITECTS
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York, PA 17404
717.852.1400

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DEPARTMENT OF PUBLIC WORKS, CITY OF READING, PENNSYLVANIA
815 WASHINGTON ST
READING, PA

REVISIONS

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CHECKED BY:	JJG

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SHEET TITLE:

ELECTRICAL DEMOLITION PLANS

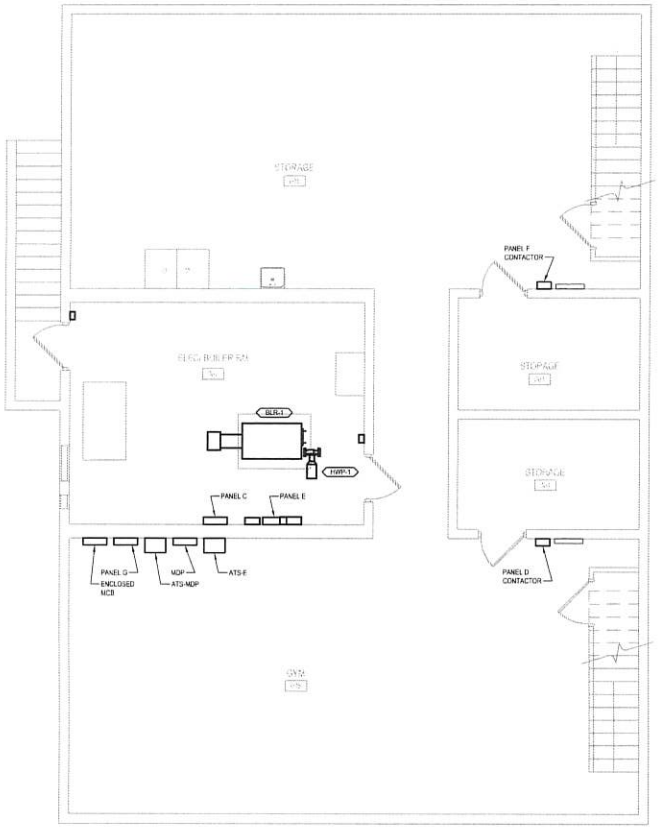
SHEET NO:

E-011

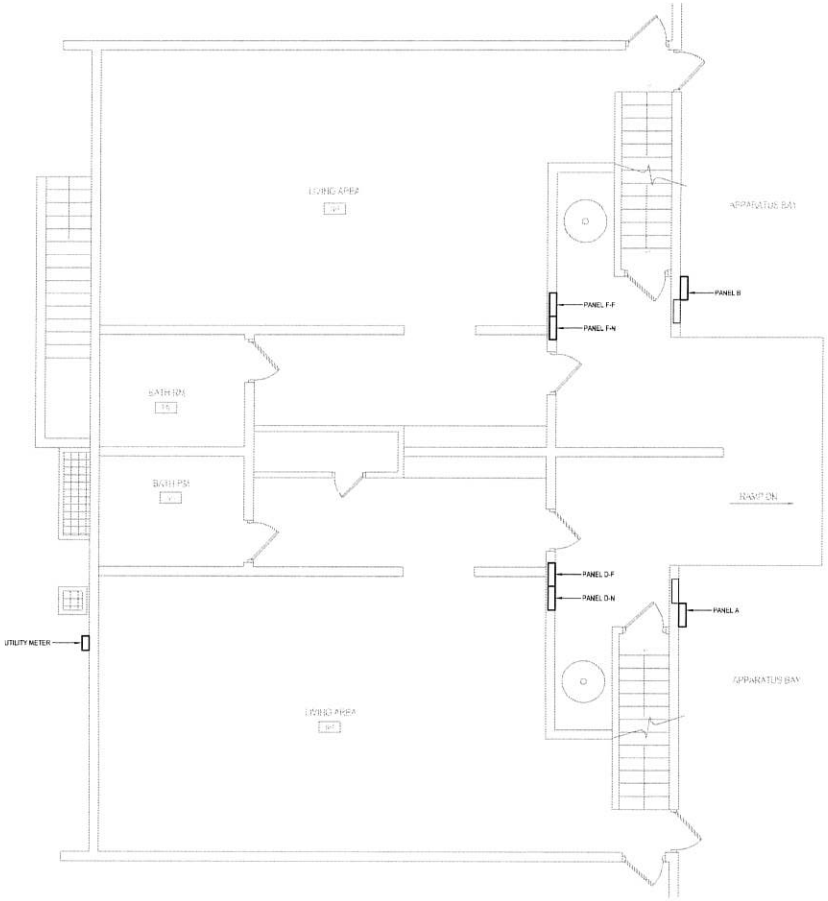
DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

GENERAL NOTES

1. SEE ONE LINE DIAGRAM ON SHEET E-601.
2. SEE PANEL SCHEDULES ON SHEET E-602 AND E-603.
3. CONTRACTOR SHALL INSTALL NEW PANELS IN SAME LOCATION AS OLD WHEREVER POSSIBLE TO ENSURE THAT BRANCH CIRCUIT CONDUCTORS ARE OF ADEQUATE LENGTH TO RECONNECT TO BREAKERS IN NEW PANELS. EXTEND AS REQUIRED.
4. FOR PANELS A AND B, CONTRACTOR SHALL INSTALL SURFACE MOUNTED PANEL BOARDS NEXT TO EXISTING FLUSH MOUNTED PANEL BOARDS. UTILIZE EXISTING PANEL BOARDS AS A PULL/JUNCTION BOX AND EXTEND BRANCH CONDUCTORS INTO NEW PANELS.
5. SEE EXISTING PANEL D/F DETAIL ON SHEET E-501 FOR MORE INFORMATION ON HOW PANELS D AND F ARE CURRENTLY WIRED. NORMAL/FIRE ALARM CIRCUITS SHALL BE SEPARATED INTO SEPARATE PANELS SHOWN. PANELS D-N AND D-F AS WELL AS F-N AND F-F, SEPARATE PANELS SHALL BE INSTALLED WITHIN OR NEXT TO BOX SPACE OF EXISTING PANELS D AND F. PROVIDE SHEET METAL COVER PLATES TO COVER ANY OPEN SPACES LEFT PANT TO MARCH EXISTING WALL COLOR.



1 BASEMENT POWER PLAN
SCALE: 1/4" = 1'-0"



2 FIRST FLOOR POWER PLAN
SCALE: 1/4" = 1'-0"

PRELIMINARY - NOT FOR CONSTRUCTION

BUCHART HORN

ARCHITECT:
BUCHART HORN ARCHITECTS
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HADDON S.E.
DEPARTMENT OF PUBLIC WORKS, CITY OF READING, PENNSYLVANIA
ENGINEERING 1 ST
READING, PA

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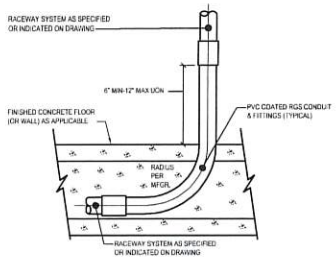
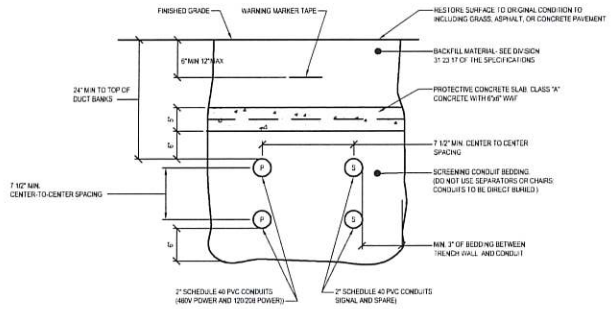
SHEET TITLE:
FLOOR PLANS - POWER

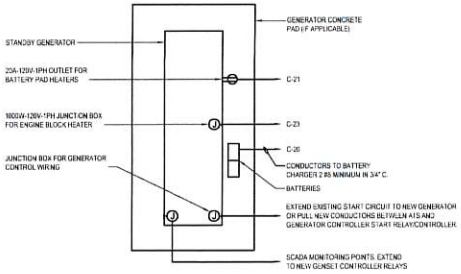
SHEET NO:
E-101



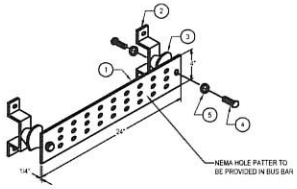
1 TYPICAL CONDUIT PENETRATION OF CONCRETE FLOOR DETAIL
NOT TO SCALE



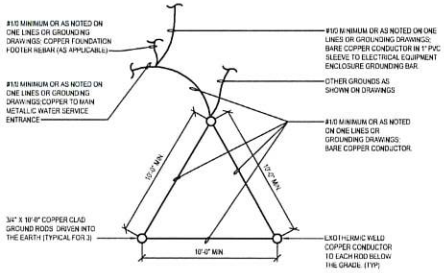
2 DIRECT BURIAL DUCTBANK DETAILS
NOT TO SCALE



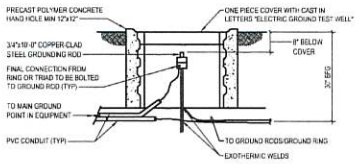
3 GENERATOR ACCESSORIES CONNECTION DETAIL
NOT TO SCALE



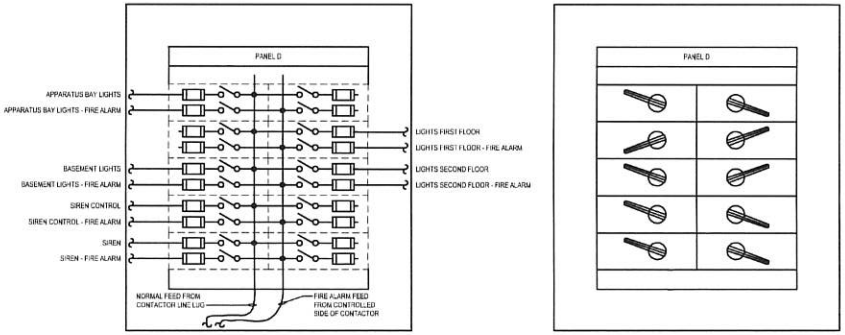
4 TYPICAL GROUND BAR DETAIL
NOT TO SCALE



6 GROUNDING TRIAD DETAIL
NOT TO SCALE



5 TYPICAL GROUND TEST WELL DETAIL
NOT TO SCALE



7 EXISTING PANEL D WIRING DIAGRAM (PANEL E IS SIMILAR)
NOT TO SCALE

PRELIMINARY - NOT FOR CONSTRUCTION

BUCHART HORN

ARCHITECTS
BUCHART HORN ARCHITECTS
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(717) 812-1400

READING FIRE DEPARTMENT ENGINE 3, 3 rd & COURT
GENERATOR / BOILER REPLACEMENT
15 N 3 rd STREET
READING PA
DEPARTMENT OF PUBLIC WORKS, CITY OF READING, PENNSYLVANIA
815 ELEVENTH ST
READING PA

REVISIONS

MARK	ISSUED DATE	DESCRIPTION

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CHECKED BY:	JJO

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SHEET TITLE:
ELECTRICAL DETAILS

SHEET NO:
E-501

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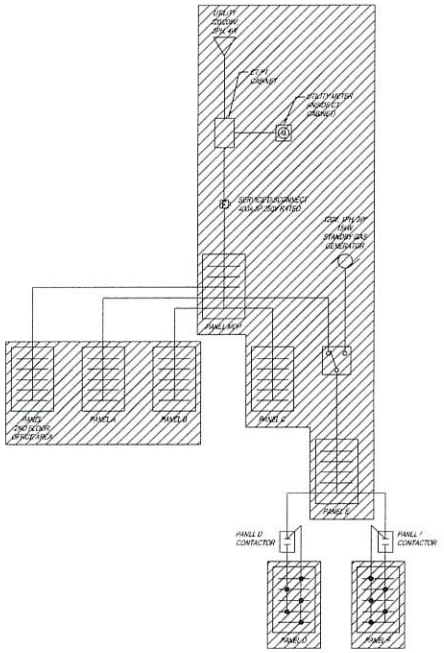
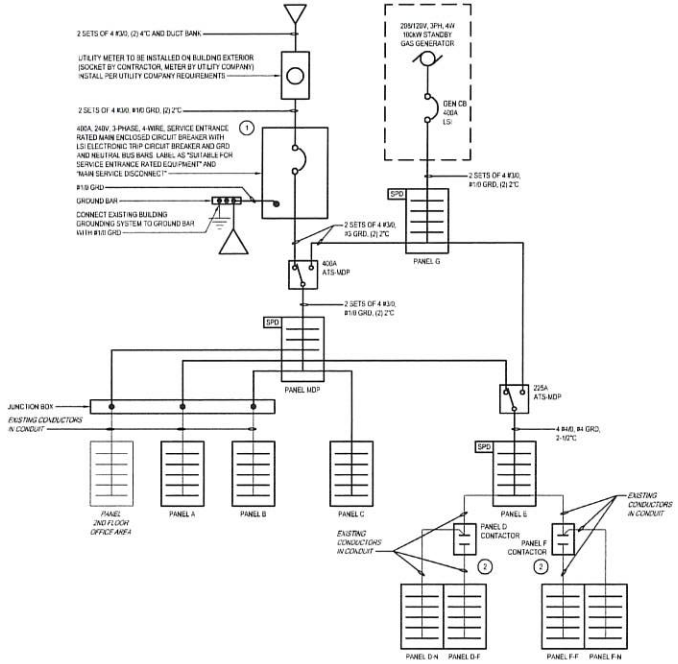


1 EXISTING ONE-LINE DIAGRAM



2 PROPOSED ONE-LINE DIAGRAM

GENERAL NOTES

1. SEE SHEET E-003 FOR UTILITY SERVICE LOCATION.
2. SEE SHEET E-011 FOR EXISTING ELECTRICAL EQUIPMENT LOCATIONS AND DEMOLITION PLAN.
3. SEE SHEET E-101 FOR NEW ELECTRICAL EQUIPMENT LOCATIONS.
4. SEE SUGGESTED ELECTRICAL CONSTRUCTION STAGING INFORMATION ON THIS SHEET FOR INFORMATION ON STAGING TO ACHIEVE AS SHORT POWER OUTAGES AS POSSIBLE DURING CONSTRUCTION. CONTRACTOR SHALL CONFIRM AND SUBMIT STAGING PROPOSAL TO OWNER AND ENGINEER FOR APPROVAL PRIOR TO COMMENCING WORK.

KEY NOTES

1. BOND GROUND AND NEUTRAL BUS BARS WITHIN ENCLOSED BREAKER FOR SYSTEM BONDING JUMPER.
2. RECONNECT EXISTING CONTROL CIRCUIT FOR NEW CONTACTOR CONTROL.

ELECTRICAL CONSTRUCTION STAGING

1. CONTRACTOR SHALL INSTALL NEW SERVICE DUCT BANK, METER, EXTERIOR GENERATOR, TRANSFER SWITCHES, MAIN ENCLOSED CIRCUIT BREAKER AND MAIN DISTRIBUTION PANEL MDP WHILE FACILITY IS STILL RUNNING ON EXISTING SERVICE.
2. CONTRACTOR SHALL INSTALL JUNCTION BOX IN PROXIMITY TO PANEL MDP AND PULL NEW CONDUCTORS TO JUNCTION BOX TO BE PREPARED TO FEED EXISTING PANEL A, EXISTING PANEL B, AND THE EXISTING 2ND FLOOR PANEL. ALSO PULL NEW CONDUCTORS TO BE PREPARED TO FEED EXISTING PANEL C AND EXISTING PANEL E.
3. ONCE UTILITY HAS APPROVED INSTALLATION, CUT OVER POWER TO NEW SERVICE EQUIPMENT AS WELL AS POWER TO EXISTING DOWNSTREAM PANELS.
4. AT THIS POINT, ALL DOWNSTREAM PANELS CAN BE REPLACED ONE BY ONE IN ORDER OF OWNER PREFERENCE. COORDINATE ORDER IN THE FIELD.

PRELIMINARY - NOT FOR CONSTRUCTION

BUCHART HORN

BUCHART HORN ARCHITECTS
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READING FIRE DEPARTMENT ENGINE 3, 3 rd & COURT
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REVISIONS		
MARK	ISSUED DATE	DESCRIPTION

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ISSUED DATE:	06/05/09
DRAWN BY:	WCA/CLM
CHECKED BY:	JJG

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SHEET TITLE:

ONE LINE DIAGRAM

SHEET NO:

E-601

DISTRIBUTION PANEL SCHEDULE

PANEL DESIGNATION: MDP
LOCATION: BASEMENT
MOUNTING: SURFACE
ENCLOSURE: NEMA 1

BUS AMPS: 400
PHASE: 3
FED FROM: ATS
LOCATION: BASEMENT

MIN. A.I.C.: X KA
WIRE: 4

MAIN BREAKER: 400A
VOLTAGE: 208Y/120
NEUTRAL SIZE: 100%
TOTAL NICHES: 63.0

NOTES:

CKT NO	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CIRC. NOTES	BREAKER FRAME	BREAKER AMP	BREAKER POLES	BREAKER INCH	LOAD (KVA) A	LOAD (KVA) B	LOAD (KVA) C	SETS NO	WIRE NO	WIRE SIZE	GND. SIZE	COND SIZE	COND SIZE	GND. SIZE	WIRE SIZE	WIRE NO	SETS NO	LOAD (KVA) A	LOAD (KVA) B	LOAD (KVA) C	BREAKER INCH	BREAKER POLES	BREAKER AMP	BREAKER FRAME	CIRC. NOTES	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CKT NO
1	HOSE DRYER - NEVERSINK		1	60	50	2	3.0	0.0			1	3	6	10	1	1	10	6	3	1	0.0			3.0	2	50	60	1	HOSE DRYER - KEYSTONE		22
2	--								0.0													0.0							--		23
3	POWER RECEPT - NEVERSINK		1	60	50	2	3.0			0.0	1	3	6	10	1	1	10	6	3	1			0.0	3.0	2	50	60	1	POWER RECEPT - KEYSTONE		24
4	--							0.0													0.0								--		25
5	SPARE			60	50	2	3.0		0.0							1	10	6	3	1		0.0		3.0	2	50	60	1	PANEL - 2ND FLOOR OFFICE AREA		26
6	--									0.0													0.0						--		27
7	PANEL A			100	100	3	4.5	1.5			1	4	1	8	2	2	8	1	4	1	1.5			4.5	3	100	100		PANEL B		28
8	--								1.5													1.5							--		29
9	--									1.5													1.5						--		30
10	PANEL C			100	100	3	4.5	0.3			1	4	1	8	2	2-1/2	4	4/0	4	1	0.0			4.5	3	225	225		PANEL E		31
11	--								0.3													0.0							--		32
12	--									0.3													0.0						--		33
13	FUTURE AIR CONDITIONING			60	45	3	4.5	0.0			1	4	6	10	1	3/4	10	10	4	1	0.1			4.5	3	30	30		FUTURE AIR CONDITIONING		34
14	--								0.0													0.1							--		35
15	--									0.0													0.1						--		36
16	SPARE			60	50	3	4.5	0.0													0.0			4.5	3	100	100		SPARE		37
17	--								0.0													0.0							--		38
18	--									0.0													0.0						--		39
19	SPARE			100	100	3	4.5	0.0								3/4	10	10	4	1	0.0			4.5	3	30	30		SPD		40
20	--								0.0													0.0							--		41
21	--									0.0													0.0						--		42
							SIDE CONNECTED KVA	2	2	2				PANEL CONNECTED KVA	10						2	2	2	SIDE CONNECTED KVA							
														PANEL DEMAND KVA	10																
														PANEL DEMAND FACTOR	100%																

1 EXISTING CIRCUITS THAT WERE REFED

DERATING FACTOR (80%)
DEMAND LOAD SIZE: 35 AMPS

LIGHTING AND APPLIANCE PANEL SCHEDULE

PANEL DESIGNATION: PANEL A
LOCATION: NV/RSNK APP BAY
MOUNTING: SURFACE
ENCLOSURE: NEMA 1

BUS AMPS: 400
PHASE: 3
FED FROM: MDP
LOCATION: BASEMENT

MIN. A.I.C.: X KA
WIRE: 4

MAIN BREAKER: 100A
VOLTAGE: 208Y/120
NEUTRAL SIZE: 100%
TOTAL POLES: 30

NOTES:

CKT NO	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CIRC. NOTES	BREAKER AMP	BREAKER POLES	LOAD (KVA) A	LOAD (KVA) B	LOAD (KVA) C	WIRE NO	WIRE SIZE	GND. SIZE	COND SIZE	COND SIZE	GND. SIZE	WIRE SIZE	WIRE NO	LOAD (KVA) A	LOAD (KVA) B	LOAD (KVA) C	BREAKER POLES	BREAKER AMP	CIRC. NOTES	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CKT NO
1	SPARE			20	1	0.0							3/4	12	12	2	0.0			1	20	1	LOUNGE LIGHTS		2
3	ENTRANCE & STAIR LIGHTS		1	20	1		0.0		2	12	12	3/4	3/4	12	12	2		0.0		1	20	1	OFFICE, PASSAGE, TOILET LIGHTS		4
5	EXHAUST FAN 1ST HOSE DRYER		1	20	1			0.0	2	12	12	3/4	3/4	12	12	2			0.0	1	20	1	UTILITY & HOSE ROOM LIGHTS		6
7	BOILER ROOM LIGHTS		1	20	1	0.0			2	12	12	3/4	3/4	12	12	2	0.0			1	20	1	DORMITORY LIGHTS		8
9	LOCKER ROOM & 2ND FLOOR TOILET LI		1	20	1		0.0		2	12	12	3/4	3/4	12	12	2		0.0		1	20	1	DORMITORY RECEPTS		10
11	LOUNGE RECEPTS		1	20	1			0.0	2	12	12	3/4	3/4	12	12	2			0.0	1	20	1	EXHAUST FAN IN UTILITY ROOM		12
13	APPARATUS ROOM RECEPTS		1	20	1	0.9			2	12	12	3/4	3/4	12	12	2	0.9			1	20	1	UTILITY ROOM RECPTS		14
15	OFFICE & PASSAGE (1ST FLOOR) RECP		1	20	1		0.9		2	12	12	3/4	3/4	12	12	2		0.0		1	20	1	DRINKING FOUNTAINS		16
17	FRONT OUTSIDE LIGHT		1	20	1			0.0	2	12	12	3/4	3/4	12	12	2			0.0	1	20		????		18
19	EXHAUST SYSTEM		1	20	1	0.0			2	12	12	3/4	3/4	12	12	2	0.0			1	20	1	AIR COMPRESSOR		20
21	EXHAUST SYSTEM		1	20	1		0.0		2	12	12	3/4	3/4	12	12	3		0.0		2	20		????		22
23	EXHAUST SYSTEM		1	20	1			0.0	2	12	12	3/4							0.0				--		24
25	SPARE		1	20		0											0.0			1	20		SPARE		26
27	SPARE		1	20			0											0.0		1	20		SPARE		28
29	SPARE		1	20				0											0.0	1	20		SPARE		30
					SIDE CONNECTED KVA	1	1	1				PANEL CONNECTED KVA	5				1	1	0				SIDE CONNECTED KVA		
												PANEL DEMAND KVA	5												
												PANEL DEMAND FACTOR	100%												

1 EXISTING CIRCUITS THAT WERE REFED

DERATING FACTOR (80%)
DEMAND LOAD SIZE: 16 AMPS

LIGHTING AND APPLIANCE PANEL SCHEDULE

PANEL DESIGNATION: PANEL C
LOCATION: BOILER ROOM
MOUNTING: SURFACE
ENCLOSURE: NEMA 1

BUS AMPS: 400
PHASE: 3
FED FROM: MDP
LOCATION: BASEMENT

MIN. A.I.C.: X KA
WIRE: 4

MAIN BREAKER: 100A
VOLTAGE: 208Y/120
NEUTRAL SIZE: 100%
TOTAL POLES: 30

NOTES:

CKT NO	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CIRC. NOTES	BREAKER AMP	BREAKER POLES	LOAD (KVA) A	LOAD (KVA) B	LOAD (KVA) C	WIRE NO	WIRE SIZE	GND. SIZE	COND SIZE	COND SIZE	GND. SIZE	WIRE SIZE	WIRE NO	LOAD (KVA) A	LOAD (KVA) B	LOAD (KVA) C	BREAKER POLES	BREAKER AMP	CIRC. NOTES	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CKT NO
1	???????????		1	20	1	0.0			2	12	12	3/4	3/4	12	12	2	0.0			1	20	1	HEATING VALVES - NEVERSINK		2
3	HEATING VALVES - KEYSTONE		1	20	1		0.0		2	12	12	3/4	3/4	12	12	2		0.0		1	20	1	UNIT HEATER CIRCULATING PUMP		4
5	UNIT HEATER - NEVERSINK		1	20	1			0.0	2	12	12	3/4	3/4	12	12	2			0.0	1	20	1	UNIT HEATER - KEYSTONE		6
7	BATTERY CHARGER		1	20	1	0.0			2	12	12	3/4	3/4	12	12	2	0.0			1	20	1	IN USE		8
9	OIL BURNER		1	20	1		0.0		2	12	12	3/4	3/4	12	12	2		0.0		1	20	1	IN USE		10
11	NEWES A/C		1	15	2			0.0	3	12	12	3/4	3/4	12	12	2			0.0	1	20	1	IN USE		12
13	--					0.0							3/4	12	12	2	0.0			1	20	1	IN USE		14
15	IN USE		1	20	1		0.0		2	12	12	3/4	3/4	12	12	3		0.0		2	15	1	IN USE		16
17	IN USE		1	20	1			0.0	2	12	12	3/4							0.0				--		18
19	IN USE		1	20	1	0.0			2	12	12	3/4	3/4	12	12	2	0.0			1	20		BATTERY CHARGER		20
21	RECPT FOR BATTERY PAD HTRS			20	1		0.0		2	12	12	3/4						0					PROV		22
23	ENGINE BLOCK HTR JB			20	1			1.0	2	12	12	3/4							0				PROV		24
25	SPARE			20	1	0.0											0.0			1	20		SPARE		26
27	SPARE			20	1		0.0											0.0		1	20		SPARE		28
29	SPARE			20	1			0.0											0.0	1	20		SPARE		30
					SIDE CONNECTED KVA	0	0	1				PANEL CONNECTED KVA	1				0	0	0				SIDE CONNECTED KVA		
												PANEL DEMAND KVA	1												
												PANEL DEMAND FACTOR	100%												

1 EXISTING CIRCUITS THAT WERE REFED

DERATING FACTOR (80%)
DEMAND LOAD SIZE: 3 AMPS

LIGHTING AND APPLIANCE PANEL SCHEDULE

PANEL DESIGNATION: PANEL B
LOCATION: KYSTN APP BAY
MOUNTING: SURFACE
ENCLOSURE: NEMA 1

BUS AMPS: 400
PHASE: 3
FED FROM: MDP
LOCATION: BASEMENT

MIN. A.I.C.: X KA
WIRE: 4

MAIN BREAKER: 100A
VOLTAGE: 208Y/120
NEUTRAL SIZE: 100%
TOTAL POLES: 30

NOTES:

CKT NO	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CIRC. NOTES	BREAKER AMP	BREAKER POLES	LOAD (KVA) A	LOAD (KVA) B	LOAD (KVA) C	WIRE NO	WIRE SIZE	GND. SIZE	COND SIZE	COND SIZE	GND. SIZE	WIRE SIZE	WIRE NO	LOAD (KVA) A	LOAD (KVA) B	LOAD (KVA) C	BREAKER POLES	BREAKER AMP	CIRC. NOTES	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CKT NO
1	APPARATUS ROOM LIGHTS		1	20	1	0.0			2	12	12	3/4	3/4	12	12	2	0.0			1	20	1	LOUNGE LIGHTS		2
3	ENTRANCE & STAIR LIGHTS		1	20	1		0.0		2	12	12	3/4	3/4	12	12	2		0.0		1	20	1	OFFICE, PASSAGE, TOILET LIGHTS		4
5	EXHAUST FAN HOSE DRYER		1	20	1			0.0	2	12	12	3/4	3/4	12	12	2			0.0	1	20	1	UTILITY & HOSE ROOM LIGHTS		6
7				20	1	0.0			2	12	12	3/4	3/4	12	12	2	0.0			1	20	1	DORMITORY LIGHTS		8
9	LOCKER ROOM & TOILET ROOM 2ND FL		1	20	1		0.0		2	12	12	3/4	3/4	12	12	2			0.9	1	20	1	DORMITORY RECPTS		10
11	LOUNGE RECEPTS		1	20	1			0.9	2	12	12	3/4	3/4	12	12	2		0.0		1	20	1	EXHAUST FAN IN UTILITY ROOM		12
13	APPARATUS ROOM RECEPTS		1	20	1	0.9			2	12	12	3/4	3/4	12	12	2	0.9			1	20	1	UTILITY ROOM RECPTS		14
15	OFFICE & PASSAGE 1ST FLOOR RECEPT		1	20	1		0.9		2	12	12	3/4	3/4	12	12	2		0.0		1	20	1	CLOCK		16
17	FRONT OUTSIDE LIGHT		1	20	1			0.0	2	12	12	3/4	3/4	12	12	2			0.0	1	20				18
19				20	1	0.0			2	12	12	3/4	3/4	12	12	2	0.0			1	20				20
21	OVERHEAD MOTOR		1	20	1		0.0		2	12	12	3/4	3/4	12	12	3		0.0		2	20				22
23				20	1			0.0	2	12	12	3/4							0.0						24
25	SPARE			20	1	0.0											0.0			1	20		SPARE		26
27	SPARE			20	1		0.0											0.0		1	20		SPARE		28
29	SPARE			20	1			0.0											0.0	1	20		SPARE		30
					SIDE CONNECTED KVA	1	1	1				PANEL CONNECTED KVA	5				1	1	0				SIDE CONNECTED KVA		
												PANEL DEMAND KVA	5												
												PANEL DEMAND FACTOR	100%												

1 EXISTING CIRCUITS THAT WERE REFED

DERATING FACTOR (80%)
DEMAND LOAD SIZE: 16 AMPS

PRELIMINARY - NOT FOR CONSTRUCTION

BUCHART HORN

MEPS
Buchart Horn Architects
845 North Lincoln Avenue Lancaster
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READING FIRE DEPARTMENT ENGINE 3, 3rd & COURT
GENERATOR / BOILER REPLACEMENT
15 N 3rd STREET
READING PA
DEPARTMENT OF PUBLIC WORKS, CITY OF READING, PENNSYLVANIA
815 WASHINGTON ST.
READING PA

REVISIONS

MARK	ISSUED DATE	DESCRIPTION

PROJECT NO: 8108341
ISSUED DATE: 06/05/20
DRAWN BY: MCA
CHECKED BY: JJG

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SHEET TITLE:
PANEL SCHEDULES

SHEET NO: E-602

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DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

LIGHTING AND APPLIANCE PANEL SCHEDULE

PANEL DESIGNATION: PANEL E
LOCATION: BOILER ROOM
MOUNTING: SURFACE
ENCLOSURE: NEMA 1
BUS AMPS: 225
PHASE: 1
FED FROM: MDP
LOCATION: BASEMENT
MIN. A.I.C.: X KA
WIRE: 3
MAIN BREAKER: 225A
VOLTAGE: 120/208
NEUTRAL SIZE: 100%
TOTAL POLES: 30
NOTES:

CKT NO	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CIRC NOTES	BREAKER AMP	BREAKER POLES	LOAD (KVA) A	LOAD (KVA) B		WIRE NO	WIRE SIZE	GND SIZE	COND SIZE	COND SIZE	GND SIZE	WIRE SIZE	WIRE NO	LOAD (KVA) A	LOAD (KVA) B		BREAKER POLES	BREAKER AMP	CIRC NOTES	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CKT NO
1	SPARE			20	1	0.0											0.0			1	20		SPARE		2
3	NEVERSINK FEED TO PANEL - D		1	20	1		0.0		2	12	12	3/4	3/4	12	12	2		0.0		1	20	1	KEYSTONE FEED TO PANEL - F		4
5	KEYSTONE CONTROL WIRE		1	20	1	0.0			2	12	12	3/4	3/4	12	12	3	0.0			2	20	1	NEVERSINK CONTROL WIRE		6
7	BOILER ROOM LIGHT		1	20	1		0.0		2	12	12	3/4						0.0					--		8
9	RADIO RECEPT		1	20	2	0.1			3	12	12	3/4	3/4	12	12	3	0.0			2	20	1	NEVERSINK 2ND FLOOR		10
11	--						0.1											0.0					--		12
13	KEYSTONE 1ST FLOOR		1	20	2	0.0			3	12	12	3/4	3/4	12	12	3	0.0			2	20	1	NEVERSINK 1ST FLOOR		14
15	--						0.0											0.0					--		16
17	KEYSTONE 2ND FLOOR		1	20	2	0.0			3	12	12	3/4					0.0			2	20		SPARE		18
19	--						0.0											0.0					--		20
21	SPARE (ON)			20	2	0.0			3	12	12	3/4	3/4	12	12	3	0.0			2	20		SPARE (ON)		22
23	--						0.0											0.0					--		24
25	PANEL D CONTACTOR			100	2	0.0			3	1	8	1-1/2	1-1/2	8	1	3	0.0			2	100		PANEL F CONTACTOR		26
27	--						0.0											0.0					--		28
29	SPARE			20	1	0.0											0.0			1	20		SPARE		30
						6	0										6	0	SIDE CONNECTED KVA						

PANEL CONNECTED KVA: 0
PANEL DEMAND KVA: 0
PANEL DEMAND FACTOR: 100%

1 EXISTING CIRCUITS THAT WERE REFED

DERATING FACTOR (80%)
DEMAND LOAD SIZE: 1 AMPS

LIGHTING AND APPLIANCE PANEL SCHEDULE

PANEL DESIGNATION: PANEL D-F
LOCATION: NVRSNK APP BAY
MOUNTING: FLUSH
ENCLOSURE: NEMA 1
BUS AMPS: 225
PHASE: 1
FED FROM: PANEL E VIA CONTACTOR
LOCATION: BOILER ROOM
MIN. A.I.C.: X KA
WIRE: 3
MAIN BREAKER: 100A
VOLTAGE: 120/208
NEUTRAL SIZE: 100%
TOTAL POLES: 42
NOTES:

CKT NO	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CIRC NOTES	BREAKER AMP	BREAKER POLES	LOAD (KVA) A	LOAD (KVA) B		WIRE NO	WIRE SIZE	GND SIZE	COND SIZE	COND SIZE	GND SIZE	WIRE SIZE	WIRE NO	LOAD (KVA) A	LOAD (KVA) B		BREAKER POLES	BREAKER AMP	CIRC NOTES	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CKT NO
1	APPARATUS ROOM LIGHTS - FIRE ALARM			20	1	0.0			2	12	12	3/4	3/4	12	12	2	0.0			1	20		SPARE ON - FIRE ALARM		2
3	SPARE (ON) - FIRE ALARM			20	1		0.0		2	12	12	3/4	3/4	12	12	2		0.0		1	20		LIGHTS 1ST FLOOR - FIRE ALARM		4
5	BASEMENT LIGHTS - FIRE ALARM			20	1	0.0			2	12	12	3/4	3/4	12	12	2	0.0			1	20		LIGHTS 2ND FLOOR- FIRE ALARM		6
7	SIREN CONTROL WIRE - FIRE ALARM			20	1		0.0		2	12	12	3/4	3/4	12	12	2		0.0		1	20		SPARE - FIRE ALARM		8
9	SIREN - FIRE ALARM			20	1	0.0			2	12	12	3/4	3/4	12	12	2	0.0			1	20		SPARE - FIRE ALARM		10
11	SPARE - FIRE ALARM			20	1		0.0		2	12	12	3/4	3/4	12	12	2		0.0		1	20		SPARE - FIRE ALARM		12
13	PROVISIONAL					0											0						PROVISIONAL		14
15	PROVISIONAL						0											0					PROVISIONAL		16
17	PROVISIONAL					0											0						PROVISIONAL		18
						0	0	SIDE CONNECTED KVA									0	0	SIDE CONNECTED KVA						

PANEL CONNECTED KVA: 0
PANEL DEMAND KVA: 0
PANEL DEMAND FACTOR: 100%

DERATING FACTOR (80%)
DEMAND LOAD SIZE: 0 AMPS

LIGHTING AND APPLIANCE PANEL SCHEDULE

PANEL DESIGNATION: PANEL D-N
LOCATION: NVRSNK APP BAY
MOUNTING: FLUSH
ENCLOSURE: NEMA 1
BUS AMPS: 225
PHASE: 1
FED FROM: PANEL E
LOCATION: BOILER ROOM
MIN. A.I.C.: X KA
WIRE: 3
MAIN BREAKER: 100A
VOLTAGE: 120/208
NEUTRAL SIZE: 100%
TOTAL POLES: 18
NOTES:

CKT NO	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CIRC NOTES	BREAKER AMP	BREAKER POLES	LOAD (KVA) A	LOAD (KVA) B		WIRE NO	WIRE SIZE	GND SIZE	COND SIZE	COND SIZE	GND SIZE	WIRE SIZE	WIRE NO	LOAD (KVA) A	LOAD (KVA) B		BREAKER POLES	BREAKER AMP	CIRC NOTES	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CKT NO
1	APPARATUS ROOM LIGHTS			20	1	0.0			2	12	12	3/4	3/4	12	12	2	0.0			1	20		SPARE (ON)		2
3	SPARE (ON)			20	1		0.0		2	12	12	3/4	3/4	12	12	2		0.0		1	20		LIGHTS 1ST FLOOR		4
5	BASEMENT LIGHTS			20	1	0.0			2	12	12	3/4	3/4	12	12	2	0.0			1	20		LIGHTS 1ST FLOOR		6
7	SIREN CONTROL WIRE			20	1		0.0		2	12	12	3/4						0.0		1	20		SPARE		8
9	SIREN			20	1	0.0			2	12	12	3/4					0.0			1	20		SPARE		10
11	SPARE			20	1		0.0											0.0		1	20		SPARE		12
13	PROVISIONAL					0											0						PROVISIONAL		14
15	PROVISIONAL						0											0					PROVISIONAL		16
17	PROVISIONAL					0											0						PROVISIONAL		18
						0	0	SIDE CONNECTED KVA									0	0	SIDE CONNECTED KVA						

PANEL CONNECTED KVA: 0
PANEL DEMAND KVA: 0
PANEL DEMAND FACTOR: 100%

DERATING FACTOR (80%)
DEMAND LOAD SIZE: 0 AMPS

LIGHTING AND APPLIANCE PANEL SCHEDULE

PANEL DESIGNATION: PANEL F - F
LOCATION: KYSTN APP BAY
MOUNTING: FLUSH
ENCLOSURE: NEMA 1
BUS AMPS: 225
PHASE: 1
FED FROM: PANEL E VIA CONTRACTOR
LOCATION: BOILER ROOM
MIN. A.I.C.: X KA
WIRE: 3
MAIN BREAKER: 100A
VOLTAGE: 120/208
NEUTRAL SIZE: 100%
TOTAL POLES: 42
NOTES:

CKT NO	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CIRC NOTES	BREAKER AMP	BREAKER POLES	LOAD (KVA) A	LOAD (KVA) B		WIRE NO	WIRE SIZE	GND SIZE	COND SIZE	COND SIZE	GND SIZE	WIRE SIZE	WIRE NO	LOAD (KVA) A	LOAD (KVA) B		BREAKER POLES	BREAKER AMP	CIRC NOTES	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CKT NO
1	LOUNGE LIGHT - FIRE ALARM			20	1	0.0			2	12	12	3/4	3/4	12	12	2	0.0			1	20		SPARE (ON) - FIRE ALARM		2
3	APPARATUS ROOM LIGHTS - FIRE ALARM			20	1		0.0		2	12	12	3/4	3/4	12	12	2		0.0		1	20		LIGHTS 1ST FLOOR - FIRE ALARM		4
5	BASEMENT LIGHTS - FIRE ALARM			20	1	0.0			2	12	12	3/4	3/4	12	12	2	0.0			1	20		LIGHTS 2ND FLOOR - FIRE ALARM		6
7	SIREN CONTROL - FIRE ALARM			20	1		0.0		2	12	12	3/4	3/4	12	12	2		0.0		1	20		SPARE - FIRE ALARM		8
9	SIREN - FIRE ALARM			20	1	0.0			2	12	12	3/4	3/4	12	12	2	0.0			1	20		SPARE - FIRE ALARM		10
11	SPARE - FIRE ALARM			20	1		0.0		2	12	12	3/4	3/4	12	12	2		0.0		1	20		SPARE - FIRE ALARM		12
13	PROVISIONAL					0											0						PROVISIONAL		14
15	PROVISIONAL						0											0					PROVISIONAL		16
17	PROVISIONAL					0											0						PROVISIONAL		18
						0	0	SIDE CONNECTED KVA									0	0	SIDE CONNECTED KVA						

PANEL CONNECTED KVA: 0
PANEL DEMAND KVA: 0
PANEL DEMAND FACTOR: 100%

DERATING FACTOR (80%)
DEMAND LOAD SIZE: 0 AMPS

LIGHTING AND APPLIANCE PANEL SCHEDULE

PANEL DESIGNATION: PANEL F - N
LOCATION: KYSTN APP BAY
MOUNTING: FLUSH
ENCLOSURE: NEMA 1
BUS AMPS: 225
PHASE: 1
FED FROM: PANEL E
LOCATION: BOILER ROOM
MIN. A.I.C.: X KA
WIRE: 3
MAIN BREAKER: 100A
VOLTAGE: 120/208
NEUTRAL SIZE: 100%
TOTAL POLES: 42
NOTES:

CKT NO	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CIRC NOTES	BREAKER AMP	BREAKER POLES	LOAD (KVA) A	LOAD (KVA) B		WIRE NO	WIRE SIZE	GND SIZE	COND SIZE	COND SIZE	GND SIZE	WIRE SIZE	WIRE NO	LOAD (KVA) A	LOAD (KVA) B		BREAKER POLES	BREAKER AMP	CIRC NOTES	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CKT NO
1	LOUNGE LIGHT			20	1	0.0			2	12	12	3/4	3/4	12	12	2	0.0			1	20		SPARE (ON)		2
3	APPARATUS ROOM LIGHTS			20	1		0.0		2	12	12	3/4	3/4	12	12	2		0.0		1	20		LIGHTS 1ST FLOOR		4
5	BASEMENT LIGHTS			20	1	0.0			2	12	12	3/4	3/4	12	12	2	0.0			1	20		LIGHTS 2ND FLOOR		6
7	SIREN CONTROL			20	1		0.0		2	12	12	3/4						0.0		1	20		SPARE		8
9	SIREN			20	1	0.0			2	12	12	3/4					0.0			1	20		SPARE		10
11	SPARE			20	1		0.0											0.0		1	20		SPARE		12
13	PROVISIONAL					0											0						PROVISIONAL		14
15	PROVIDENAL						0											0					PROVISIONAL		16
17	PROVISIONAL					0											0						PROVISIONAL		18
						0	0	SIDE CONNECTED KVA									0	0	SIDE CONNECTED KVA						

PANEL CONNECTED KVA: 0
PANEL DEMAND KVA: 0
PANEL DEMAND FACTOR: 100%

DERATING FACTOR (80%)
DEMAND LOAD SIZE: 0 AMPS

PRELIMINARY - NOT FOR CONSTRUCTION

BUCHART HORN
CONSULTING ENGINEERS

BUCHART HORN Architecture
Engineering Consultants
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READING FIRE DEPARTMENT ENGINE 3, 3 rd & COURT GENERATOR / BOILER REPLACEMENT

16 N 3 rd STREET
READING PA

DEPARTMENT OF PUBLIC WORKS, CITY OF READING, PENNSYLVANIA

815 MUSSER ST
READING, PA

REVISIONS

MARK	ISSUED DATE	DESCRIPTION

PROJECT NO: 81083-01
ISSUED DATE: 06/05/01
DRAWN BY: WCA
CHECKED BY: JJG

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SHEET TITLE:

PANEL SCHEDULES

SHEET NO: E-603

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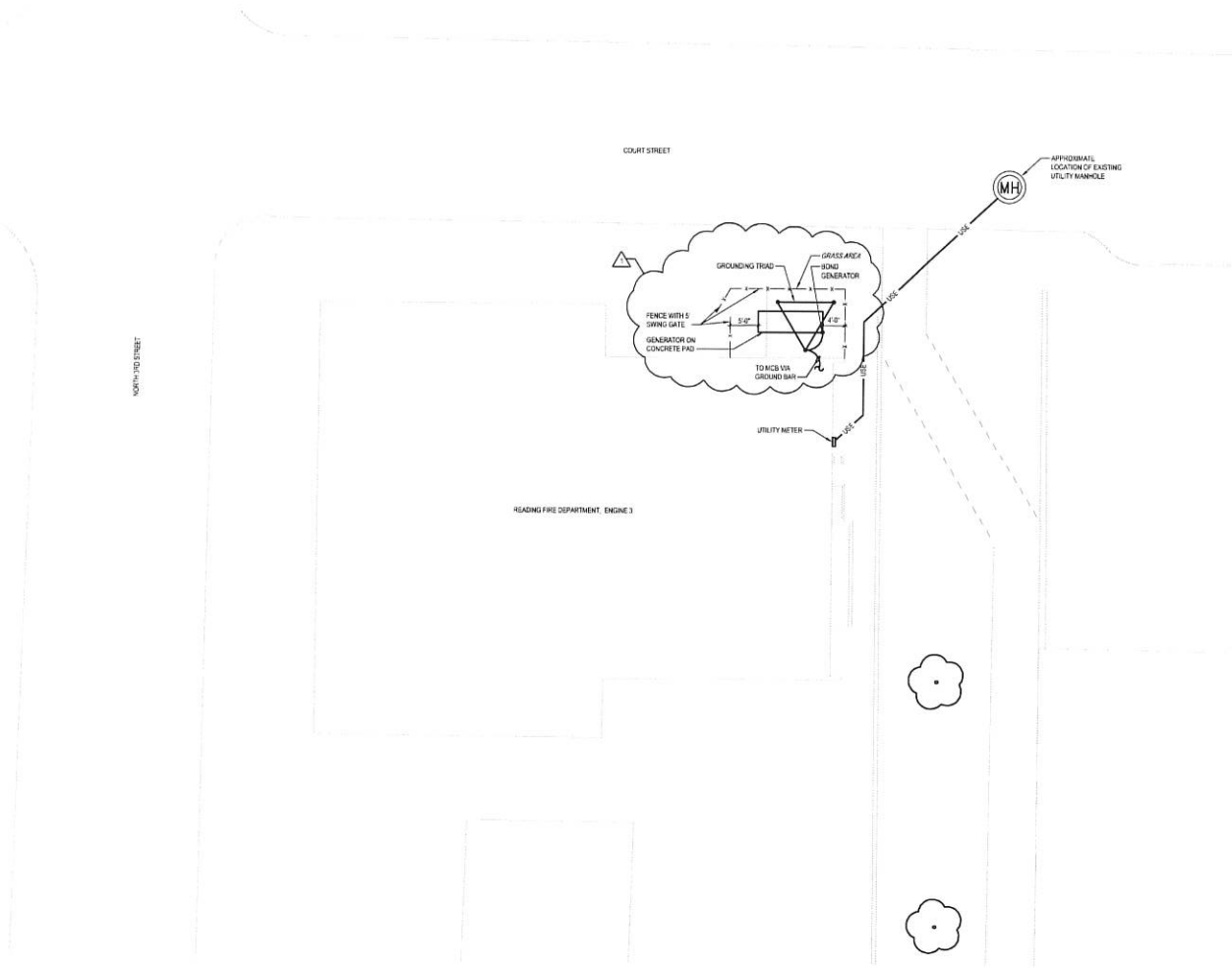

1 ELECTRICAL SITE PLAN
SCALE: 1" = 10'

GENERAL NOTES

1. SEE ONE LINE DIAGRAM ON SHEET E-601 FOR SERVICE INFORMATION.
2. SEE DUCT BANK AND GROUNDING DETAILS ON SHEET E-501.
3. SEE GENERATOR CONCRETE PAD DETAIL ON SHEET E-501A.
4. EC SHALL REPLACE CONCRETE SIDEWALK REMOVED FOR DUCT BANK INSTALLATION AND GAS LINE INSTALLATION TO GENERATOR.
5. CONTRACTOR SHALL COORDINATE METER SOCKET LOCATION WITH MET-ED AND WORK AT GAS METER TO ENSURE 3'-0" SEPARATION BETWEEN ELECTRIC METER AND GAS METER HEADER. MET-ED WILL PROVIDE ENCASED DUCT BANK AND CONDUCTORS FROM STREET HAND HOLE TO ELECTRIC METER SOCKET. CONTRACTOR SHALL EXTEND CONDUIT STUB-UP FROM DUCT BANK TO METER SOCKET. CONTRACTOR SHALL INCLUDE TRENCH INSPECTION FOR DUCT BANK WITH LOCAL INSPECTOR AND CONCRETE SIDEWALK REPLACEMENT WITHIN THE PROJECT SCOPE OF WORK.

1

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READING FIRE DEPARTMENT ENGINE 3, 3rd & COURT
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REVISIONS		
MARK	ISSUED DATE	DESCRIPTION
1	06/30/2020	ADDENDUM NO.1

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CHECKED BY:	JJG

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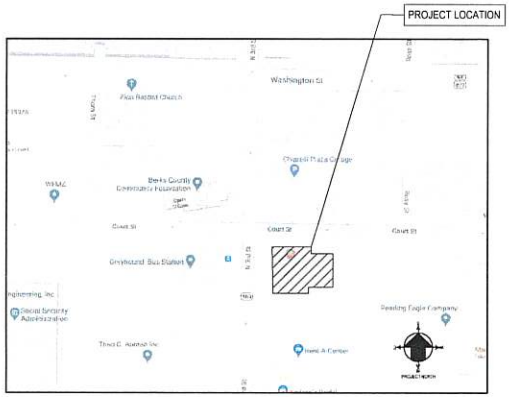
SHEET TITLE:
ELECTRICAL SITE PLAN

SHEET NO:
E-003

READING FIRE DEPARTMENT
ENGINE 3
READING PENNSYLVANIA

ELECTRICAL SERVICE, GENERATOR, & BOILER REPLACEMENT

PROJECT NO. 81083-01
JUNE 2020



DRAWING INDEX

SHEET NO.	SHEET TITLE
GENERAL	
G-1	COVER SHEET
MECHANICAL	
M-101	BOILER ROOM FLOOR PLAN
M-102	CONTROL DIAGRAMS
M-103	SPECIFICATIONS
ELECTRICAL	
E-001	ELECTRICAL SYMBOLS LEGEND
E-002	ELECTRICAL ABBREVIATIONS AND GENERAL INFORMATION
E-003	ELECTRICAL SITE PLAN
E-011	FLOOR PLANS - ELECTRICAL DEMOLITION
E-101	FLOOR PLANS - POWER
E-501	ELECTRICAL DETAILS
E-601	ONE LINE DIAGRAM
E-602	PANEL SCHEDULES
E-603	PANEL SCHEDULES

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CHECKED BY:	JJG

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SHEET TITLE:
COVER SHEET

SHEET NO:
G-1

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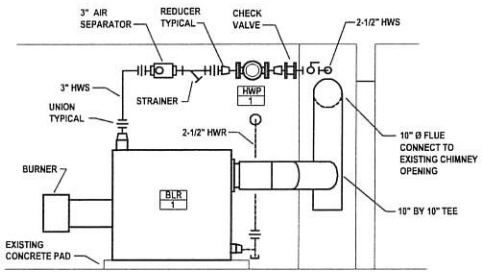
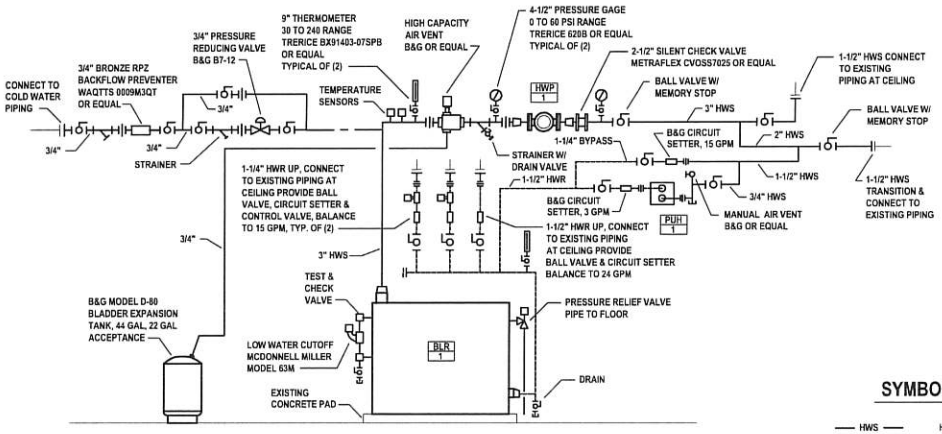


SECTION "A" BOILER ELEVATION

SCALE : 1/2" = 1' - 0"

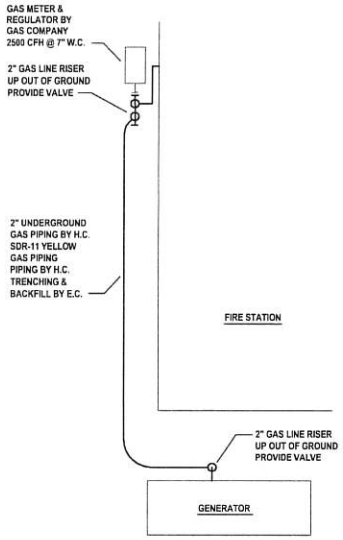


SCHEMATIC HOT WATER PIPING DIAGRAMS

NO SCALE

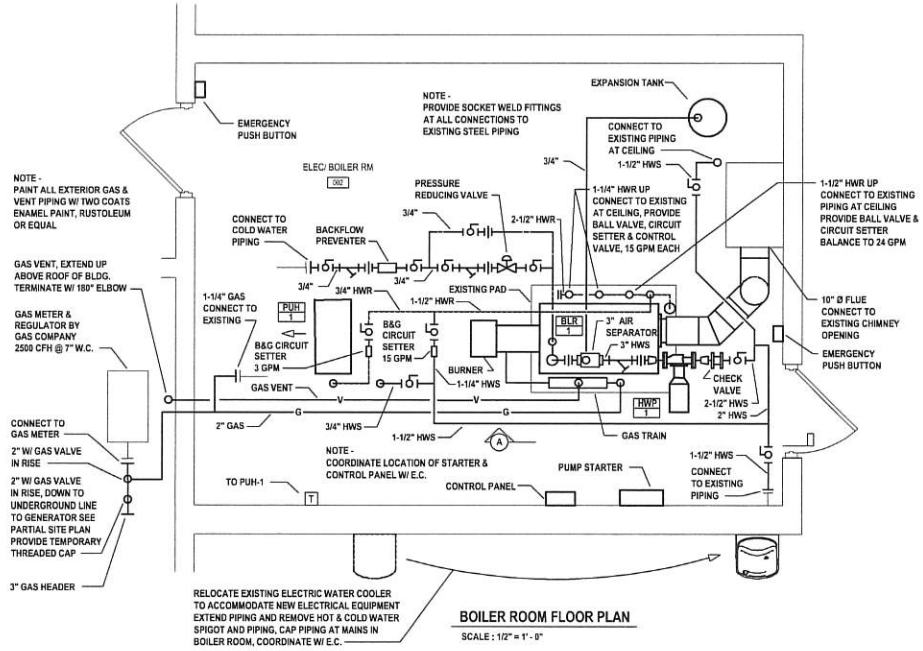
SYMBOLS LIST

HWS	HOT WATER SUPPLY PIPING
HWR	HOT WATER RETURN PIPING
CW	DOMESTIC COLD WATER PIPING
G	GAS PIPING
V	VENT PIPING
	BALL VALVE
	STRAINER
	UNION
	PIPE TURNED UP
	PIPE TURNED DOWN
H.C.	HEATING CONTRACTOR
E.C.	ELECTRICAL CONTRACTOR



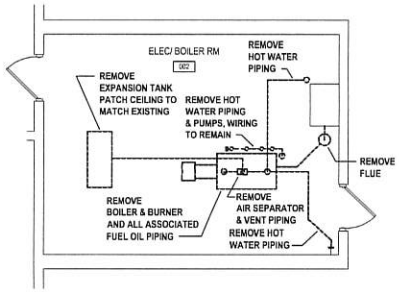
PARTIAL SITE PLAN

SCALE : 1/4" = 1' - 0"



BOILER ROOM FLOOR PLAN

SCALE : 1/2" = 1' - 0"



BOILER ROOM DEMOLITION PLAN

SCALE : 1/4" = 1' - 0"

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BOILER ROOM FLOOR PLAN

SHEET NO:

M-101

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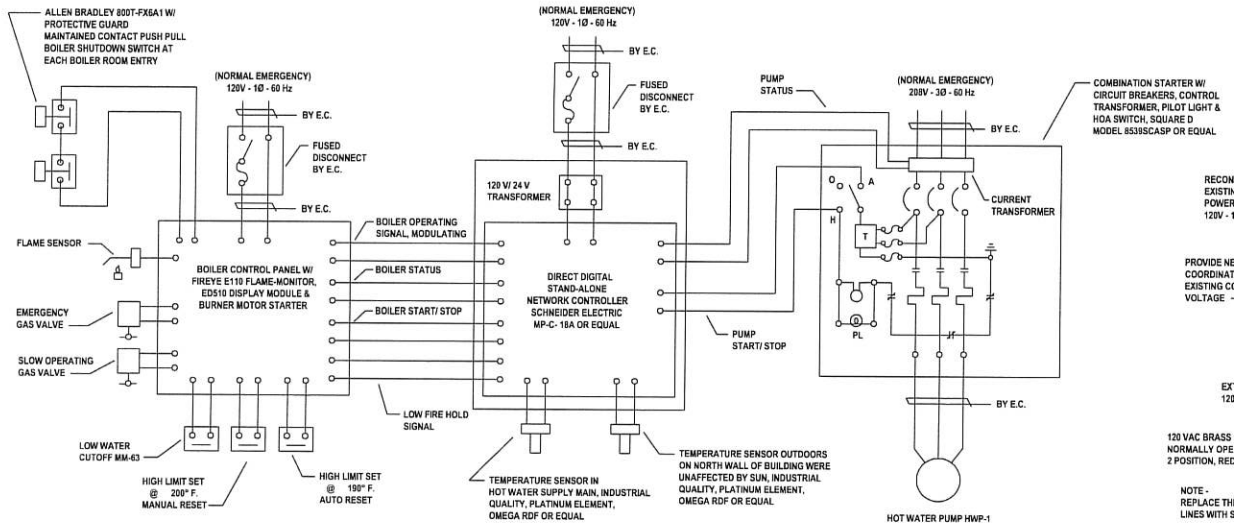
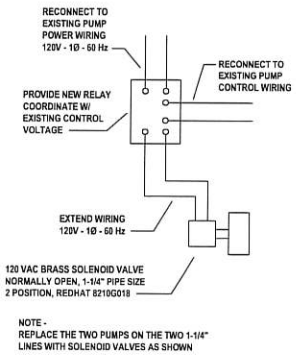


SCHEMATIC BOILER CONTROL WIRING DIAGRAMS

NO SCALE

HOT WATER RESET SCHEDULE

OUTDOOR AIR TEMPERATURE	HOT WATER SUPPLY TEMPERATURE
5	180
30	160
55	140



SCHEMATIC ZONE VALVE CONTROL WIRING DIAGRAMS

NO SCALE

BOILER SCHEDULE

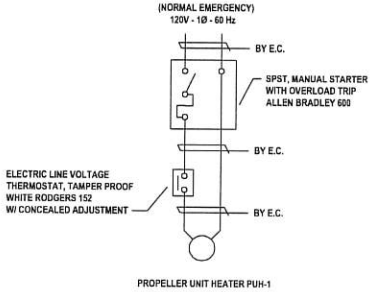
MARK	MBH INPUT	MBH OUTPUT	GAS PRESSURE	BURNER HP	POWER	BASIS OF DESIGN	MODEL
BLR-1	935	753	10" W.C. TO 14"W.C.	1/2	120 V - 1 Ø - 60 Hz	WEIL MCLAIN	780

HOT WATER PUMP SCHEDULE

MARK	GPM	OPERATING HEAD (FT.)	SHUTOFF HEAD (FT.)	MOTOR HP	POWER	BASIS OF DESIGN	MODEL
HWP-1	72	44	46	2	208 V - 3 Ø - 60 Hz	BELL & GOSSETT	60 - 2 x 2 x 7
HWP-2	72	44	46	2	208 V - 3 Ø - 60 Hz	BELL & GOSSETT	60 - 2 x 2 x 7
PROVIDE HWP-2 LOOSE IN A BOX TO OWNER FOR A SPARE							

PROPELLER UNIT HEATER SCHEDULE

MARK	MBH CAPACITY	CFM	GPM	MOTOR HP	MOTOR RPM	POWER	HEIGHT	BASIS OF DESIGN	MODEL
PUH-1	34	400	3	1/20	1050	120 V - 1 Ø - 60 Hz	11-1/2"	MODINE	HHD30



SCHEMATIC UNIT HEATER CONTROL WIRING DIAGRAMS

NO SCALE

SEQUENCE OF CONTROL

UPON ANY BOILER EMERGENCY PUSHBUTTON SWITCH BEING ACTIVATED BOILER SHALL SHUT DOWN. BOILERS SHALL NOT RESTART UNTIL SWITCH IS MANUALLY RESET.

CONTROL PANEL SHALL MONITOR OUTDOOR AIR TEMPERATURE. UPON A DROP IN OUTDOOR AIR TEMPERATURE TO 55 DEGREES BOILER SYSTEM SHALL INITIATE. HOT WATER PUMP SHALL BE INDEXED TO START. CONTROL PANEL SHALL MONITOR STATUS OF PUMP. BOILER OPERATION SHALL NOT BE INITIATED UNTIL PUMP OPERATION IS CONFIRMED.

ONCE PUMP OPERATION IS CONFIRMED CONTROL PANEL SHALL SIGNAL BOILER TO START. IF HOT WATER SUPPLY TEMPERATURE IS BELOW 140 DEGREES BOILER SHALL START ON LOW FIRE AND HOLD LOW FIRE UNTIL THE HOT WATER SUPPLY TEMPERATURE REACHES 140 DEGREES.

ONCE THE BOILER SUPPLY WATER TEMPERATURE REACHES 140 DEGREES CONTROL PANEL SHALL SEND A MODULATION SIGNAL TO BOILER BOILER CONTROL PANEL TO ACHIEVE THE HOT WATER SUPPLY TEMPERATURE SHOWN IN THE HOT WATER RESET SCHEDULE.

BOILER SHALL CONTINUE TO OPERATE UNTIL THE OUTDOOR AIR TEMPERATURE RISES TO 60 DEGREES. AT 60 DEGREES THE CONTROL PANEL SHALL INDEX THE BOILER OFF. THE HOT WATER PUMP SHALL CONTINUE TO RUN FOR THREE MINUTES AFTER THE BOILER IS INDEXED OFF.

BID DOCUMENTS

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ROBERT C. MATJAST

ARCHITECT: BUCHART HORN, Architects, 401 West Philadelphia Street, York, PA 17401, 717-843-1401

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SHEET TITLE: CONTROL DIAGRAMS

SHEET NO: M-102

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MECHANICAL SPECIFICATIONS

1. VISIT THE SITE AND BECOME THOROUGHLY AQUAINTED WITH ALL EXISTING CONDITIONS.

2. THE DRAWINGS ARE DIAGRAMMATIC AND SHALL BE FOLLOWED AS CLOSE AS POSSIBLE. THE DRAWINGS ARE NOT INTENDED TO SHOW EVERY DETAIL. SYSTEMS SHALL BE ASSEMBLED COMPLETE TO PERFORM THE INTENT OF THE DRAWINGS IN COMPLIANCE WITH ALL CODES.

3. SUBMIT AND PAY ALL FEES FOR ALL BUILDING PERMITS REQUIRED BY THE CITY OF READING AND THE PENNSYLVANIA DEPARTMENT OF LABOR AND INDUSTRY BOILER DIVISION. COORDINATE FINAL BOILER INSPECTION AND PROVIDE ANY REQUIRED REVISIONS.

4. SUBMIT UGI GAS SERVICE UPGRADE REQUEST FORM. SCHEDULE AND COORDINATE GAS SERVICE UPGRADE WITH UGI.

5. GUARANTEE IN WRITING ALL MATERIALS, EQUIPMENT AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE BY THE CITY OF READING.

6. TEST AND BALANCE BOILER, PIPING, EQUIPMENT AND CONTROLS. DRAIN AND FLUSH ALL EXISTING PIPING. TEST BOILER AND PIPING SYSTEM AT 40 PSI FOR A PERIOD OF ONE HOUR. REPAIR ANY LEAKS AND RETEST. BALANCE ALL CIRCUIT SETTERS WITH EXISTING BUILDING CONTROL VALVES INDEXED OPEN. BALANCE PUMP TO SCHEDULED GPM. SUBMIT WRITTEN BALANCE REPORT. BALANCING AGENT SHALL BE CERTIFIED BY EITHER AABC OR NEBB.

7. SUBMIT, FOR REVIEW BY THE ENGINEER, SHOP DRAWING DATA FOR EACH PIECE OF EQUIPMENT OR MATERIAL PROPOSED. SUBMIT CONTROL SHOP DRAWINGS.

8. AT THE COMPLETION OF THE PROJECT PROVIDE THE OWNER WITH AN 8 HOUR INSTRUCTIONAL SESSION FOR ALL EQUIPMENT AND CONTROLS. PROVIDE OPERATION AND MAINTENANCE MANUALS FOR ALL EQUIPMENT AND CONTROLS. SUBMIT "AS BUILT DRAWINGS".

9. PROVIDE ALL CUTTING AND PATCHING OF EXISTING BOILER ROOM CEILING AS REQUIRED FOR DEMOLITION AND NEW WORK INSTALLATION. PATCH ALL OPENINGS WITH 5/8" PURPLE MOISTURE RESISTANT DRYWALL WITH 1/8" SKIM COAT PLASTER. PROVIDE BACKING SUPPORT TO ATTACH DRYWALL PATCHES. SAND ALL AREAS SMOOTH AND PAINT ENTIRE CEILING WITH TWO COATS MOLD RESISTANT PAINT, BEHR ULTRA WHITE CEILING FLAT INTERIOR PAINT OR APPROVED EQUAL.

10. PRESSURE GAGES AND THERMOMETERS SHALL BE MANUFACTURED BY TRERICE, DRESSER OR WEISS. THERMOMETERS SHALL BE 9 INCH WITH CAST ALUMINUM CASING. PRESSURE GAGES SHALL BE 4-1/2" DIAMETER WITH ALUMINUM CASING. PROVIDE 1/4" NEEDLE VALVES FOR ALL THERMOMETERS AND PRESSURE GAGES.

11. BALL VALVES SHALL BE TWO PIECE, BRASS OR BRONZE BODY WITH FULL PORT CHROME PLATED BRONZE BALL, TFE SEAT, 600 PSIG, MANUFACTURED BY CONBRACO, WATTS OR MILWAUKEE.

12. PIPE HANGERS SHALL BE ADJUSTABLE STEEL CLEVIS HANGERS (MSS TYPE 1) MANUFACTURED BY PHD, ANVIL OR B-LINE. HANGERS SHALL BE GALVANIZED OR PAINTED. PROVIDE HANGERS AT ALL CHANGES IN DIRECTION AND ON BOTH SIDES OF ALL EQUIPMENT.

13. PROVIDE 1-1/4" LETTER HEIGHT STENCIL IDENTIFICATION FOR ALL PIPING. PROVIDE BRASS TAGS FOR ALL VALVES.

14. INSULATE ALL HOT WATER SUPPLY, HOT WATER RETURN AND DOMESTIC COLD WATER PIPING WITH PREFORMED, GLASS FIBER INSULATION WITH THERMOSETTING RESIN, ASTM C547, TYPE 1 WITH FACTORY APPLIED ALL PURPOSE VAPOR- RETARDER JACKET. INSULATION SHALL BE MANUFACTURED BY OWENS-CORNING, KNAUF OR CERTAIN TEED. PROVIDE INSULATION WRAP AND 20 MIL PVC COVERS FOR ALL ELBOWS AND FITTINGS. INSULATION SHALL BE 1" THICK FOR PIING 1-1/4" AND SMALLER AND 1-1/2" FOR PIPING 1-1/2" AND LARGER.

15. PROVIDE A COMPLETE STAND ALONE DDC CONTROL SYSTEM AS SHOWN ON THE SCHEMATIC CONTROL WIRING DIAGRAMS. STAND ALONE NETWORK CONTROLLER SHALL BE MANUFACTURED BY SCHNEIDER ELECTRIC AND INSTALLED BY NRG CONTROLS INC., TRI-M GROUP LLC OR CM3 BUILDING SOLUTIONS, INC. THE CONTROL SUB-CONTRACTOR SHALL FURNISH ALL EQUIPMENT, MATERIALS, LABOR AND SUPERVISION FOR A COMPLETE ELECTRONIC AUTOMATIC CONTROL SYSTEM. COORDINATE WITH BOILER EQUIPMENT AND ELECTRICAL CONTRACTOR. ALL WIRING SHALL BE IN ELECTRICAL METALLIC TUBING (EMT). SUBMIT CONTROL SHOP DRAWINGS. INSTALL CONTROLLER IN 12 GAGE CABINET WITH BAKED ENAMEL FINISH. ALL WIRING IN THE PANEL SHALL BE THHN/THWN INSULATED CONDUCTORS COLOR CODED. FOLLOW ELECTRICAL SPECIFICATION FOR ALL CONDUIT AND CONDUCTORS INSTALLED BY THE ATC SUB-CONTRACTOR. PROVIDE ALL SENSORS AND PIPE WELLS. COMMISSION SYSTEM AND PROVIDE OPERATING AND MAINTENACE MANUALS.

16. ALL HOT WATER SUPPLY, HOT WATER RETURN, VENT AND ABOVE GROUND GAS PIPING SHALL BE ASTM A53 SCHEDULE 40 BLACK STEEL. PIPING 2" AND SMALLER SHALL HAVE MALLEABLE IRON THREADED FITTINGS. PIPING AND FITTINGS 2-1/2" AND LARGER SHALL BE BUTT WELDED WITH FLANGES AT CONNECTION TO EQUIPMENT. CONNECTION TO EXISTING PIPING SHALL BE MADE WITH SOCKET WELDED FITTINGS. DOMESTIC WATER PIPING SHALL BE TYPE "L" COPPER WITH WROUGHT COPPER SOLDER JOINT FITTINGS.

17. PUMPS SHALL BE BELL & GOSSETT SERIES 60 FLEXIBLE COUPLED IN-LINE CENTRIFUGAL, BRONZE FITTED.

18. FLUE PIPE SHALL BE DOUBLE WALL POSITIVE PRESSURE SYSTEM MODEL PS AS MANUFACTURED BY SELKIRK. INNER CASING SHALL BE 0.035 INCH THICK TYPE 304 STAINLESS STEEL AND OUTER CASING SHALL BE 0.025 INCH THICK ALUMINIZED STEEL WITH 1 INCH INSULATION BETWEEN CASINGS. PIPE JOINTS SHALL BE MADE USING FACTORY SUPPLIED "V" BANDS WITH SEALANT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

19. UNIT HEATER SHALL BE LOW PROFILE HOT WATER TYPE MODEL HHD30 AS MANUFACTURED BY MODINE. UNIT HEATER SHALL HAVE 18 GAGE PAINTED STEEL CABINET WITH SIDE PIPING CONNECTIONS. INSTALL WITH BOTTOM 6'-8" ABOVE FINISHED FLOOR.

20. BOILER:

A. FURNISH AND FIELD ASSEMBLE IN PLACE LOW PRESSURE, WET BASE, CAST IRON SECTIONAL BOILER WITH GAS FIRED POWER BURNER THAT PRESSURIZES THE FIRE BOX AND OPERATES UNDER FORCED DRAFT.

B. BOILER SHALL BE WEIL MCLAIN SERIES 80 WITH NATURAL GAS BURNER CAPABLE OF BURNING GAS AT 4 IN. TO 14 IN. WATER COLUMN. BOILER SHALL BE RATED FOR 50 PSI WATER.

C. SUBMIT BOILER AND BURNER SHOP DRAWINGS FOR APPROVAL BY THE ENGINEER.

D. CAST IRON SECTIONS SHALL BE ASSEMBLED WITH INDIVIDUAL DRAW RODS AND SHALL HAVE SEALING GROOVES WITH HIGH TEMPERATURE SEALING ROPE.

E. BOILER TO HAVE REAR FLUE OUTLET, INSULATED BURNER MOUNTING PLATE, OBSERVATION PORTS, STEEL FLUE DAMPER, FLEXIBLE REFRACTORY BLANKETS AND INSULATED HEAVY GAGE STEEL JACKET WITH ENAMEL FINISH.

F. FURNISH BOILER WITH HIGH TEMPERATURE LIMIT, LOW TEMPERATURE LIMIT, COMBINATION PRESSURE-TEMPERATURE GAGE WITH DIAL, ASME CERTIFIED PRESSURE RELIEF VALVE SET AT 50 PSIG AND MCDONNELL MILLER 63M LOW WATER CUTOFF.

G. PROVIDE BOILER WITH GAS POWER BURNER WITH MODULATING CONTROL, POWER FLAME OR APPROVED EQUAL. BURNER SHALL BE 1/2 HORSE POWER, 120 VOLT, SINGLE PHASE. BOILER CONTROL PANEL SHALL BE PROVIDED WITH FIREYE E110 FLAME-MONITOR AND ED510 DISPLAY MODULE. CONTROL DEVISES AND MODULATING CONTROL SEQUENCE SHALL COMPLY WITH ALL REQUIREMENTS OF ASME, CSD-1 AND UL. SYSTEM SHALL BE IN ACCORDANCE WITH ALL REQUIREMENTS FOR AN IRI MODULATING SYSTEM. PROVIDE ALL VALVES AND VENT PIPING TO THE EXTERIOR IN STRICT ACCORDANCE WITH IRI. BOILER PANEL SHALL INCLUDE THE FOLLOWING INDICATOR DISPLAY: CALL FOR HEAT, IGNITION ON, PILOT FAILURE, LOW WATER, FLAME FAILURE, ALARM, SILENCING SWITCH, CONTROL FUSE AND POST PURGE TIMER. BURNER OPERATING CONTROLS SHALL BE FULLY MODULATING WITH A 6 TO 1 TURNDOWN, PRE-PURGE AND POST-PURGE PROGRAMMING.

H. THE CONTRACTOR SHALL OBTAIN THE SERVICES OF A FACTORY AUTHORIZED AGENT TO PROVIDE LIGHT OFF AND ADJUSTMENT. THE START-UP AGENT SHALL PROVIDE A BURNER LIGHT-OFF REPORT INDICATING THAT THE BURNER WAS ADJUSTED TO OPTIMUM PERFORMANCE. THE AUTHOIZED AGENT SHALL PROVIDE A ONE YEAR SERVIDE WARRANTY AFTER START UP.

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SPECIFICATIONS

SHEET NO:

M-103

ELECTRICAL, COMMUNICATION, PROCESS CONTROL, AND ELECTRONIC SAFETY AND SECURITY SYMBOL LEGEND

LIGHTING

LIGHT FIXTURE : GENERAL
- CEILING SURFACE MOUNTED
- CEILING RECESSED
- CEILING PENDANT
- WALL MOUNTED

NIGHT LIGHT : FIXTURE WITH "NIGHT LIGHT" CONNECTED TO NORMAL OR NORMAL/EMERGENCY CIRCUIT
- CEILING SURFACE MOUNTED
- CEILING RECESSED
- CEILING PENDANT
- WALL MOUNTED

EMERGENCY : LIGHT FIXTURE CONNECTED TO NORMAL/EMERGENCY, EMERGENCY ONLY OR BATTERY INVERTER CIRCUIT
- CEILING SURFACE MOUNTED
- CEILING RECESSED
- CEILING PENDANT
- WALL MOUNTED

EMERGENCY BALLAST : LIGHT FIXTURE WITH EMERGENCY BATTERY BALLAST
- CEILING SURFACE MOUNTED
- CEILING RECESSED
- CEILING PENDANT
- WALL MOUNTED

EMERGENCY SOCKET : LIGHT FIXTURE WITH EMERGENCY ONLY SOCKET
- CEILING SURFACE MOUNTED
- CEILING RECESSED
- CEILING PENDANT
- WALL MOUNTED

FLOOD OR SPOT LIGHT : CLG, WALL

EXIT SIGN :
- ILLUMINATED FACE
- WALL MOUNTED - DIRECTIONAL ARROW AS REQUIRED
- SINGLE FACE, CEILING MOUNTED - DIRECTIONAL ARROW AS REQUIRED
- DUAL FACE, CEILING MOUNTED - DIRECTIONAL ARROWS AS REQUIRED

EMERGENCY LIGHTING UNIT :
- EMERGENCY LIGHTING UNIT - BATTERY TYPE WITH NUMBER OF HEADS AS INDICATED
- EMERGENCY LIGHTING UNIT - REMOTE HEAD WITH NUMBER OF HEADS AS INDICATED

TRACK LIGHTING:
- N M S
- TRACK MOUNTED LIGHT FIXTURES - WITH FLOOD AND/OR SPOT TYPES
- FLOOD: M - MEDIUM; N - NARROW; W - WIDE SPOT; S - NORMAL
- FEED END
- HORIZONTAL/VERTICAL RUN

POWER DISTRIBUTION

SURFACE FLUSH
- PANELBOARD
- EQUIPMENT CABINET

CLG FLOOR WALL
- JUNCTION BOX
- BLANK OUTLET
- JUNCTION BOX OR BLANK OUT - ABOVE FLOOR, IN CAST BOX ON RIGID CONDUIT
- JUNCTION BOX OR BLANK OUT - ABOVE COUNTER
- CONTACTOR
- RELAY
- METER
- SPD — SURGE PROTECTION DEVICE
- CB — ENCLOSED CIRCUIT BREAKER
- SAFETY SWITCH - NON-FUSED, 3-POLE, 30A, 600V UNO
- SAFETY SWITCH - FUSED, 3-POLE, 30A, 600V UNO
- COMBINATION STARTER / DISCONNECT - 3 PHASE
- MANUAL MOTOR STARTER (HP RATED) THE LETTERS ADJACENT TO THE SYMBOL INDICATE STARTER TYPE
  - M - TOGGLE
  - MK - KEY OPERATED
  - MB - PUSHBUTTON
  - MT - TOGGLE WITH THERMAL OVERLOADS
- TRANSFORMER - 120V AND GREATER
- TRANSFORMER - LOW VOLTAGE
- MOTOR OR EQUIPMENT
- ELECTRIC SOLENOID VALVE - BY OTHERS (H-HOT WATER, C-COLD WATER, G-GAS)
- MAST HEAD
- CONDUIT SLEEVE - QUANTITY AND SIZE AS REQUIRED
- CABLE TRAY - WALL HUNG
- CABLE TRAY - CENTER HUNG
- EMPTY CONDUIT - SEALED & CAPPED
- CIRCUIT
- HOMERUN TO PANELBOARD; PROVIDE 3 #12, #12 GRD, 3/4"C UNLESS NOTED OTHERWISE ON DRAWING, ON PANEL SCHEDULES, OR ONE LINE DIAGRAMS
- CIRCUIT - EQUIPMENT ON SAME CIRCUIT BUT SEPARATELY CONTROLLED
- GROUND BAR

SITE

- POLE MOUNTED H.I.D. LIGHT FIXTURE - SINGLE HEAD WITH ARM BRACKET
- POLE MOUNTED H.I.D. LIGHT FIXTURE - DUAL HEAD WITH ARM BRACKET
- POLE MOUNTED H.I.D. LIGHT FIXTURE - SINGLE HEAD POST MOUNT
- BUILDING UPLIGHT FIXTURE
- BOLLARD LIGHT FIXTURE
- UNDERGROUND ELECTRICAL ENCLOSURE
- PAD MOUNT TRANSFORMER
- UTILITY POLE
- MANHOLE/VAULT
- UGE — UNDERGROUND EMERGENCY/STANDBY GENERATOR SERVICE
- UPE — UNDERGROUND ELECTRIC SERVICE (PRIMARY)
- USE — UNDERGROUND ELECTRIC SERVICE (SECONDARY)
- UTC — UNDERGROUND CATV & TELEPHONE SERVICE
- SL — UNDERGROUND SITE LIGHTING CONDUIT
- EC — UNDERGROUND EMPTY CONDUIT
- BC — UNDERGROUND BRANCH CIRCUIT CONDUIT
- TC — TELECOMMUNICATION CONDUIT

WIRING DEVICES

SWITCH:
- $ — SINGLE POLE
- $a — THE LETTERS/NUMBERS ADJACENT TO THE SYMBOL INDICATE SWITCH TYPE. SWITCHES ARE SINGLE POLE UNLESS IDENTIFIED OTHERWISE
  - 3 - THREE-WAY
  - 4 - FOUR-WAY
  - B - TOUCHBOLT
  - CK - CARD KEY
  - D - DIMMER - INCANDESCENT
  - DF - DIMMER - FLUORESCENT
  - DL - DIMMER - LOW VOLTAGE
  - ET - ELECTRONIC TAP
  - K - KEY OPERATED
  - MC - MAINTAINED CONTACT
  - P - PILOT LIGHT
  - R - LOCAL REMOTE CONTROL
  - WP - WEATHERPROOF
  - X - EXPLOSION PROOF

OCCUPANCY SENSOR:
- $oc — SWITCH - PIR WITH PUSHBUTTON
- $oc1 — THE LETTERS/NUMBERS ADJACENT TO THE SYMBOL INDICATE SWITCH SENSOR TYPE. SWITCH SENSORS ARE PIR TYPE UNLESS IDENTIFIED OTHERWISE
  - OC1 - DUAL TECHNOLOGY WITH 1 PUSHBUTTON
  - OC2 - DUAL TECHNOLOGY WITH 2 PUSHBUTTONS FOR DUAL CONTROL

CLG WALL
- RADIAL - AUTO ON/OFF
- DIRECTIONAL - AUTO ON/OFF

THE LETTERS ADJACENT TO THE SYMBOL INDICATES SENSOR TYPE. WHERE SENSOR SYMBOL IS SHOWN WITHOUT IDENTIFICATION, PROVIDE PIR FOR WALL TYPES AND DT FOR CEILING TYPES.
- DT - DUAL TECHNOLOGY (COMBINATION PIR & US)
- ER - EXTENDED RANGE
- HB - HIGHBAY
- HH - HIGH HUMIDITY / LOW TEMPERATURE
- HW - HALLWAY
- PIR - PASSIVE INFRARED
- R - RELAY
- US - ULTRASONIC OR MICROPHONIC
- WP - WEATHERPROOF
- WW - WIDE VIEW

- P — POWER PACT

PHOTO/DAYLIGHT SENSOR:
- PHOTO SENSOR - WALL MTD (MOUNTED ON NORTH FACE OF BUILDING)
- PHOTO SENSOR - CEILING MTD

RECEPTACLE:
CLG FLOOR WALL
- SINGLE
- DUPLEX
- DOUBLE DUPLEX
- GFCI
- GFCI DOUBLE DUPLEX
- SPD (ISOLATED GROUND)
- SPD DOUBLE DUPLEX
- TAMPER RESISTANT
- SPLIT WIRED
- 30A — SINGLE PHASE, 480V RATED WITH AMPERAGE AS INDICATED
- 40A — THREE PHASE, 480V RATED WITH AMPERAGE AS INDICATED
- 12" — NUMBER ADJACENT TO SYMBOL INDICATES MOUNTING HEIGHT A.F.F.
- C — LETTER "C" ADJACENT TO SYMBOL INDICATES RECEPTACLE ABOVE COUNTER
- ABOVE FLOOR, IN CAST BOX ON RIGID CONDUIT - HI-CLIP TACILE TYPE AS SHOWN

WIRING DEVICES (CONTINUED)

PUSHBUTTON:
- STANDARD
- E, K — THE LETTER ADJACENT TO THE SYMBOL INDICATES TYPE. PUSHBUTTONS ARE STANDARD UNLESS IDENTIFIED OTHERWISE
  - E - EMERGENCY
  - K - EMERGENCY, KEY OPERATED
  - P - PANIC/ENTRANCE

MISCELLANEOUS:
- POWER POLE - WITH WIRING DEVICES AS INDICATED
- POWER/TELECOM POLE - WITH WIRING DEVICES AS INDICATED
- FURNITURE PEDESTAL - WITH WIRING DEVICES AS INDICATED
- FIRE RATED POKE-THROUGH - WIRING DEVICES AND TELECOM OUTLETS AS INDICATED
- FLUSH FLOOR BOX - WIRING DEVICES AND TELECOM OUTLETS AS INDICATED
- SURFACE RACEWAY WITH WIRING DEVICES AS INDICATED
  - VERTICAL DROP
  - HORIZONTAL RUN
- SURFACE MOUNTED RACEWAY MOUNTED - WIRING DEVICES AS INDICATED
  - SURFACE RACEWAY

FIRE ALARM

CLG WALL
- SMOKE DETECTOR
- HEAT DETECTOR
- CARBON MONOXIDE DETECTOR
- NUMBER ADJACENT TO SYMBOL INDICATES ZONE, IF REQUIRED. LETTER ADJACENT TO SYMBOL INDICATES PREFERRED DETECTOR TYPE.
  - D - DOOR
  - P - PRECAUTION
  - R - ELEVATOR RECALL
  - RE - SHAFT & EXHAUST ELEVATOR RECALL
  - RS - ELEVATOR RECALL & SPRINKLER ACTIVATION
- DUCT DETECTOR - SMOKE (INUMBER INDICATES ZONE, IF REQUIRED)
- DUCT DETECTOR - HEAT (INUMBER INDICATES ZONE, IF REQUIRED)

CLG WALL
- AUDIBLE WITH VISUAL UNIT
- AUDIBLE ONLY UNIT
- VISUAL ONLY UNIT
- MANUAL PULL STATION (INUMBER INDICATES ZONE IF REQUIRED)
- MANUAL PULL STATION - KEY OPERATED
- MANUAL PULL STATION WITH CLEAR PROTECTIVE COVER DOOR HOLDER (F-FLOOR, C-CEILING, W-WALL)
- CONTROL MODULE - ZONE
- CONTROL MODULE - ADDRESSABLE
- REMOTE TEST STATION - WALL MTD
- REMOTE TEST STATION - CEILING MTD
- LETTER L INDICATES TEST LIGHT
- FIRE SUPPRESSION FLOW SWITCH - BY OTHERS
- FIRE SUPPRESSION TAMPER SWITCH - BY OTHERS

SURFACE FLUSH
- FIRE ALARM CONTROL PANEL

TELECOMMUNICATION/NETWORK

CLG FLOOR WALL
- VOICE/DATA OUTLET - BLANK
- DATA OUTLET - BLANK
- TELEPHONE (VOICE) OUTLET - BLANK
- W — TELEPHONE OUTLET - LETTER 'W' ADJACENT TO SYMBOL INDICATES OUTLET FOR WALL HUNG PHONE
- 2 — NUMBER ADJACENT TO SYMBOL INDICATES NUMBER OF ACTIVE PORTS: 2, 4, 6 OR 8
- C — LETTER "C" ADJACENT TO SYMBOL INDICATES OUTLET ABOVE COUNTER
- F — LETTER "F" ADJACENT TO SYMBOL INDICATES FIBER OPTIC OUTLET
- 42" — NUMBER ADJACENT TO SYMBOL INDICATES MOUNTING HEIGHT A.F.F.
- D — VOICE/DATA POLE - TELECOM OUTLETS AS INDICATED
- POWER/TELECOM POLE - TELECOM OUTLETS AS INDICATED
- FURNITURE PEDESTAL - TELECOM OULTES AS INDICATED
- SURFACE MOUNTED RACEWAY MOUNTED - TELECOM OUTLETS AS INDICATED
  - SURFACE RACEWAY

SURFACE FLUSH
- TELECOM/NETWORK EQUIPMENT CABINET
- TELECOM/NETWORK EQUIPMENT RACK
- TELECOM/NETWORK BACKBOARD

PROCESS CONTROL DEVICES

MAV 1 1 — MCC 3 PNL
- TYPE LETTER SHOWN IN LIST BELOW
- NUMBER OF #14 DIGITAL SIGNAL WIRES INCLUDING A #14 GRD IN 3/4"C UNO (BLANK IF NONE). CONDUITS TO/FROM* SAME AREA MAY BE COMBINED. EC TO CONFORM TO NEC FOR CONDUIT SIZES. 24V AND 120V SHALL BE SEPARATED INTO SEPARATE CONDUITS. WIRES NOT USED ARE SPARES
- ASSOCIATED POWER SOURCE (BLANK IF NONE)
- NUMBER OF 2/C #16 TSP ANALOG SIGNAL CABLES IN 3/4"C UNO (BLANK IF NONE). CONDUITS TO/FROM* SAME AREA MAY BE COMBINED. EC TO CONFORM TO NEC FOR CONDUIT SIZES. CABLES NOT USED ARE SPARES

* - SEE INSTRUMENTATION DEVICE LIST ON EACH SHEET FOR DIGITAL AND ANALOG SIGNAL DESTINATION

LIST OF COMMON PROCESS DEVICES
- BTS - BOILER TEMPERATURE SWITCH
- CGS - COMBUSTIBLE GAS SENSOR/TRANSMITTER
- CTS - CABINET TEMPERATURE SWITCH
- DPS - DIFFERENTIAL PRESSURE SWITCH
- DSD - OVERHEAD DOOR SAFETY DEVICE
- EL - EMERGENCY STOP LANYARD
- ESP - EMERGENCY STOP PUSH BUTTON
- FLS - FLOODING LEVEL SENSOR
- FS - FLOW SWITCH
- GFM - GAS FLOW METER
- LS - LEVEL SWITCH (FLOAT)
- LTS - LIMIT SWITCH
- MM - MAGNETIC FLOW METER
- MOG - MOTOR OPERATED GATE
- MOV - MOTOR OPERATED VALVE
- MT - MOTOR TEMPERATURE SWITCH
- OLS - OIL LEVEL SWITCH
- POS - POSITION SWITCH
- PS - PRESSURE SWITCH
- PT - PRESSURE TRANSMITTER
- RL - RADAR LEVEL PROBE
- S - SOLENOID VALVE
- SL - SUBMERGIBLE LEVEL PROBE
- SLP - SEAL LEAK PROBE
- SM - SUCTION MONITOR
- T - TRANSMITTER
- TP - TEMPERATURE PROBE
- UF - ULTRASONIC FLOW METER
- UL - ULTRASONIC LEVEL PROBE
- VFM - VENTRU FLOW METER
- ZS - ZERO SPEED SWITCH

WIRING DIAGRAMS

- WIRES NOT CONNECTED
- CONNECTING WIRES

SECURITY/ACCESS/SURVEILLANCE

CLG WALL
- AUDIBLE WITH VISUAL UNIT
- AUDIBLE ONLY UNIT
- VISUAL ONLY UNIT
- 110 — THE NUMBER ADJACENT TO THE SYMBOL INDICATES PREFERRED CANDELA VALUE. VISUAL SYMBOL WITHOUT IDENTIFICATION SHALL BE AS FOLLOWS:
  - CORRIDORS / HALLWAYS - 30 CANDELA
  - ROOMS <= 2,000 SQFT - 75 CANDELA
  - ROOMS > 2,000 SQFT - 110 CANDELA

CLG WALL
- MONITOR
- CAMERA
- 72" — NUMBER ADJACENT TO SYMBOL INDICATES MOUNTING HEIGHT A.F.F.

CLG WALL
- MOTION DETECTOR (NUMBER INDICATES ZONE IF REQUIRED)
- SS — SPEAKER
- INTERCOM STATION - WALL MTD
- INTERCOM STATION - MASTER
- MAGNETIC DOOR CONTACTS (NUMBER INDICATES ZONE IF REQUIRED)
- B — PUSHBUTTON
- K — KEYPAD
- CR — CARD/PROXIMITY READER
- BR — BIOMETRIC READER
- MP — MULTIPLEXER
- L — ELECTRIC LOCK - BY OTHERS
- S — ELECTRIC STRIKE - BY OTHERS

SURFACE FLUSH
- SECURITY EQUIPMENT CABINET

GENERAL

- RISER, OR ONE LINE NOTE NUMBER (E.G., SEE RISER NOTE NO. E1) — E1
- SHEET KEYNOTE (NEW CONSTRUCTION) — 1
- DEMOLITION KEYNOTE — 1
- REVISION SEQUENCE NUMBER — 1
- ROOM TAG (ROOM NO NOT ALWAYS SHOWN) — ROOM NAME 101
- EQUIPMENT TAG — AHU-2
- SECTION/ ELEVATION REFERENCE — VIEW REF 1; SHEET REF A-XXX
- INTERIOR ELEVATION REFERENCE — VIEW REF 1; SHEET REF AXXX
- DETAIL / CALLOUT REFERENCE — VIEW REF 1; SHEET REF 1

BOX TAG/NOTE REFERENCE
BOXED TAG(S)/NOTE(S) BELOW THE ROOM NAME/NUMBER OR PLACED IN THE SPACE INDICATE THAT THE INFORMATION IN THE BOX APPLIES TO ALL FIXTURES AND/OR RECEPTACLES IN THE ROOM/SPACE UNLESS NOTED OTHERWISE.

PANEL NAME — RA 60 / P1 6 / LGA 10 — LIGHT FIXTURE DESIGNATOR (ONLY ON LIGHTING PLANS); POWER CIRCUIT FOR RECEPTACLES OR LIGHTING FIXTURES
KEY NOTE (TYP.) — 2 4 — EMERGENCY CIRCUIT (IF REQUIRED)

SYMBOLS LEGEND NOTES:
- A NOT ALL SYMBOLS INDICATED MAY APPEAR ON THESE CONTRACT DRAWINGS.
- B DASHED SYMBOLS REPRESENT EXISTING EQUIPMENT OR EQUIPMENT NOT IN CONTRACT.

BID DOCUMENTS

BUCHART HORN
ARCHITECTS | ENGINEERS | PLANNERS

MEETING DATE: 10/23/2018
Buchart Horn Architects
445 Minnesota Street, Suite 1800
St. Paul, MN 55101-2157
(651) 223-5000

READING FIRE DEPARTMENT ENGINE 3, 3rd & COURT
ELECTRICAL SERVICE, GENERATOR, & BOILER REPLACEMENT
1515 1st STREET
1515 & 1525 COURT
READING, PA
DEPARTMENT OF PUBLIC WORKS, CITY OF READING, PENNSYLVANIA
815 WASHINGTON ST
READING, PA

REVISIONS			
MARK	ISSUED DATE	DESCRIPTION	

PROJECT NO.	81013-01
ISSUED DATE:	06/12/20
DRAWN BY:	WCA
CHECKED BY:	JJG

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SHEET TITLE: ELECTRICAL SYMBOLS LEGEND

SHEET NO: E-001

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

ELECTRICAL ABBREVIATIONS, MOUNTING HEIGHTS, AND GENERAL LAYOUT NOTES

ELECTRICAL ABBREVIATIONS

NUMBER			
1PH	SINGLE-PHASE	DISTR	DISTRIBUTION
1Ø	SINGLE-PHASE	DIV	DIVISION
1P	SINGLE POLE	DL	DAMP LOCATION
2/C	TWO-CONDUCTOR	DN	DOWN
2WAY	TWO WAY	DPDT	DOUBLE POLE, DOUBLE THROW
3/C	THREE CONDUCTOR	DPST	DOUBLE POLE, SINGLE THROW
3PH	THREE-PHASE	DT	DOUBLE THROW
3Ø	THREE PHASE	DWG	DRAWING
4/C	FOUR-CONDUCTOR	**E**	
4PDT	FOUR-POLE DOUBLE THROW	E	EAST OR EMERGENCY
4PST	FOUR POLE SINGLE THROW	EA	EACH
4W	FOUR-WIRE	EC	ELECTRICAL CONTRACTOR
A		EFF	EFFICIENCY
A	AMPERE	ELEC	ELECTRIC
A/E	ARCHITECT/ENGINEER	EMER	EMERGENCY
ABBRV	ABBREVIATION	EM	ELECTROMAGNETIC INTERFERENCE
AC	ALTERNATING CURRENT	EMS	ENERGY MANAGEMENT SYSTEM
ADA	AMERICANS WITH DISABILITIES ACT	ENCL	ENCLOSURE
AF	AMPERE FRAME	EO	ELECTRICALLY OPERATED
AFC	ABOVE FINISHED COUNTER	EPA	ENVIR PROTECTION AGENCY
AFF	ABOVE FINISHED FLOOR	EPO	EMERGENCY POWER OFF
AFFF	ABOVE FINISHED FIRST FLOOR	EP	EXPLOSION PROOF
AFG	ABOVE FINISH GRADE	EQ	EQUAL
AFR	ABOVE FINISHED ROOF	EQUIP	EQUIPMENT
AFS	ABOVE FINISHED SLAB	EQUIV	EQUIVALENT
AHJ	AUTHORITY HAVING JURISDICTION	ETC	AND SO FORTH or ET CETERA
AIC	AMPERE INTERRUPTING CAPACITY	EW	EACH WAY
ALT	ALTERNATE	EXIST or EXIST	EXISTING
ALT NO	ALTERNATE NUMBER	**F**	
AMP	AMPERE	F	FAHRENHEIT
APPROX	APPROXIMATE	FA	FIRE ALARM
AT	AMPERE TRIP	FAAP	FIRE ALARM ANNUNCIATOR PANEL
ATC	AUTOMATIC TEMP CONTROL	FACP	FIRE ALARM CONTROL PANEL
ATS	AUTOMATIC TRANSFER SWITCH	FC	FOOTCANDLE
AUX	AUXILIARY	FDR	FEEDER
AV	AUDIO VISUAL	FED	FEDERAL
AVG	AVERAGE	FFA	FROM FLOOR ABOVE
AWG	AMERICAN WIRE GAUGE	FFB	FROM FLOOR BELOW
B		FLA	FULL LOAD AMPS
BAS	BUILDING AUTOMATION SYSTEM	FLR	FLOOR
BFF	BELOW FINISH FLOOR	FM	FACTORY MUTUAL
BFG	BELOW FINISHED GRADE	FPC	FIRE PROTECTION CONTRACTOR
BHP	BRAKE HORSEPOWER	FREQ	FREQUENCY
BKBD	BACKBOARD	FT	FEET OR FOOT
BKR	BREAKER	FVNR	FULL VOLTAGE NON REVERSING
BLDG	BUILDING	FVR	FULL VOLTAGE REVERSING
BLW	BELOW	**G**	
BOS	BOTTOM OF STEEL	G	GROUND
C		GC	GENERAL CONTRACTOR
C	CELSIUS OR CONDUIT	GEN	GENERATOR
CATV	COMMUNITY ANTENNA TELEVISION	GFCI	GROUND FAULT CIRC INTERRUPTER
CB	CIRCUIT BREAKER	GRD	GROUND
CCTV	CLOSED CIRCUIT TELEVISION	**H**	
CFM	CUBIC FEET PER MINUTE	H	HIGH
CL	CENTER LINE	HAZ	HAZARD
CLF	CURRENT LIMITING FUSE	HD	HEAVY DUTY
CLG	CEILING	HDPE	HIGH DENSITY POLYETHYLENE
CMU	CONCRETE MASONRY UNIT	HOA	HAND-OFF AUTOMATIC
CO	COMPANY	HP	HORSEPOWER
COAX	COAXIAL CABLE	HR	HOUR
COL	COLUMN	HT	HEIGHT
COMM	COMMUNICATION	HV	HIGH VOLTAGE
CPT	CONTROL POWER TRANSFORMER	Hz	HERTZ (FREQUENCY)
CRI	COLOR RENDERING INDEX	**I**	
CT	CURRENT TRANSFORMER	I/O	INPUT/OUTPUT
CU	COPPER	IBC	INTERNATIONAL BUILDING CODE
CU FT	CUBIC FEET	ID	INSIDE DIAMETER
CU YD	CUBIC YARD	ID NO	IDENTIFICATION NUMBER
D		IN	INCHES
D	DEEP or DEPTH	INTERCOM	INTERCOMMUNICATION
DB	DECIBEL	INV	INVERTER
DC	DIRECT CURRENT	IR	INFRARED
DDC	DIRECT DIGITAL CONTROL	**J**	
DEG	DEGREE	JB	JUNCTION BOX
DEG C	DEGREES CELSIUS	**K**	
DEG F	DEGREES FAHRENHEIT	K	KILO OR KELVIN OR THOUSAND
DEMO	DEMOLITION	KHZ	KILOHERTZ
DIA	DIAMETER	KO	KNOCKOUT
DISC	DISCONNECT	KV	KILOVOLT
		KVA	KILOVOLT AMPERE

KVAR	KILOVOLT AMPERE PER HOUR	PNL	PANEL
KVAR	KILOVOLT AMPERE REACTIVE	PO	PURCHASE ORDER
KW	KILOWATT	POCC	POINT OF COMMON COUPLING
KWH	KILOWATT HOUR	PRELIM	PRELIMINARY
KWHM	KILOWATT HOUR METER	PRI	PRIMARY
L		PT	POTENTIAL TRANSFORMER
L	LONG OR LOCKABLE	PV	PHOTOVOLTAIC
LA	LIGHTNING ARRESTER	PWR	POWER
LB or LBS	POUND(S)	**Q**	
LED	LIGHT EMITTING DIODE	QAQC	QUALASSURANCE/QUALCONTROL
LF	LINEAR FEET (FOOT)	QTY	QUANTITY
LIN	LINEAR	**R**	
LP	LIGHT POLE	R	RADIUS
LPW	LUMENS PER WATT	RCP	REFLECTED CEILING PLAN
LRA	LOCKED ROTOR AMPS	RECPT	RECEPTACLE
LT	LEFT	REV	REVISION
LTG	LIGHTING	RF	RADIO FREQUENCY
LV	LOW VOLTAGE	RFI	REQUEST FOR INFORMATION
M		RM	ROOM
mA	MILLIAMPERE	ROW	RIGHT OF WAY
MAT	MATERIAL	RPM	REVOLUTIONS PER MINUTE
MATV	MASTER ANTENNA TV SYSTEM	RT	RIGHT
MAX	MAXIMUM	**S**	
MCB	MAIN CIRCUIT BREAKER	S	SOUTH
MC	MECHANICAL CONTRACTOR	SCH or SCHED	SCHEDULE
MCA	MINIMUM CIRCUIT AMPS	SCR	SEMICONDUCTOR CONTROLLED RECTIFIER
MCC	MOTOR CONTROL CENTER	SEC	SECOND OR SECONDARY
MECH	MECHANICAL	SPD	SURGE PROTECTION DEVICE
MFA	MAXIMUM FUSE AMPS	SPDT	SINGLE POLE, DOUBLE THROW
MFR	MANUFACTURER	SPEC	SPECIFICATION
MG	MOTOR GENERATOR	SPST	SINGLE POLE, SINGLE THROW
MH	MANHOLE OR METAL HALIDE	SQ	SQUARE
MHz	MEGAHERTZ	SQ FT	SQUARE FOOT (FEET)
MIC	MICROPHONE	SQ IN	SQUARE INCH
MIN	MINIMUM OR MINUTE	SQ YD	SQUARE YARD
MISC	MISCELLANEOUS	ST	SHUNT TRIP OR SINGLE THROW
MLO	MAIN LUGS ONLY	STD	STANDARD
MOCP	MAX OVERCURRENT PROTECTION	STP	SHIELDED TWISTED PAIR
MOD	MOTOR OPERATED DAMPER	SWBD	SWITCHBOARD
MOP	MAX OVERCURRENT PROTECTION	SWGR	SWITCHGEAR
MTD	MOUNTED	**T**	
MTS	MANUAL TRANSFER SWITCH	TEL	TELEPHONE
MV	MILLIVOLT	TEMP	TEMPERATURE
MVA	MEGAVOLT-AMPERE	TFA	TO FLOOR ABOVE
mW	MILLIWATT	TFB	TO FLOOR BELOW
MW	MEGAWATT	TL	TWIST LOCK
MWH	MEGAWATT HOUR	TV	TELEVISION
N		TYP	TYPICAL
N	NORTH OR NEUTRAL	**U**	
N/A or N/A	NOT APPLICABLE	UL	UNDERWRITERS LABORATORIES
NC or N/C	NORMALLY CLOSED	UNO	UNLESS NOTED OTHERWISE
NE	NORMAL/EMERGENCY	UPS	UNINTERRUPTIBLE POWER SUPPLY
NEC	NATIONAL ELECTRICAL CODE	UTP	UNSHIELDED TWISTED PAIR
NEG	NEGATIVE	**V**	
NEUT	NEUTRAL	V	VOLT
NFPA	NATIONAL FIRE PROTECTION ASSOC	VA	VOLT AMPERE
NF	NONFUSED	VAM	VOLT AMMETER
NIC	NOT IN CONTRACT	VAR	VARIES
NL	NIGHT LIGHT	VAR	VOLT AMPERE REACTIVE
NO	NUMBER	VD	VOLTAGE DROP
NO or N/O	NORMALLY OPEN	VF	VARIABLE FREQUENCY
NOM	NOMINAL	VFD	VARIABLE FREQUENCY DRIVE
NTS	NOT TO SCALE	VOLTS	VOLTAGE
O		VR	VOLTAGE REGULATOR
OC	ON CENTER	**W**	
OD	OUTSIDE DIAMETER	W	WATT OR WIRE
OL	OVERLOAD	W	WITH
P		W/O	WITHOUT
P	PENDANT OR POLE	WL	WET LOCATION
PA	PUBLIC ADDRESS	WP	WEATHERPROOF
PB	PULL BOX OR PUSHBUTTON	WT	WATERTIGHT OR WEIGHT
PC	PLUMBING CONTRACTOR	**X**	
PCU	POWER CONDITIONING UNIT	XFER	TRANSFER
PE	PROFESSIONAL ENGINEER	XFMR	TRANSFORMER
PEC	PHOTOELECTRIC CELL	**Y**	
PF	POWER FACTOR	Y	WYE
PFB	PROVISION FOR FUTURE BREAKER	YR	YEAR
PH	PHASE	**Z**	
PL	PROPERTY LINE		
PN	PART NUMBER		

NOTE: NOT ALL ABBREVIATIONS OR TERMS INDICATED ARE USED ON THESE CONTRACT DOCUMENTS.

EQUIPMENT ABBRV

A	
AHU	AIR HANDLING UNIT
B	
B	BOILER
BC	BLOWER COIL UNIT
BFWP	BOILER FEEDWATER PUMP
C	
CFU	CHEMICAL FEED UNIT
CH	CHILLER
CHWP	CHILLED WATER PUMP
CT	COOLING TOWER
CU	CONDENSING UNIT
CUH	CABINET UNIT HEATER
D	
DH	DUCT HEATER
DWH	DOMESTIC WATER HEATER
E	
EBB	ELECTRIC BASEBOARD
ECU	EVAPORATIVE COOLING UNIT
EF	EXHAUST FAN
EHC	ELECTRIC HEATING COIL
EHD	ELECTRIC HAND DRYER
EHP	ELECTRIC HEATING PANEL
ELEV	ELEVATOR
ERU	ENERGY RECOVERY UNIT
EUH	ELECTRIC UNIT HEATER
EWC	ELECTRIC WATER COOLER
F	
FCU	FAN COIL UNIT
FOP	FUEL OIL PUMP
G	
GUH	GAS FIRED UNIT HEATER
H	
H	HUMIDIFIER
HC	HEATING COIL
HP	HEAT PUMP
HRU	HEAT RECOVERY UNIT
HWCP	HOT WATER CIRC PUMP
HWP	HOT WATER PUMP
I	
IF	INTAKE FAN
IRH	INFRARED HEATER
IWH	INSTANTANEOUS WATER HTR
J	
JP	JOCKEY PUMP
L	
L	AUTOMATIC FAUCET SENSOR
M	
MAU	MAKE UP AIR UNIT
MOD	MOTOR OPERATED DAMPER
O	
OHD	OVERHEAD DOOR
P	
P	PUMP
PHC	PREHEAT COIL
R	
RAF	RETURN AIR FAN
REF	REFRIGERATOR
RHC	REHEAT COIL
RTU	ROOF TOP UNIT
S	
SCU	SELF CONTAINED UNIT
SD	SMOKE DAMPER
SF	SUPPLY FAN
SP	SUMP PUMP
SS	SPLIT SYSTEM FAN
T	
TC	TRASH COMPACTOR
TMV	THERMOSTATIC MIXING VALVE
U	
UH	UNIT HEATER
UV	UNIT VENTILATOR
V	
VAV	VARIABLE AIR VOLUME BOX
VRP	VACUUM RETURN PUMP
W	
WH	WALL HEATER

WIRE SEPARATION NOTES

1. ANALOG, DIGITAL, AND LOW VOLTAGE POWER CIRCUITS TO BE RUN IN SEPARATE RACEWAYS OR CABLE SETS AS INDICATED.
2. SEPARATE WIRING BY LEVEL AS OUTLINED BELOW:
   - LEVEL 1-1 ANALOG SIGNALS LESS THAN 50V AND LESS THAN 50mA
     - 4-20mA SHIELDED INSTRUMENTATION
     - SHIELDED LOW VOLTAGE INSTRUMENTATION
     - VARIABLE SPEED DRIVE SPEED SIGNALS
   - LEVEL 1-2 DIGITAL SIGNAL AND DATA BUSSES.
     - PROGRAMMABLE LOGIC CONTROLLER BUSSES
     - METER SYSTEM DATA BUS
     - INSTRUMENTATION REMOTE TERMINAL UNIT BUS.
   - LEVEL 2-1 ANALOG SIGNALS OVER 50V AND LESS THAN 240V
     - TACHOMETER GENERATORS
   - LEVEL 2-2 DIGITAL AND DISCRETE INPUTS TO PROGRAMMABLE LOGIC CONTROLLERS AND REMOTE TERMINAL UNITS. ALL OUTPUTS SUPPLYING RELAY COILS SHALL HAVE SURGE SUPPRESSION
   - LEVEL 3-1 POWER CIRCUITS OF 20A OR LESS AND 120V OR LESS.
     - LIGHTING AND RECEPTACLE CIRCUITS TO BE IN A SEPARATE CONDUIT UNO
     - CLASS 1 CONTROL CIRCUITS ORIGINATING IN AN MCC COMPARTMENT OR A MOTOR STARTER CAN BE ROUTED WITH POWER CIRCUIT FROM SAME COMPARTMENT
   - LEVEL 4-1 POWER CIRCUITS OVER 20A UP TO 400A, LESS THAN 600V. EACH SHALL BE RUN IN SEPARATE CONDUITS
   - LEVEL 5-1 FEEDERS OVER 400A.
3. EACH LEVEL INDICATED ABOVE TO BE INSTALLED IN SEPARATE RACEWAY OR CABLE SET UNLESS NOTED OTHERWISE OR INDICATED BY THESE CONTRACT DOCUMENTS
4. WHERE DIFFERENT LEVEL SYSTEMS ARE INSTALLED IN PARALLEL RUNS EXCEEDING FIVE (5) FEET OR LONGER, PROVIDE PHYSICAL SEPARATION AS SHOWN IN THE TABLE.
5. IN ALL JUNCTION/PULL BOXES WITH MULTIPLE VOLTAGES, PROVIDE GROUNDED METALLIC BARRIERS TO MAINTAIN SEPARATION.
6. ONLY EXTERNAL INTERFACE SIGNALS ARE SHOWN FOR MOTOR/CONTROLLER STARTERS, PROGRAMMABLE DEVICES, AND VARIABLE SPEED DRIVES (VFD). INTERNAL SIGNALS NECESSARY FOR CORRECT FUNCTIONING MUST BE PROVIDED AND COORDINATED WITH ALL REQUIREMENTS.
7. ALL INTERCONNECTING WIRING AND TERMINATIONS BETWEEN EQUIPMENT BY CONTRACTOR UNO
8. CONTRACTOR SHALL PROVIDE THE OWNER WITH A FULL SIZE SET OF LOOP AND INTERFACE WIRING DIAGRAMS WITH FILLED IN TERMINAL BLOCK AND WIRE NUMBERS.
9. REFER TO WIRE SEPARATION NOTED FOR COMBINING WIRING.

LEVEL	1	2	3	4	5
LEVEL 1	0	1"	3"	12"	12"
2	1"	0	3"	9"	12"
3	3"	3"	0	3"	6"
4	12"	9"	3"	0	0

GENERAL ELECTRICAL NOTES

A. COORDINATE INSTALLATION OF NEW ITEMS AND EQUIPMENT WITH THE OWNER'S REPRESENTATIVE, MAINTENANCE STAFF, AND THE WORK OF OTHER CONTRACTORS. THE CONTRACTOR SHALL INCLUDE ALL COSTS ASSOCIATED WITH THE RELOCATION OF EQUIPMENT CONFLICTING WITH NEW WORK BY OTHER DISCIPLINES THAT HAS NOT BEEN COORDINATED

B. FIELD VERIFY ALL DIMENSIONS. DRAWINGS ARE ILLUSTRATIVE AND MAY NOT REFLECT EXACT CONDITIONS OR DIMENSIONS.

C. DO NOT SCALE THE DRAWINGS. DRAWINGS ARE DIAGRAMMATIC AND SHOW THE GENERAL ARRANGEMENT OF EQUIPMENT AND SYSTEMS. THEY ARE NOT INTENDED TO SHOW EVERY OFFSET, FITTING AND COMPONENT. DO NOT USE THE PLANS FOR EXACT LOCATION OF EQUIPMENT, FIXTURES OR ARCHITECTURAL ITEMS SUCH AS WALLS, WINDOWS, SOFFITS, AND PILASTERS. SPECIFIC LOCATIONS, MOUNTING HEIGHTS AND OVERALL DIMENSIONS OF DEVICES AND FIXTURES ARE TO BE OBTAINED FROM THE ARCHITECTURAL DRAWINGS AND DETAILS WHEN AVAILABLE.

D. DRAWINGS SPECIFIC TO THIS TRADE DO NOT LIMIT THE RESPONSIBILITY OR WORK REQUIRED BY THE CONTRACT DOCUMENTS. REFER TO DRAWINGS AND SPECIFICATIONS OF OTHER TRADES FOR COMPLETE INFORMATION PRIOR TO BID.

E. WHERE CONFLICTS EXIST AMONG DRAWINGS, SPECIFICATIONS AND EQUIPMENT SCHEDULES, THE MOST STRINGENT SHALL APPLY. NOTIFY THE ENGINEER OF ALL CONFLICTS FOR RESOLUTION OR INTERPRETATION.

F. NOTIFY THE OWNER IN WRITING AND FIELD VERIFY CONDITIONS BEFORE PERFORMING ANY SHACKLING, TRENCHING, CORING OR ANY OTHER STRUCTURAL MODIFICATIONS. INSURE THAT NO ADVERSE EFFECT TO THE BUILDING'S STRUCTURAL INTEGRITY WILL OCCUR.

G. BRANCH CIRCUIT SIZING FROM DISCONNECT, STARTER OR VFD, OR CONTROL PANEL TO MOTOR/EQUIPMENT SHALL MATCH WHAT IS SHOWN FROM MCC/PANELBOARD TO DISCONNECT, STARTER OR VFD, OR CONTROL PANEL UNO. MOTOR BRANCH CIRCUITS FED FROM VFD SHALL BE VFD CABLE IN APPROPRIATELY SIZED CONDUIT.

H. ALL EQUIPMENT INSTALLED WITHIN AREAS THAT ARE LISTED AS CLASSIFIED AREAS SHALL BE UL LISTED AND LABELED FOR INSTALLATION IN THAT AREA. ALL CONDUIT TRANSITIONING FROM CLASSIFIED AREAS TO UNCLASSIFIED AREAS SHALL HAVE PROPER SEAL OFF FITTINGS.

I. ALL WORK SHOWN IN BOLD IS NEW WORK OR MODIFICATION OF EXISTING INSTALLATIONS TO BE COMPLETED BY THE CONTRACTOR UNDER THIS PROJECT. SEE PROJECT SPECIFICATIONS SEQUENCE / PHASING OF WORK, AND DIVISION 1 FOR ADDITIONAL REQUIREMENTS FOR THIS PROJECT. CONTRACTOR SHALL READ AND UNDERSTAND THE REQUIREMENTS BEFORE SUBMITTING BID OR COMPLETING CONTRACTOR WORK.

MOUNTING HEIGHTS

LIGHTING

EMERGENCY BATTERY UNIT - WALL
18" BELOW CEILING OR 8'-0" ABOVE FINISHED FLOOR, WHICHEVER IS LOWER

EMERGENCY LIGHT - REMOTE HEAD
12" BELOW CEILING OR 8'-0" ABOVE FINISHED FLOOR, WHICHEVER IS LOWER

EXIT SIGN - WALL
6" ABOVE DOOR JAMB BUT NO HIGHER THAN 8'-0" ABOVE FINISHED FLOOR

LIGHT FIXTURE - WALL
SEE SPECIFICATIONS OR LIGHT FIXTURE SCHEDULE FOR MOUNTING HEIGHT

LIGHTING CONTROL PANEL - WALL
TOP OF TRIM 6'-2" ABOVE FINISHED FLOOR. IF CABINET IS OVER 6'-0" TALL, MOUNT BOTTOM EDGE 6" ABOVE FINISHED FLOOR

WIRING DEVICES

CLOCK RECEPTACLE
7'-0" ABOVE FINISHED FLOOR

MOTION SENSOR - WALL
8'-0" ABOVE FINISHED FLOOR OR AS RECOMMENDED BY MANUFACTURER

PHOTOELECTRIC CELL - WALL
12" FROM TOP OF ROOM ON NORTH FACE OF BUILDING

PUSHBUTTON - WALL
SAME AS LIGHTING SWITCHES

RECEPTACLE - WALL
RECEPTACLES OCCURRING IN STRUCTURAL TILE, BRICK, OR BLOCK WALL SHALL BE LOCATED ABOVE MASONRY JOINTS NEAREST THE APPROPRIATE MOUNTING HEIGHT AS INDICATED BELOW

FINISHED SPACE STANDARD
18" ABOVE FINISHED FLOOR. WHERE INTERFERENCE WITH HEATING EQUIPMENT REQUIRES HIGHER MOUNTING, MOUNT AS DIRECTED BY THE ENGINEER

COUNTERS
6" ABOVE BACK SPLASH OR COUNTER. CONSTRUCTION OF COUNTERS AND HEIGHTS OF BACKS SHALL BE VERIFIED BY THE CONTRACTOR BEFORE ROUGH-IN

UNFINISHED SPACE
42" ABOVE FINISHED FLOOR EXCEPT WHERE INTERFERENCE WITH MECHANICAL EQUIPMENT REQUIRES HIGHER MOUNTING

EXTERIOR - WALL
24" ABOVE FINISHED FLOOR. IF RECEPTACLE IS LESS THAN 24" ABOVE FINISHED GRADE, INCREASE MOUNTING HEIGHT TO MAINTAIN 24" ABOVE FINISHED GRADE

ROOF - WALL
24" ABOVE FINISHED FLOOR

RECEPTACLE - SPECIAL PURPOSE
SAME AS RECEPTACLES

SWITCH - LIGHTING
42" ABOVE FLOOR ON STRIKE SIDE OF DOOR. WHERE SWITCHES OCCUR IN BRICK, TILE, OR BLOCK WALLS, THEY SHALL BE MOUNTED AT VERTICAL MASONRY JOINT AND IN EITHER TOP OR BOTTOM HORIZONTAL JOINT, WHICHEVER IS CLOSEST TO THE MOUNTING HEIGHT. WHERE SWITCH HEIGHT OCCURS AT POINT OF CHANGE OF FINISH, THEY SHALL BE RAISED OR LOWERED TO OCCUR IN ONE FINISH

TELEVISION RECEPTACLE - WALL
7'-0" ABOVE FINISHED FLOOR OR SAME HEIGHT AS TELEVISION OUTLET

FIRE ALARM

AUDIBLE - WALL
6" BELOW CEILING OR 80" ABOVE FINISHED FLOOR, WHICHEVER IS LOWER

CONTROL PANEL - WALL
TOP OF TRIM 6'-2" ABOVE FINISHED FLOOR. IF CABINET IS OVER 6'-0" TALL, MOUNT BOTTOM EDGE 6" ABOVE FINISHED FLOOR

PULL STATION
42" ABOVE FINISHED FLOOR

REMOTE ANNUNCIATOR STATION
5'-0" ABOVE FINISHED FLOOR

REMOTE DUCT DETECTOR TEST STATION - WALL
5'-0" ABOVE FINISHED FLOOR

VISUAL - WALL
6" BELOW CEILING OR 80" ABOVE FINISHED FLOOR, WHICHEVER IS LOWER

VISUAL / AUDIBLE (COMBINATION TYPE) - WALL
6" (CENTER OF VISUAL) BELOW CEILING OR 80" ABOVE FINISHED FLOOR, WHICHEVER IS LOWER

DISTRIBUTION EQUIPMENT

BLANK OUTLET - WALL
SAME AS RECEPTACLES

CABINET (EQUIPMENT) - WALL
TOP OF TRIM 6'-2" ABOVE FINISHED FLOOR. IF CABINET IS OVER 6'-0" TALL, MOUNT BOTTOM EDGE 6" ABOVE FINISHED FLOOR

CIRCUIT BREAKER - ENCLOSED
5'-0" ABOVE FINISHED FLOOR

CONTACTOR
5'-0" ABOVE FINISHED FLOOR

DISCONNECT SWITCH
5'-0" ABOVE FINISHED FLOOR

GENERATOR REMOTE ANNUNCIATOR STATION
5'-0" ABOVE FINISHED FLOOR

PANELBOARD / TRANSFER SWITCH
TOP OF TRIM 6'-2" ABOVE FINISHED FLOOR. IF PANELBOARD IS OVER 6'-0" TALL, MOUNT BOTTOM EDGE OF PANELBOARD 6" ABOVE FINISHED FLOOR

SURFACE RACEWAY - HORIZONTAL RUN
SAME AS RECEPTACLES

THERMAL SWITCH - WALL
SAME AS LIGHT SWITCHES

TELECOMMUNICATION / NETWORK

AREA OF RESCUE ASSISTANCE SIGN
6" BELOW CEILING OR 80" ABOVE FINISHED FLOOR, WHICHEVER IS LOWER

AREA OF RESCUE ASSISTANCE INTERCOM MASTER STATION
42" ABOVE FINISHED FLOOR

AREA OF RESCUE ASSISTANCE INTERCOM STATION
42" ABOVE FINISHED FLOOR

BELL
80" ABOVE FINISHED FLOOR

DATA / VOICE OUTLET - WALL
SAME AS RECEPTACLES

HORNS - OUTDOOR
12" BELOW EDGE OF ROOM

TELEPHONE OUTLET - WALL
LOW. SAME AS RECEPTACLES
HIGH. 48" ABOVE FINISHED FLOOR

SECURITY / ACCESS CONTROL / SURVEILLANCE

AUDIBLE (BUZZER) - WALL
6" BELOW CEILING OR 80" ABOVE FINISHED FLOOR, WHICHEVER IS LOWER

BIOMETRIC READER
48" ABOVE FINISHED FLOOR

CAMERA - WALL
7'-6" ABOVE FINISHED FLOOR

CARD / PROXIMITY READ
48" ABOVE FINISHED FLOOR

HORNS - OUTDOOR
12" BELOW EDGE OF ROOF

INTERCOM STATION
48" ABOVE FINISHED FLOOR

MONITOR - WALL
7'-6" ABOVE FINISHED FLOOR

PUSHBUTTON - WALL
SAME AS LIGHTING SWITCH

OCCUPANCY SENSOR - WALL
5'-0" ABOVE FINISHED FLOOR OR AS RECOMMENDED BY MANUFACTURER

SPEAKER - WALL
7'-6" ABOVE FINISHED FLOOR

VISUAL (STROBE) - WALL
6" BELOW CEILING OR 80" ABOVE FINISHED FLOOR, WHICHEVER IS LOWER

MOUNTING HEIGHT NOTES:

1. UNLESS INDICATED OTHERWISE ON THE PLANS OR AS DIRECTED BY THE ENGINEER, CENTERLINE OF DEVICE SHALL BE AS INDICATED ABOVE.
2. WHERE MOUNTING HEIGHTS ARE NOT DETAILED OR DIMENSIONED, THE CONTRACTOR SHALL INSTALL SYSTEMS, MATERIALS, AND EQUIPMENT TO PROVIDE THE MAXIMUM HEADROOM POSSIBLE AND COMPLY WITH THE REQUIREMENTS OF THE EQUIPMENT MANUFACTURER. WHERE EQUIPMENT IS INTENDED, SPECIFIED, OR NOTED TO BE MOUNTED OTHER THAN INDICATED ABOVE, MOUNT IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND AS DIRECTED.
3. WHERE MULTIPLE DEVICES ARE INSTALLED WITHIN CLOSE PROXIMITY TO EACH OTHER, THEY SHALL BE INSTALLED AT SAME HEIGHT.
4. NOT ALL EQUIPMENT INDICATED WITH MOUNTING HEIGHTS ARE ON THESE CONTRACT DOCUMENTS.

BUCHART HORN

ARCHITECTS
BUCHART HORN INCORPORATED
1000 PA. PA. PA. PA.
717.932.1400

READING FIRE DEPARTMENT ENGINE 3, 3 rd & COURT
ELECTRICAL SERVICE, GENERATOR, & BOILER REPLACEMENT
15 N 3 rd STREET
READING, PA

DEPARTMENT OF PUBLIC WORKS, CITY OF READING, PENNSYLVANIA
815 WASHINGTON ST
READING, PA

REVISIONS			
MARK	ISSUED DATE	DESCRIPTION	

PROJECT NO. 81283-01
ISSUED DATE: 06/12/20
DRAWN BY: WCA
CHECKED BY: JJG

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SHEET TITLE:
ELECTRICAL ABBREVIATIONS AND GENERAL INFORMATION

SHEET NO
E-002

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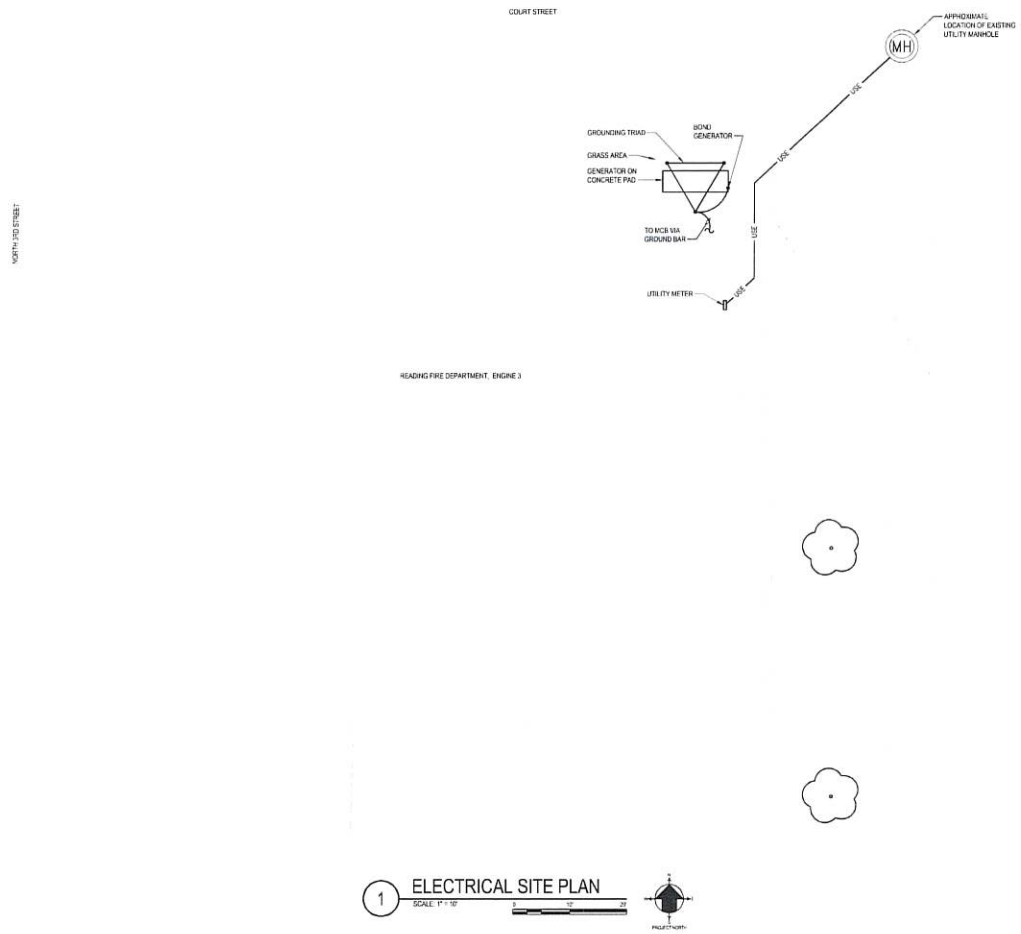

1 ELECTRICAL SITE PLAN

SCALE: 1" = 10'

0 10' 20'

PROJECT NORTH

GENERAL NOTES

1. SEE ONE LINE DIAGRAM ON SHEET E-601 FOR SERVICE INFORMATION.
2. SEE DUCT BANK AND GROUNDING DETAILS ON SHEET E-501.
3. SEE GENERATOR CONCRETE PAD DETAIL ON SHEET E-502A.
4. EC SHALL REPLACE CONCRETE SIDEWALK REMOVED FOR DUCT BANK INSTALLATION AND GAS LINE INSTALLATION TO GENERATOR.

BID DOCUMENTS

BUCHART HORN

M.E.P.E.
Southern Methods
1434 Mount Rose Street
York, PA 17403
717 843-1401

READING FIRE DEPARTMENT ENGINE 3, 3 rd & COURT
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READING PA

DEPARTMENT OF PUBLIC WORKS, CITY OF READING, PENNSYLVANIA
815 WASHINGTON ST
READING PA

REVISIONS

MARK	ISSUED DATE	DESCRIPTION

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SHEET TITLE:

ELECTRICAL SITE PLAN

SHEET NO:

E-003

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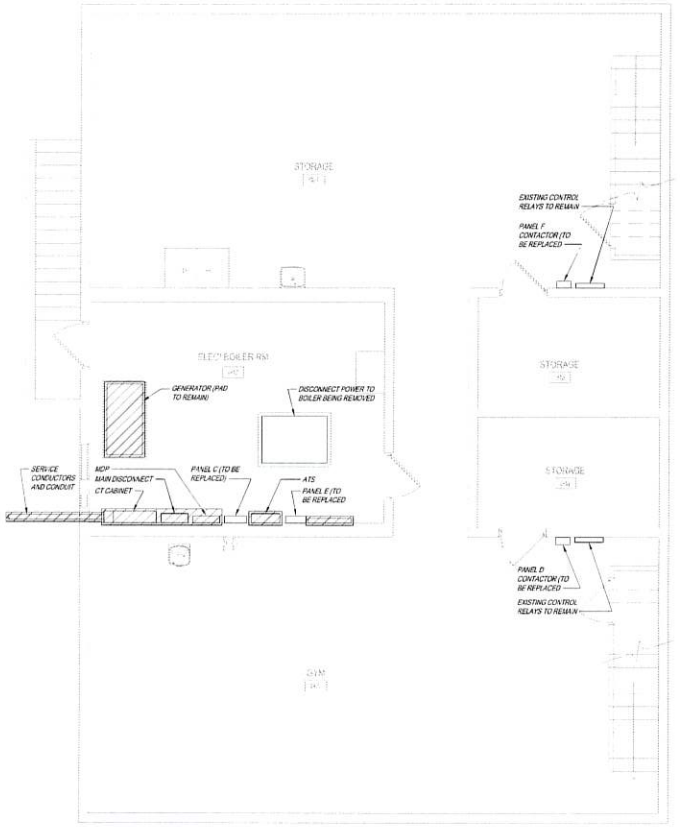
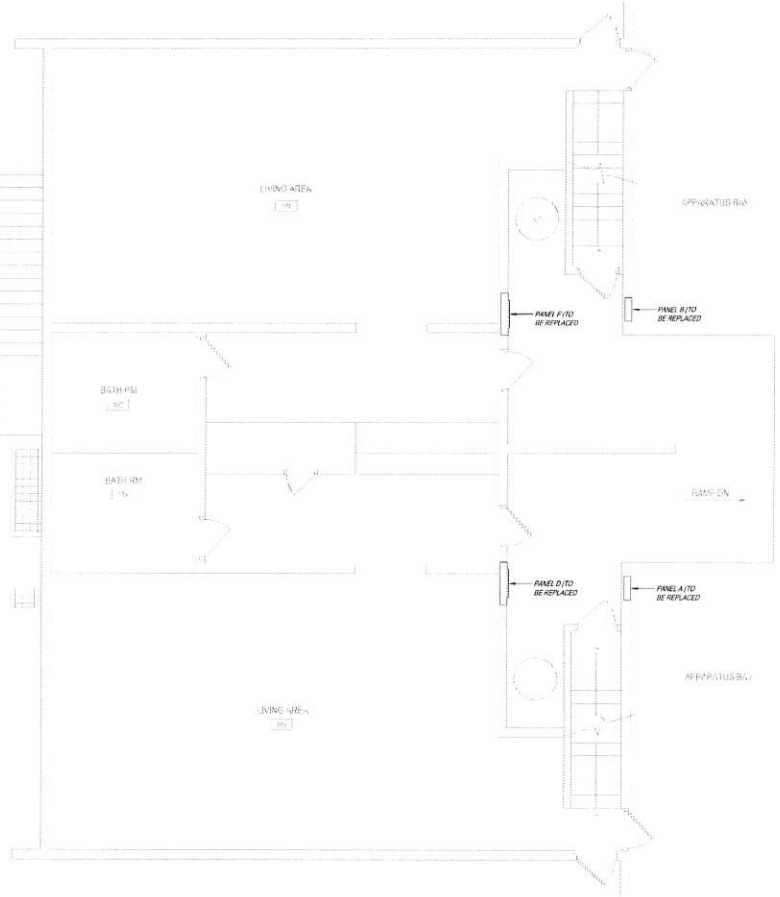
GENERAL NOTES

1. SEE ONE LINE DIAGRAM ON SHEET E-401 FOR DEMOLITION STAGING INFORMATION.
2. ALL BRANCH CIRCUITS FROM PANELS AND SUB PANELS NOT MARKED FOR DEMOLITION ON SHEET 601 SHALL BE MAINTAINED FOR RECONNECTION IN NEW PANELS
3. CONTRACTOR SHALL UTILIZE EXISTING PANEL BOARD CANS WHEREVER POSSIBLE TO FACILITATE QUICKER INSTALLATION OF NEW PANELS IN EXISTING LOCATIONS.
4. CONTRACTOR SHALL VISIT THE SITE TO CONFIRM EXISTING FEEDER ROUTES AND LENGTHS PRIOR TO ASSEMBLING BID OR COMPLETING WORK.
5. CONTRACTOR SHALL SEAL EXISTING WALL PENETRATION ONCE NEW SERVICE IS CONNECTED AND EXISTING SERVICE CONDUCTORS AS WELL AS CONDUIT TO 5' BEYOND EXTERIOR OF WALL. UTILIZE WATER STOP OF ROUGH OPENING AND FILL WITH HYDRAULIC CEMENT OR OTHER APPROVED MEANS DISCUSSED WITH ENGINEER. SEAL EXISTING WALL PENETRATION ONCE EXISTING GENERATOR EXHAUST PIPE IS REMOVED.



1 BASEMENT ELECTRICAL DEMOLITION PLAN
SCALE: 1/4" = 1'-0"



2 FIRST FLOOR ELECTRICAL DEMOLITION PLAN
SCALE: 1/4" = 1'-0"

BID DOCUMENTS

BUCHART HORN

WORK
Buchart Horn Architects
615 Walnut Street, Suite 400
York, PA 17401
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READING FIRE DEPARTMENT ENGINE 3, 3 rd & COURT
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READING, PA

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SHEET TITLE:

ELECTRICAL DEMOLITION PLANS

SHEET NO:

E-011

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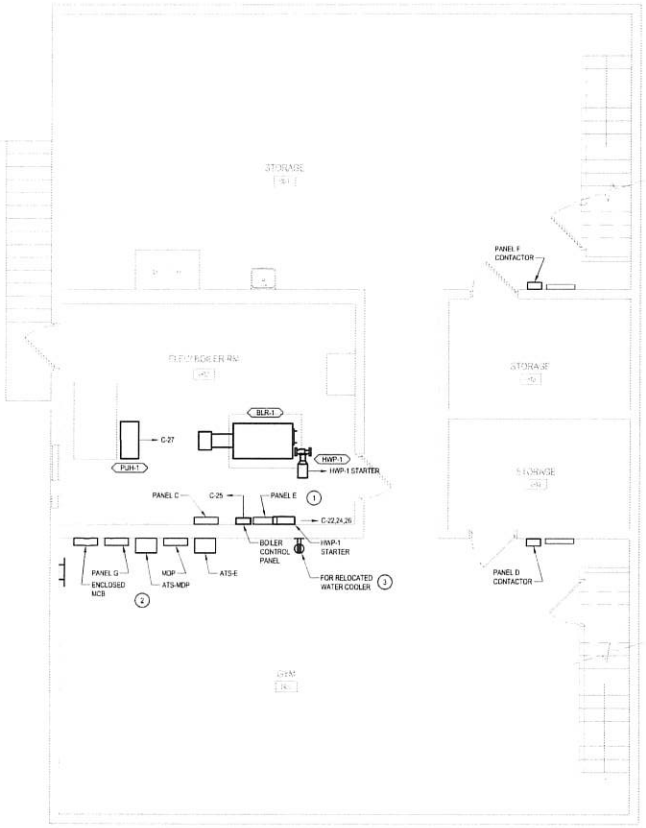
KEY NOTES

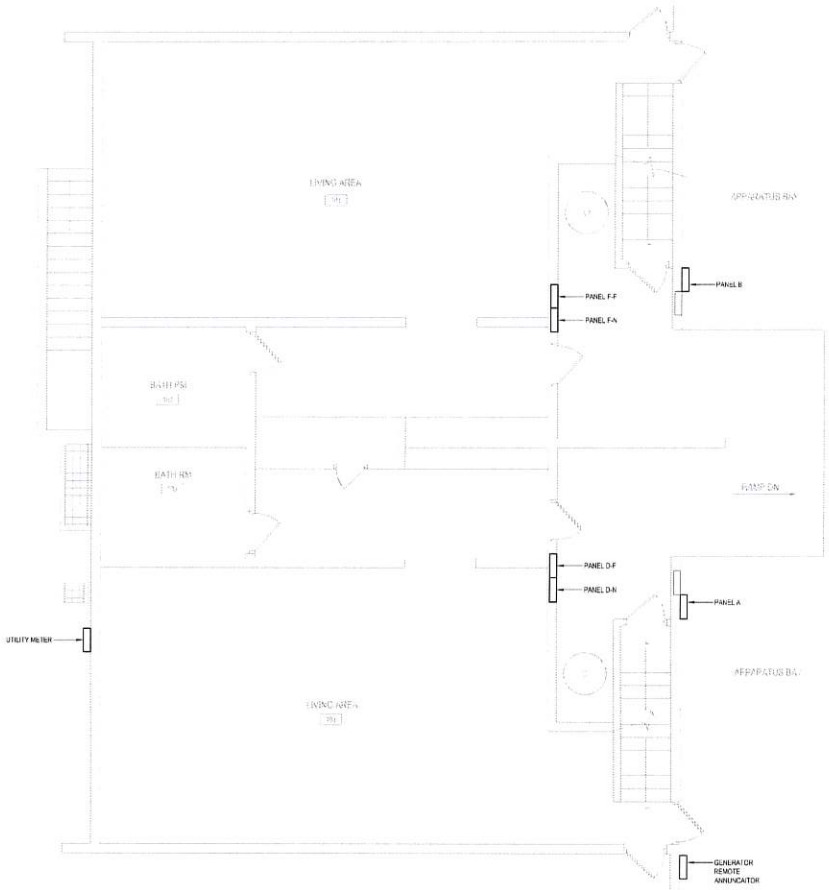
1. SEE MECHANICAL SERIES SHEETS FOR MORE INFORMATION ON BOILER CONTROL PANEL CONNECTIONS AS WELL AS MORE INFORMATION FOR HWP-1 STARTER. EC SHALL FURNISH AND INSTALL LOCAL DISCONNECTING MEANS AND INSTALL AND CONNECT WIRE THROUGH DEVICES PROVIDED BY OTHERS. COORDINATE INSTALLATIONS WITH MC AND ATC.
2. CONTRACTOR SHALL MARK NEC REQUIRED WORKING CLEARANCES ON THE FLOOR FOR THE PANELS/EQUIPMENT IN THIS AREA. SEE IDENTIFICATION SPECIFICATION SECTION FOR TAPE REQUIREMENTS.
3. PROVIDE SURFACE MOUNTED GFCI RECEPTACLE TO BE USED FOR RELOCATED WATER COOLER. CONNECT RECEPTACLE TO EXISTING CIRCUIT THAT FEEDS THE EXISTING WATER COOLER RECEPTACLE. REMOVE EXISTING RECEPTACLE AND PROVIDE DEVICE BOX COVER.

GENERAL NOTES

1. SEE ONE LINE DIAGRAM ON SHEET E-601
2. SEE PANEL SCHEDULES ON SHEET E-602 AND E-603
3. CONTRACTOR SHALL INSTALL NEW PANELS IN SAME LOCATION AS OLD WHEREVER POSSIBLE TO ENSURE THAT BRANCH CIRCUIT CONDUCTORS ARE OF ADEQUATE LENGTH TO RECONNECT TO BREAKERS IN NEW PANELS. EXTEND AS REQUIRED.
4. FOR PANELS A AND B, CONTRACTOR SHALL INSTALL SURFACE MOUNTED PANEL BOARDS NEXT TO EXISTING FLUSH MOUNTED PANEL BOARDS. UTILIZE EXISTING PANEL BOARDS AS A PULL/JUNCTION BOX AND EXTEND BRANCH CONDUCTORS INTO NEW PANELS. PROVIDE SHEET METAL COVER PLATES TO COVER ANY OPEN SPACES LEFT PAINT TO MATCH EXISTING WALL COLOR.
5. SEE EXISTING PANEL D/F DETAIL ON SHEET E-501 FOR MORE INFORMATION ON HOW PANELS D AND F ARE CURRENTLY WIRED. NORMAL/FIRE ALARM CIRCUITS SHALL BE SEPARATED INTO SEPARATE PANELS SHOWN. PANELS D-N AND D-F AS WELL AS F-N AND F-F. SEPARATE PANELS SHALL BE INSTALLED WITHIN OR NEXT TO BOX SPACE OF EXISTING PANELS D AND F. PROVIDE SHEET METAL COVER PLATES TO COVER ANY OPEN SPACES LEFT PAINT TO MATCH EXISTING WALL COLOR.



1 BASEMENT POWER PLAN
SCALE: 1/4" = 1'-0"



2 FIRST FLOOR POWER PLAN
SCALE: 1/4" = 1'-0"

BID DOCUMENTS

BUCHART HORN

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REVISIONS		
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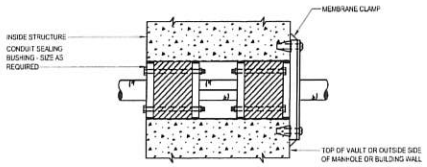
SHEET TITLE:
FLOOR PLANS - POWER

SHEET NO
E-101

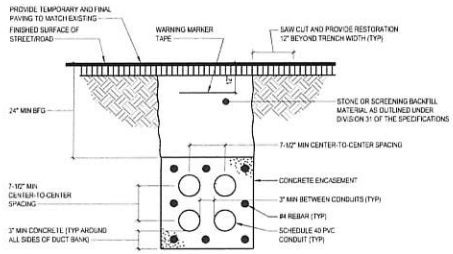


CONDUIT PENETRATION NOTE

A. SIMILAR INSTALLATION FOR THROUGH WALL OR THROUGH FLOOR PENETRATIONS. MAINTAIN MIN 6" EXTENSIONS OF PVC COATING ON BOTH SIDES

1 TYPICAL BELOW GRADE CONDUIT PENETRATION DETAIL

NOT TO SCALE



SERVICE DUCT BANK DETAIL NOTES:

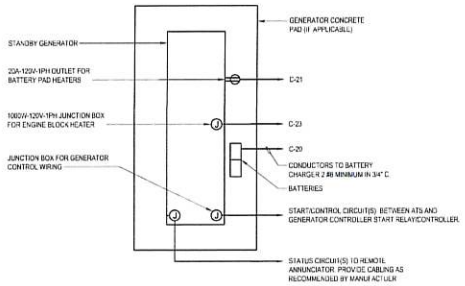
A. CONTRACTOR TO UTILIZE PVC COATED GALVANIZED STEEL CONDUIT FOR ALL HORIZONTAL AND VERTICAL BENDS. GROUND EXPOSED RACEWAY ENTERING ENCLOSURES AND AT RISER POLE AS REQUIRED BY THE NEC UTILIZING AN INSULATED THROAT TYPE GROUNDING BUSHING

B. PROVIDE (4) FOUR 4" PVC CONDUITS FOR SERVICE CONDUCTORS. UNUSED CONDUITS WILL BECOME SPARES

C. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL EXISTING UNDERGROUND UTILITY LINES, PIPING, MANHOLES, AND VALVES BEFORE EXCAVATING FOR NEW UNDERGROUND ELECTRIC, CONTROLS, AND INSTRUMENTATION LINES. ADJUST ROUTING OF NEW INSTALLATIONS AS NECESSARY TO AVOID INTERFERENCE WITH EXISTING BURIED UTILITIES

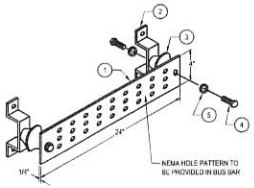
5 SERVICE DUCT BANK DETAIL

NOT TO SCALE



3 GENERATOR ACCESSORIES CONNECTION DETAIL

NOT TO SCALE

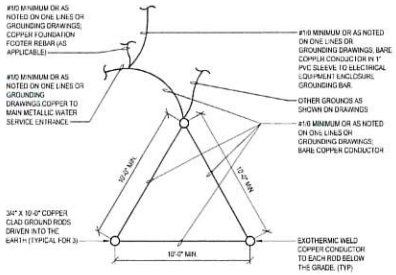


GROUND BAR KEYED NOTES:

1. SOLID COPPER GROUND BAR 1/4"x4"x24
2. WALL MOUNTING BRACKET
3. INSULATORS
4. 5/8" - 11x1 HHCS BOLTS
5. 5/8" LOCKWASHER

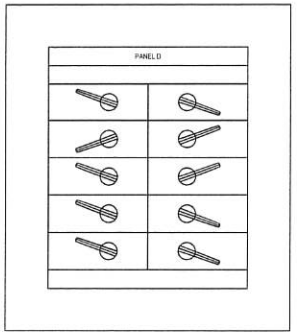
4 TYPICAL GROUND BAR DETAIL

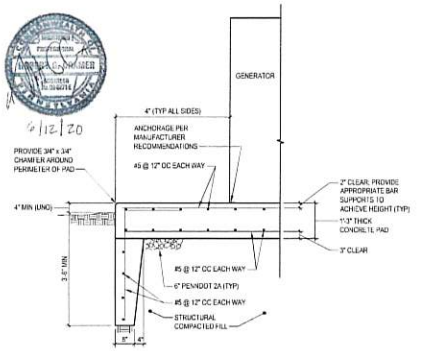
NOT TO SCALE



5 GROUNDING TRIAD DETAIL

NOT TO SCALE



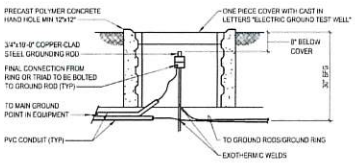


GENERATOR PAD NOTES:

1. GENERATOR FOUNDATION TO BE CAST-IN-PLACE (NON-SLIP BROOM FINISH) WITH FULL REINFORCING STEEL NETWORK PROVIDED WITH SUBSOIL DRAINAGE, PER AC
2. CONTRACTOR TO SIZE GENERATOR FOUNDATION PER DETAIL AND PER THE DIMENSIONS OF THE BASIS OF DESIGN MANUFACTURER SELECTED. SHOULD THE CONTRACTOR PROVIDE GENERATOR WITH LARGER DIMENSIONS THAN BASIS OF DESIGN, THE CONTRACTOR SHALL PROVIDE PROPERLY SIZED PAD AT NO ADDITIONAL COST
3. CONCRETE TO ACHIEVE MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4,500 PSI UNO. AIR ENTRAIN CONCRETE EXPOSED TO FREEZING WITH 6% AIR +1.5% WICRATION -0.42
4. REINFORCED STEEL: ASTM A615 GRADE 60
5. GENERATOR PAD TO REAR ON STRUCTURAL COMPACTED BACKFILL PLACED IN THE EXCAVATED AREA OF THE EXISTING UNDERGROUND TANK REMOVAL

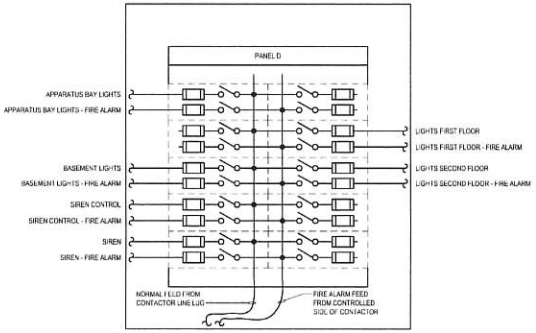
8 GENERATOR PAD DETAIL

NOT TO SCALE



6 TYPICAL GROUND TEST WELL DETAIL

NOT TO SCALE



7 EXISTING PANEL D WIRING DIAGRAM (PANEL E IS SIMILAR)

NOT TO SCALE

BID DOCUMENTS

BUCHART HORN

READING FIRE DEPARTMENT ENGINE 3, 3 rd & COURT
ELECTRICAL SERVICE, GENERATOR, & BOILER REPLACEMENT
15 N 3 rd STREET READING, PA
DEPARTMENT OF PUBLIC WORKS, CITY OF READING, PENNSYLVANIA
816 WASHINGTON ST READING, PA

REVISIONS			
MARK	ISSUED DATE	DESCRIPTION	

PROJECT NO: 81083-01
ISSUED DATE: 06/12/20
DRAWN BY: WCA
CHECKED BY: JJG

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SHEET TITLE: ELECTRICAL DETAILS

SHEET NO: E-501

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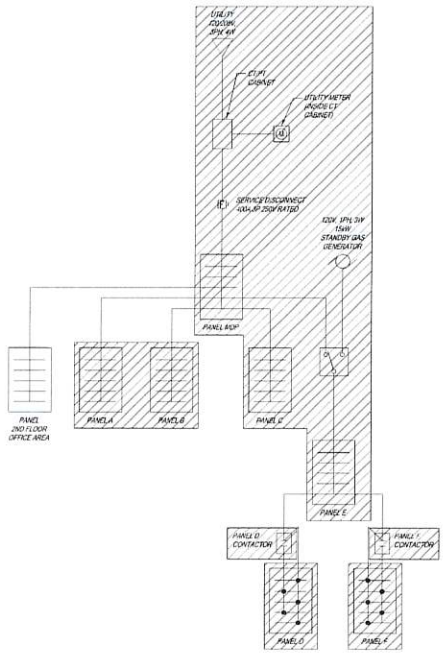
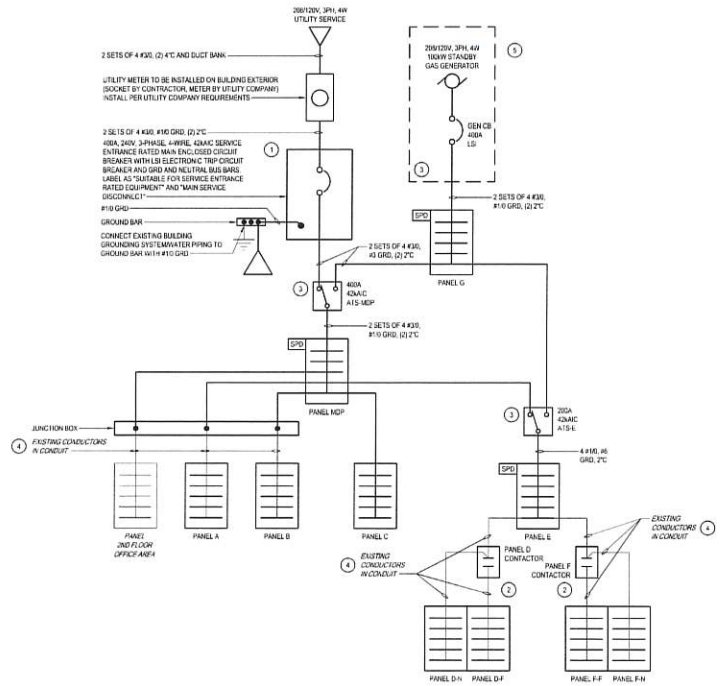


1 EXISTING ONE-LINE DIAGRAM



2 PROPOSED ONE-LINE DIAGRAM

GENERAL NOTES

1. SEE SHEET E-403 FOR UTILITY SERVICE LOCATION.
2. SEE SHEET E-011 FOR EXISTING ELECTRICAL EQUIPMENT LOCATIONS AND DEMOLITION PLAN.
3. SEE SHEET E-101 FOR NEW ELECTRICAL EQUIPMENT LOCATIONS.
4. SEE SHEET E-501 FOR ELECTRICAL DETAILS.
5. SEE SUGGESTED ELECTRICAL CONSTRUCTION STAGING INFORMATION ON THIS SHEET FOR INFORMATION ON STAGING TO ACHIEVE AS SHORT POWER OUTAGES AS POSSIBLE DURING CONSTRUCTION. CONTRACTOR SHALL CONFIRM AND SUBMIT STAGING PROPOSAL TO OWNER AND ENGINEER FOR APPROVAL PRIOR TO COMMENCING WORK.

KEY NOTES

1. BOND GROUND AND NEUTRAL BUS BARS WITHIN ENCLOSED BREAKER FOR SYSTEM BONDING JUMPER.
2. RECONNECT EXISTING CONTROL CIRCUIT FOR NEW CONTACTOR CONTROL.
3. ATSs SHALL COMMUNICATE WITH EACH OTHER AND GENERATOR TO PROVIDE LOAD MANAGEMENT CONTROL. ATS-MDP SHALL SHED LOAD AND MAINTAIN ATS-E IN EVENT OF GENERATOR OVERLOAD OR OTHER GENERATOR OUTPUT ISSUE. CONTRACTOR SHALL PROVIDE CONTROL WIRING OR COMMUNICATIONS CABLE IN APPROPRIATELY SIZED CONDUIT PER MANUFACTURER'S RECOMMENDATIONS.
4. THE CONTRACTOR SHALL PERFORM INSULATION RESISTANCE MEGGAR TESTING ON ALL EXISTING FEEDERS SHOWN TO BE REUSED. NOTIFY ENGINEER IMMEDIATELY OF RESULTS. THE OWNER MAY OPT TO REPLACE ANY FEEDER THAT FAILS UNDER THE CONTINGENT BID MONIES AS DIRECTED BY THE ENGINEER. FOLLOW TESTING REQUIREMENTS OF THE SPECIFICATIONS.
5. CONNECT GENERATOR AS SEPARATELY DERIVED SOURCE. PROVIDE BONDING JUMPER AND CONNECTION TO GROUND TRIAD AT GENERATOR.

ELECTRICAL CONSTRUCTION STAGING

1. CONTRACTOR SHALL INSTALL NEW SERVICE DUCT BANK, CONDUCTORS/GROUNDING, METER, EXTERIOR GENERATOR, TRANSFER SWITCHES, MAIN ENCLOSED CIRCUIT BREAKER AND MAIN DISTRIBUTION PANEL MDP WHILE FACILITY IS STILL RUNNING ON EXISTING SERVICE.
2. CONTRACTOR SHALL INSTALL JUNCTION BOX IN PROXIMITY TO PANEL MDP AND PULL NEW CONDUCTORS TO JUNCTION BOX TO BE PREPARED TO FEED EXISTING PANEL A, EXISTING PANEL B, AND THE EXISTING 2ND FLOOR PANEL. ALSO PULL NEW CONDUCTORS TO BE PREPARED TO FEED EXISTING PANEL C AND EXISTING PANEL E.
3. ONCE UTILITY HAS APPROVED/CONNECT NEW INSTALLATION, TURN ON POWER TO NEW SERVICE EQUIPMENT AS WELL AS CONNECT POWER TO EXISTING DOWNSTREAM PANELS.
4. AT THIS POINT, ALL DOWNSTREAM PANELS CAN BE REPLACED ONE BY ONE IN ORDER OF OWNER PREFERENCE. COORDINATE ORDER IN THE FIELD.

BID DOCUMENTS

BUCHART HORN

BUCHART HORN Architects
Engineers Consultants Planners
1041 Fairview Street
Harrisburg, PA 17104
717.652.1400

READING FIRE DEPARTMENT ENGINE 3, 3 rd & COURT
ELECTRICAL SERVICE, GENERATOR, & BOILER REPLACEMENT
15 N 3 rd STREET
READING, PA
DEPARTMENT OF PUBLIC WORKS, CITY OF READING, PENNSYLVANIA
815 WASHINGTON ST
READING, PA

REVISIONS			
MARK	ISSUED DATE	DESCRIPTION	

PROJECT NO:	81083-01
ISSUED DATE:	06/12/20
DRAWN BY:	WCA/CLM
CHECKED BY:	JJG

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SHEET TITLE:
ONE LINE DIAGRAM

SHEET NO:
E-601

DISTRIBUTION PANEL SCHEDULE

PANEL DESIGNATION: MDP
LOCATION: BASEMENT
MOUNTING: SURFACE
ENCLOSURE: NEMA 1

BUS AMPS: 400 | MIN A I C: 42 KA
PHASE: 3 | WIRE: 4
FED FROM: UTILITY VIA ATS
LOCATION: BASEMENT

MAIN BREAKER: 400A
VOLTAGE: 208Y/120
NEUTRAL SIZE: 100%
TOTAL INCHES: 63.0

NOTES: MAIN BREAKER AND ALL BREAKERS 100A AND LARGER SHALL BE LSI ELECTONIC TRIP CIRCUIT BREAKERS

CKT NO.	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CIRC. NOTES	BREAKER FRAME	BREAKER AMP	BREAKER POLES	BREAKER INCH	LOAD (KVA) A	LOAD (KVA) B	LOAD (KVA) C	SETS NO	WIRE NO	WIRE SIZE	GND. SIZE	COND SIZE	COND SIZE	GND. SIZE	WIRE SIZE	WIRE NO	SETS NO	LOAD (KVA) A	LOAD (KVA) B	LOAD (KVA) C	BREAKER INCH	BREAKER POLES	BREAKER AMP	BREAKER FRAME	CIRC. NOTES	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CKT NO.
1	HOSE DRYER - NEVERSINK		1	60	50	2	3.0	0.5			1	3	6	10	1	1	10	6	3	1	0.5			3.0	2	50	60	1	HOSE DRYER - KEYSTONE		22
2									0.5													0.5									23
3	POWER RECEPT - NEVERSINK		1	60	50	2	3.0			0.1	1	3	6	10	1	1	10	6	3	1			0.1	3.0	2	50	60	1	POWER RECEPT - KEYSTONE		24
4	--							0.1													0.1								--		25
5	SPARE			60	50	2	3.0		0.0							1	10	6	3	1		0.0		3.0	2	50	60	1	PANEL - 2ND FLOOR OFFICE AREA		26
6	--									0.0													0.0						--		27
7	PANEL A			100	100	3	4.5	1.1			1	4	1	8	2	2	8	1	4	1	1.0			4.5	3	100	100		PANEL B		28
8	--								1.1													1.0							--		29
9	--									1.1													1.0						--		30
10	PANEL C			100	100	3	4.5	2.5			1	4	1	8	2	2	8	1/0	4	1	2.8			4.5	3	150	200		PANEL E VIA ATS		31
11	--								2.5													2.8							--		32
12	--									2.5													2.8						--		33
13	SPARE			60	45	3	4.5	0.0													0.0			4.5	3	30	30		SPARE		34
14	(FUTURE A/R CONDITIONING)								0.0													0.0							(FUTURE A/R CONDITIONING)		35
15	--									0.0													0.0						--		36
16	SPARE			60	50	3	4.5	0.0													0.0			4.5	3	100	100		SPARE		37
17	--								0.0													0.0							--		38
18	--									0.0													0.0						--		39
19	SPARE			100	100	3	4.5	0.0								3/4	10	10	4	1	0.0			4.5	3	30	30		SPD		40
20	--								0.0													0.0							--		41
21	--									0.0													0.0						--		42
								SIDE CONNECTED KVA	4	4	4										4	5	5	SIDE CONNECTED KVA							

PANEL CONNECTED KVA: 26
PANEL DEMAND KVA: 11
PANEL DEMAND FACTOR: 44%

1 EXISTING CIRCUITS THAT WERE REFED

DERATING FACTOR (80%)
DEMAND LOAD SIZE: 40 AMPS

DISTRIBUTION PANEL SCHEDULE

PANEL DESIGNATION: PANEL G
LOCATION: BASEMENT
MOUNTING: SURFACE
ENCLOSURE: NEMA 1

BUS AMPS: 400 | MIN A I C: 42 KA
PHASE: 3 | WIRE: 4
FED FROM: GENERATOR
LOCATION: EXTERIOR

MAIN BREAKER: 400A
VOLTAGE: 208Y/120
NEUTRAL SIZE: 100%
TOTAL INCHES: 22.5

NOTES: ALL BREAKERS SHALL BE LSI ELECTRONIC TRIP CIRCUIT BREAKERS.

CKT NO.	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CIRC. NOTES	BREAKER FRAME	BREAKER AMP	BREAKER POLES	BREAKER INCH	LOAD (KVA) A	LOAD (KVA) B	LOAD (KVA) C	SETS NO	WIRE NO	WIRE SIZE	GND. SIZE	COND SIZE	COND SIZE	GND. SIZE	WIRE SIZE	WIRE NO	SETS NO	LOAD (KVA) A	LOAD (KVA) B	LOAD (KVA) C	BREAKER INCH	BREAKER POLES	BREAKER AMP	BREAKER FRAME	CIRC. NOTES	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CKT NO.
1	ATS-MDP			400	400	3	4.5	8.7			1	4	600	3	4						0										22
2	--								8.7													0									23
3	--									8.7													0								24
4	ATS-E			200	150	3	4.5	7.2			1	4	1/0	6	2						0										25
5	--								7.2													0									26
6										7.2													0								27
7	SPARE			400	400	3	4.5	0.0													0										28
8	--								0.0													0									29
9	--									0.0													0								30
10	SPARE			225	225	3	4.5	0.0													0										31
11	--								0.0													0									32
12	--									0.0													0								33
13	SPD			30	30	3	4.5	0.0			1	4	10	10	3/4						0										34
14	--								0.0													0									35
15	--									0.0													0								36
16								0													0										37
17									0													0									38
18										0													0								39
19								0													0										40
20									0													0									41
21										0													0								42
								SIDE CONNECTED KVA	16	16	16										0	0	0	SIDE CONNECTED KVA							

PANEL CONNECTED KVA: 48
PANEL DEMAND KVA: 20
PANEL DEMAND FACTOR: 42%

DERATING FACTOR (80%)
DEMAND LOAD SIZE: 69 AMPS

LIGHTING AND APPLIANCE PANEL SCHEDULE

PANEL DESIGNATION: PANEL A
LOCATION: NVRSNK A/R BAY
MOUNTING: SURFACE
ENCLOSURE: NEMA 1

BUS AMPS: 100 | MIN A I C: 10 KA
PHASE: 3 | WIRE: 4
FED FROM: MDP
LOCATION: BASEMENT

MAIN BREAKER: 100A
VOLTAGE: 208Y/120
NEUTRAL SIZE: 100%
TOTAL POLES: 30

NOTES:

CKT NO.	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CIRC. NOTES	BREAKER AMP	BREAKER POLES	LOAD (KVA) A	LOAD (KVA) B	LOAD (KVA) C	WIRE NO	WIRE SIZE	GND SIZE	COND SIZE	COND SIZE	GND SIZE	WIRE SIZE	WIRE NO	LOAD (KVA) A	LOAD (KVA) B	LOAD (KVA) C	BREAKER POLES	BREAKER AMP	CIRC. NOTES	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CKT NO.
1	SPARE (ON)		1	20	1	0.2			2	12	12	3/4	3/4	12	12	2	0.2			1	20	1	LOUNGE LIGHTS		2
3	ENTRANCE & STAIR LIGHTS		1	20	1		0.2		2	12	12	3/4	3/4	12	12	2		0.2		1	20	1	OFFICE, PASSAGE, TOILET LIGHTS		4
5	EXHAUST FAN 1ST HOSE DRYER		1	20	1			0.2	2	12	12	3/4	3/4	12	12	2			0.2	1	20	1	UTILITY & HOSE ROOM LIGHTS		6
7	BOILER ROOM LIGHTS		1	20	1	0.2			2	12	12	3/4	3/4	12	12	2	0.2			1	20	1	DORMITORY LIGHTS		8
9	LOCKER ROOM & 2ND FLOOR TOILET LI		1	20	1		0.2		2	12	12	3/4	3/4	12	12	2			0.9	1	20	1	DORMITORY RECPTS		10
11	LOUNGE RECEPTS		1	20	1			0.9	2	12	12	3/4	3/4	12	12	2				0.2	1	20	1	EXHAUST FAN IN UTILITY ROOM		12
13	APPARATUS ROOM RECEPTS		1	20	1	0.9			2	12	12	3/4	3/4	12	12	2	0.9			1	20	1	UTILITY ROOM RECPTS		14
15	OFFICE & PASSAGE (1ST FLOOR) RECP		1	20	1		0.9		2	12	12	3/4	3/4	12	12	2		0.2		1	20	1	DRINKING FOUNTAINS		16
17	FRONT OUTSIDE LIGHT		1	20	1			0.2	2	12	12	3/4	3/4	12	12	2			0.2	1	20	1	SPARE (ON)		18
19	POLYMOVENT FAN		1	20	3	0.3			4	12	12	3/4	3/4	12	12	2	0.5			1	20	1	AIR COMPRESSOR		20
21							0.3						3/4	12	12	3		0.3		2	20		OVERHEAD DOOR		22
23	--							0.3											0.3				--		24
25	SPARE			20	1	0.0											0.0			1	20		SPARE		26
27	SPARE			20	1		0.0											0.0		1	20		SPARE		28
29	SPARE			20	1			0.0											0.0	1	20		SPARE		30
						SIDE CONNECTED KVA	2	2	2								2	2	1	SIDE CONNECTED KVA					

PANEL CONNECTED KVA: 9
PANEL DEMAND KVA: 3
PANEL DEMAND FACTOR: 38%

1 EXISTING CIRCUITS THAT WERE REFED

DERATING FACTOR (80%)
DEMAND LOAD SIZE: 12 AMPS

LIGHTING AND APPLIANCE PANEL SCHEDULE

PANEL DESIGNATION: PANEL B
LOCATION: KYSTN A/R BAY
MOUNTING: SURFACE
ENCLOSURE: NEMA 1

BUS AMPS: 100 | MIN A I C: 10 KA
PHASE: 3 | WIRE: 4
FED FROM: MDP
LOCATION: BASEMENT

MAIN BREAKER: 100A
VOLTAGE: 208Y/120
NEUTRAL SIZE: 100%
TOTAL POLES: 30

NOTES:

CKT NO.	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CIRC. NOTES	BREAKER AMP	BREAKER POLES	LOAD (KVA) A	LOAD (KVA) B	LOAD (KVA) C	WIRE NO	WIRE SIZE	GND SIZE	COND SIZE	COND SIZE	GND SIZE	WIRE SIZE	WIRE NO	LOAD (KVA) A	LOAD (KVA) B	LOAD (KVA) C	BREAKER POLES	BREAKER AMP	CIRC. NOTES	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CKT NO.
1	APPARATUS ROOM LIGHTS		1	20	1	0.2			2	12	12	3/4	3/4	12	12	2	0.2			1	20	1	LOUNGE LIGHTS		2
3	ENTRANCE & STAIR LIGHTS		1	20	1		0.2		2	12	12	3/4	3/4	12	12	2		0.2		1	20	1	OFFICE, PASSAGE, TOILET LIGHTS		4
5	EXHAUST FAN HOSE DRYER		1	20	1			0.2	2	12	12	3/4	3/4	12	12	2			0.2	1	20	1	UTILITY & HOSE ROOM LIGHTS		6
7	SPARE (ON)		1	20	1	0.2			2	12	12	3/4	3/4	12	12	2	0.2			1	20	1	DORMITORY LIGHTS		8
9	LOCKER ROOM & TOILET ROOM 2ND FL(		1	20	1		0.2		2	12	12	3/4	3/4	12	12	2		0.9		1	20	1	DORMITORY RECPTS		10
11	LOUNGE RECEPTS		1	20	1			0.9	2	12	12	3/4	3/4	12	12	2			0.2	1	20	1	EXHAUST FAN IN UTILITY ROOM		12
13	APPARATUS ROOM RECEPTS		1	20	1	0.9			2	12	12	3/4	3/4	12	12	2	0.9			1	20	1	UTILITY ROOM RECPTS		14
15	OFFICE & PASSAGE 1ST FLOOR RECEPT		1	20	1		0.9		2	12	12	3/4	3/4	12	12	2		0.2		1	20	1	CLOCK		16
17	FRONT OUTSIDE LIGHT		1	20	1			0.2	2	12	12	3/4	3/4	12	12	3			0.1	2	20		OVERHEAD DOOR		18
19	SPARE (ON)			20	1	0.2			2	12	12	3/4					0.1						--		20
21	SPARE (ON)			20	1		0.2		2	12	12	3/4	3/4	12	12	2		0.2		1	20		SPARE (ON)		22
23	SPARE (ON)			20	1			0.2	2	12	12	3/4	3/4	12	12	2			0.2	1	20		SPARE (ON)		24
25	SPARE			20	1	0.0											0.0			1	20		SPARE		26
27	SPARE			20	1		0.0											0.0		1	20		SPARE		28
29	SPARE			20	1			0.0											0.0	1	20		SPARE		30
						SIDE CONNECTED KVA	2	2	2								1	2	1	SIDE CONNECTED KVA					

PANEL CONNECTED KVA: 6
PANEL DEMAND KVA: 3
PANEL DEMAND FACTOR: 38%

1 EXISTING CIRCUITS THAT WERE REFED

DERATING FACTOR (80%)
DEMAND LOAD SIZE: 11 AMPS

BID DOCUMENTS

BUCHART HORN

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Buchart Horn Architects
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York, PA 17401
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READING FIRE DEPARTMENT ENGINE 3, 3 rd & COURT
ELECTRICAL SERVICE, GENERATOR, & BOILER REPLACEMENT
15 N 3 rd STREET
READING, PA

DEPARTMENT OF PUBLIC WORKS, CITY OF READING, PENNSYLVANIA
815 WASHINGTON ST
READING, PA

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MARK	ISSUED DATE	DESCRIPTION	

PROJECT NO: 81083-01
ISSUED DATE: 06/12/20
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CHECKED BY: JJG

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SHEET TITLE: PANEL SCHEDULES

SHEET NO: E-602

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LIGHTING AND APPLIANCE PANEL SCHEDULE

PANEL DESIGNATION: **PANEL C** | BUS AMPS: 100 | MIN A.I.C.: 10 KA | MAIN BREAKER: 100A | NOTES:
LOCATION: BOILER ROOM | PHASE: 3 | WIRE: 4 | VOLTAGE: 208Y/120
MOUNTING: SURFACE | FED FROM: MDP | NEUTRAL SIZE: 100%
ENCLOSURE: NEMA 1 | LOCATION: BASEMENT | TOTAL POLES: 42

CKT NO	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CIRC NOTES	BREAKER AMP	POLES	LOAD (KVA) A	B	C	WIRE NO	SIZE	GND SIZE	COND SIZE	COND SIZE	GND SIZE	WIRE SIZE	NO	LOAD (KVA) A	B	C	BREAKER POLES	AMP	CIRC NOTES	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CKT NO
1	HEAT		1	20	1	0.5			2	12	12	3/4	3/4	12	12	2	0.5			1	20	1	HEATING VALVES - NEVERSINK		2
3	HEATING VALVES - KEYSTONE		1	20	1		0.5		2	12	12	3/4	3/4	12	12	2		0.5		1	20	1	UNIT HEATER CIRCULATING PUMP		4
5	UNIT HEATER - NEVERSINK		1	20	1			0.5	2	12	12	3/4	3/4	12	12	2			0.5	1	20	1	UNIT HEATER - KEYSTONE		6
7	BATTERY CHARGER		1	20	1	0.5			2	12	12	3/4	3/4	12	12	2	0.2			1	20	1	IN USE		8
9	OIL BURNER		1	20	1		0.5		2	12	12	3/4	3/4	12	12	2		0.2		1	20	1	IN USE		10
11	NEVISS A/C		1	15	2			0.3	3	12	12	3/4	3/4	12	12	2			0.2	1	20	1	IN USE		12
13	--					0.3							3/4	12	12	2	0.2			1	20	1	IN USE		14
15	IN USE		1	20	1		0.2		2	12	12	3/4	3/4	12	12	3		0.1		2	15	1	IN USE		16
17	IN USE		1	20	1			0.2	2	12	12	3/4							0.1				--		18
19	IN USE		1	20	1	0.2			2	12	12	3/4	3/4	12	12	3	0.5			1	20		BATTERY CHARGER		20
21	RECPT FOR BATTERY PAD HTRS			20	1		0.5		2	12	12	3/4	3/4	12	12	4		0.9		3	15		HWH-1		22
23	ENGINE BLOCK HTR JB			20	1			1.0	2	12	12	3/4							0.9				--		24
25	BLR-1			20	1	1.1			2	12	12	3/4					0.9						--		26
27	PUH-1			20	1		0.5		2	12	12	3/4	3/4	12	12	2		0.2		1	20		ATC SYSTEM		28
29	SPARE			20	1			0.0											0.0	1	20		SPARE		30
31	SPARE			20	1	0.0											0.0			1	20		SPARE		32
33	SPARE			20	1		0.0											0.0		1	20		SPARE		34
35	SPARE			20	1			0.0											0.0	1	20		SPARE		36
37	PROVISIONAL					0											0						PROVISIONAL		38
39	PROVISIONAL						0											0					PROVISIONAL		40
41	PROVISIONAL							0											0				PROVISIONAL		42
			SIDE CONNECTED KVA	3	2	2											2	2	2	SIDE CONNECTED KVA					

PANEL CONNECTED KVA: 13 | PANEL DEMAND KVA: 8 | PANEL DEMAND FACTOR: 50%
1 EXISTING CIRCUITS THAT WERE REFED
DERATING FACTOR (80%) | DEMAND LOAD SIZE: 26 4MPS

LIGHTING AND APPLIANCE PANEL SCHEDULE

PANEL DESIGNATION: **PANEL E** | BUS AMPS: 225 | MIN A.I.C.: 10 KA | MAIN BREAKER: 150A | NOTES: MAIN BREAKER SHALL BE LSI
LOCATION: BOILER ROOM | PHASE: 3 | WIRE: 4 | VOLTAGE: 208Y/120 | ELECTRONIC TRIP CIRCUIT
MOUNTING: SURFACE | FED FROM: MDP VIA ATS | NEUTRAL SIZE: 100% | BREAKER
ENCLOSURE: NEMA 1 | LOCATION: BASEMENT | TOTAL POLES: 42

CKT NO	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CIRC NOTES	BREAKER AMP	POLES	LOAD (KVA) A	B	C	WIRE NO	SIZE	GND SIZE	COND SIZE	COND SIZE	GND SIZE	WIRE SIZE	NO	LOAD (KVA) A	B	C	BREAKER POLES	AMP	CIRC NOTES	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CKT NO
1	PANEL D CONTACTOR			100	1	8.0			2	1	8	1-1/4	1-1/4	8	1	2	8.0			1	100		PANEL F CONTACTOR		2
3	PROVISIONAL						0											0					PROVISIONAL		4
5	RADIO RECEIPT		1	20	2			0.1	3	12	12	3/4	3/4	12	12	3			0.3	2	20	1	NEVERSINK CONTROL WIRE		6
7	--					0.1											0.3						--		8
9	KEYSTONE 1ST FLOOR		1	20	2		0.3		3	12	12	3/4	3/4	12	12	3		0.3		2	20	1	NEVERSINK 2ND FLOOR		10
11	--							0.3											0.3				--		12
13	KEYSTONE 2ND FLOOR		1	20	2	0.3			3	12	12	3/4	3/4	12	12	3	0.3			2	20	1	NEVERSINK 1ST FLOOR		14
15	--						0.3											0.3					--		16
17	SPARE (ON)		1	20	2			0.3	3	12	12	3/4	3/4	12	12	3			0.3	2	20	1	SPARE(ON)		18
19	--					0.3											0.3						--		20
21	NEVERSINK FEED TO PANEL - D		1	20	1		0.5		2	12	12	3/4	3/4	12	12	2		0.5		1	20	1	KEYSTONE FEED TO PANEL - F		22
23	KEYSTONE CONTROL WIRE		1	20	1			0.5	2	12	12	3/4	3/4	12	12	2			0.5	1	20	1	BOILER ROOM LIGHT		24
25	SPARE			20	2	0.0											0.0			2	20		SPARE		26
27	--						0.0											0.0					--		28
29	SPARE			100	2			0.0											0.0	2	100		SPARE		30
31	--					0.0											0.0						--		32
33	SPARE						0											0					SPARE		34
35	SPARE							0											0				SPARE		36
37	SPARE					0							3/4	10	10	4	0.0			3	30		SPD		38
39	PROVISIONAL						0											0.0					--		40
41	PROVISIONAL							0											0.0				--		42
			SIDE CONNECTED KVA	9	1	1											9	1	1	SIDE CONNECTED KVA					

PANEL CONNECTED KVA: 22 | PANEL DEMAND KVA: 9 | PANEL DEMAND FACTOR: 39%
1 EXISTING CIRCUITS THAT WERE REFED
DERATING FACTOR (80%) | DEMAND LOAD SIZE: 30 4MPS

LIGHTING AND APPLIANCE PANEL SCHEDULE

PANEL DESIGNATION: **PANEL D-F** | BUS AMPS: 100 | MIN A.I.C.: 10 KA | MAIN BREAKER: 100A | NOTES:
LOCATION: NVRSNK APP BAY | PHASE: 1 | WIRE: 3 | VOLTAGE: 120/208
MOUNTING: FLUSH | FED FROM: PANEL E VIA CONTACTOR | NEUTRAL SIZE: 100%
ENCLOSURE: NEMA 1 | LOCATION: BOILER ROOM | TOTAL POLES: 18

CKT NO	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CIRC NOTES	BREAKER AMP	POLES	LOAD (KVA) A	B		WIRE NO	SIZE	GND SIZE	COND SIZE	COND SIZE	GND SIZE	WIRE SIZE	NO	LOAD (KVA) A	B		BREAKER POLES	AMP	CIRC NOTES	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CKT NO
1	APPARATUS ROOM LIGHTS - FIRE ALARM			20	1	0.5			2	12	12	3/4	3/4	12	12	2	0.5			1	20		SPARE (ON) - FIRE ALARM		2
3	SPARE (ON) - FIRE ALARM			20	1		0.5		2	12	12	3/4	3/4	12	12	2		0.5		1	20		LIGHTS 1ST FLOOR - FIRE ALARM		4
5	BASEMENT LIGHTS - FIRE ALARM			20	1	0.5			2	12	12	3/4	3/4	12	12	2	0.5			1	20		LIGHTS 2ND FLOOR - FIRE ALARM		6
7	SIREN CONTROL WIRE - FIRE ALARM			20	1		0.5		2	12	12	3/4	3/4	12	12	2		0.0		1	20		SPARE - FIRE ALARM		8
9	SIREN - FIRE ALARM			20	1	0.5			2	12	12	3/4	3/4	12	12	2	0.0			1	20		SPARE - FIRE ALARM		10
11	SPARE - FIRE ALARM			20	1		0.0		2	12	12	3/4	3/4	12	12	2		0.0		1	20		SPARE - FIRE ALARM		12
13	PROVISIONAL					0											0						PROVISIONAL		14
15	PROVISIONAL						0											0					PROVISIONAL		16
17	PROVISIONAL					0											0						PROVISIONAL		18
			SIDE CONNECTED KVA	2	1												1	1	SIDE CONNECTED KVA						

PANEL CONNECTED KVA: 4 | PANEL DEMAND KVA: 1 | PANEL DEMAND FACTOR: 20%
LABEL PANEL "120V LOADS ONLY": A AND B POLES SAME PHASE UPSTREAM
DERATING FACTOR (80%) | DEMAND LOAD SIZE: 5 4MPS

LIGHTING AND APPLIANCE PANEL SCHEDULE

PANEL DESIGNATION: **PANEL D-N** | BUS AMPS: 100 | MIN A.I.C.: 10 KA | MAIN BREAKER: 100A | NOTES:
LOCATION: NVRSNK APP BAY | PHASE: 1 | WIRE: 3 | VOLTAGE: 120/208
MOUNTING: FLUSH | FED FROM: PANEL E | NEUTRAL SIZE: 100%
ENCLOSURE: NEMA 1 | LOCATION: BOILER ROOM | TOTAL POLES: 18

CKT NO	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CIRC NOTES	BREAKER AMP	POLES	LOAD (KVA) A	B		WIRE NO	SIZE	GND SIZE	COND SIZE	COND SIZE	GND SIZE	WIRE SIZE	NO	LOAD (KVA) A	B		BREAKER POLES	AMP	CIRC NOTES	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CKT NO
1	APPARATUS ROOM LIGHTS			20	1	0.5			2	12	12	3/4	3/4	12	12	2	0.5			1	20		SPARE (ON)		2
3	SPARE (ON)			20	1		0.5		2	12	12	3/4	3/4	12	12	2		0.5		1	20		LIGHTS 1ST FLOOR		4
5	BASEMENT LIGHTS			20	1	0.5			2	12	12	3/4	3/4	12	12	2	0.5			1	20		LIGHTS 1ST FLOOR		6
7	SIREN CONTROL WIRE			20	1		0.5		2	12	12	3/4						0.0		1	20		SPARE		8
9	SIREN			20	1	0.5			2	12	12	3/4					0.0			1	20		SPARE		10
11	SPARE			20	1		0.0											0.0		1	20		SPARE		12
13	PROVISIONAL					0											0						PROVISIONAL		14
15	PROVISIONAL						0											0					PROVISIONAL		16
17	PROVISIONAL					0											0						PROVISIONAL		18
			SIDE CONNECTED KVA	2	1												1	1	SIDE CONNECTED KVA						

PANEL CONNECTED KVA: 4 | PANEL DEMAND KVA: 2 | PANEL DEMAND FACTOR: 50%
LABEL PANEL "120V LOADS ONLY": A AND B POLES SAME PHASE UPSTREAM
DERATING FACTOR (80%) | DEMAND LOAD SIZE: 12 4MPS

LIGHTING AND APPLIANCE PANEL SCHEDULE

PANEL DESIGNATION: **PANEL F - F** | BUS AMPS: 100 | MIN A.I.C.: 10 KA | MAIN BREAKER: 100A | NOTES:
LOCATION: KYSTN APP BAY | PHASE: 1 | WIRE: 3 | VOLTAGE: 120/208
MOUNTING: FLUSH | FED FROM: PANEL E VIA CONTRACTOR | NEUTRAL SIZE: 100%
ENCLOSURE: NEMA 1 | LOCATION: BOILER ROOM | TOTAL POLES: 18

CKT NO	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CIRC NOTES	BREAKER AMP	POLES	LOAD (KVA) A	B		WIRE NO	SIZE	GND SIZE	COND SIZE	COND SIZE	GND SIZE	WIRE SIZE	NO	LOAD (KVA) A	B		BREAKER POLES	AMP	CIRC NOTES	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CKT NO
1	LOUNGE LIGHT - FIRE ALARM			20	1	0.5			2	12	12	3/4	3/4	12	12	2	0.5			1	20		SPARE (ON) - FIRE ALARM		2
3	APPARATUS ROOM LIGHTS - FIRE ALARM			20	1		0.5		2	12	12	3/4	3/4	12	12	2		0.5		1	20		LIGHTS 1ST FLOOR - FIRE ALARM		4
5	BASEMENT LIGHTS - FIRE ALARM			20	1	0.5			2	12	12	3/4	3/4	12	12	2	0.5			1	20		LIGHTS 2ND FLOOR - FIRE ALARM		6
7	SIREN CONTROL - FIRE ALARM			20	1		0.5		2	12	12	3/4	3/4	12	12	2		0.0		1	20		SPARE - FIRE ALARM		8
9	SIREN - FIRE ALARM			20	1	0.5			2	12	12	3/4	3/4	12	12	2	0.0			1	20		SPARE - FIRE ALARM		10
11	SPARE - FIRE ALARM			20	1		0.0		2	12	12	3/4	3/4	12	12	2		0.0		1	20		SPARE - FIRE ALARM		12
13	PROVISIONAL					0											0						PROVISIONAL		14
15	PROVISIONAL						0											0					PROVISIONAL		16
17	PROVISIONAL					0											0						PROVISIONAL		18
			SIDE CONNECTED KVA	2	1												1	1	SIDE CONNECTED KVA						

PANEL CONNECTED KVA: 4 | PANEL DEMAND KVA: 1 | PANEL DEMAND FACTOR: 20%
LABEL PANEL "120V LOADS ONLY": A AND B POLES SAME PHASE UPSTREAM
DERATING FACTOR (80%) | DEMAND LOAD SIZE: 5 4MPS

LIGHTING AND APPLIANCE PANEL SCHEDULE

PANEL DESIGNATION: **PANEL F - N** | BUS AMPS: 100 | MIN A.I.C.: 10 KA | MAIN BREAKER: 100A | NOTES:
LOCATION: KYSTN APP BAY | PHASE: 1 | WIRE: 3 | VOLTAGE: 120/208
MOUNTING: FLUSH | FED FROM: PANEL E | NEUTRAL SIZE: 100%
ENCLOSURE: NEMA 1 | LOCATION: BOILER ROOM | TOTAL POLES: 18

CKT NO	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CIRC NOTES	BREAKER AMP	POLES	LOAD (KVA) A	B		WIRE NO	SIZE	GND SIZE	COND SIZE	COND SIZE	GND SIZE	WIRE SIZE	NO	LOAD (KVA) A	B		BREAKER POLES	AMP	CIRC NOTES	FEEDER/BRANCH CIRCUIT DESCRIPTION	AREA	CKT NO
1	LOUNGE LIGHT			20	1	0.5			2	12	12	3/4	3/4	12	12	2	0.5			1	20		SPARE (ON)		2
3	APPARATUS ROOM LIGHTS			20	1		0.5		2	12	12	3/4	3/4	12	12	2		0.5		1	20		LIGHTS 1ST FLOOR		4
5	BASEMENT LIGHTS			20	1	0.5			2	12	12	3/4	3/4	12	12	2	0.5			1	20		LIGHTS 2ND FLOOR		6
7	SIREN CONTROL			20	1		0.5		2	12	12	3/4						0.0		1	20		SPARE		8
9	SIREN			20	1	0.5			2	12	12	3/4					0.0			1	20		SPARE		10
11	SPARE			20	1		0.0											0.0		1	20		SPARE		12
13	PROVISIONAL					0											0						PROVISIONAL		14
15	PROVISIONAL						0											0					PROVISIONAL		16
17	PROVISIONAL					0											0						PROVISIONAL		18
			SIDE CONNECTED KVA	2	1												1	1	SIDE CONNECTED KVA						

PANEL CONNECTED KVA: 4 | PANEL DEMAND KVA: 2 | PANEL DEMAND FACTOR: 50%
LABEL PANEL "120V LOADS ONLY": A AND B POLES SAME PHASE UPSTREAM
DERATING FACTOR (80%) | DEMAND LOAD SIZE: 12 4MPS

BID DOCUMENTS

BUCHART HORN

M.E.P.E.E.
Subsurface Utilities
400 West Philadelphia Street
York, PA 17404
717.852.1400

READING FIRE DEPARTMENT ENGINE 3, 3rd & COURT
ELECTRICAL SERVICE, GENERATOR, & BOILER REPLACEMENT
15 N 3rd STREET
READING, PA
DEPARTMENT OF PUBLIC WORKS, CITY OF READING, PENNSYLVANIA
816 WASHINGTON ST
READING, PA

REVISIONS

MARK	ISSUED DATE	DESCRIPTION

PROJECT NO: 8108341
ISSUED DATE: 06/12/20
DRAWN BY: NCA
CHECKED BY: JJG
© BUCHART HORN, INC.
SHEET TITLE: PANEL SCHEDULES
SHEET NO: E-603

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

CERTIFICATE OF ACKNOWLEDGMENT OF RECEIPT OF ADDENDUM

THE CITY OF READING

ADDENDUM NO.1

RFP: Reading Fire Department 3rd and Court Electrical Service, Generator and Boiler Replacement

DUE DATE: July 7, 2020
3:00 P.M. Prevailing Time

NOTICE

This addendum must be signed, attached to, and returned with your proposal to the City of Reading by the time and date indicated ABOVE:

THE NEW BID DUE DATE FOR THIS PROJECT IS 3:00 P.M., PREVAILING TIME, ON JULY 14, 2020 VIA PENN BID.

I, HEREBY CERTIFY THAT THE CHANGES COVERED BY THIS ADDENDUM HAVE BEEN TAKEN INTO ACCOUNT.

Firm Name (Type or Print)_____

Authorized Signature _____

Title_____

Name (Type or Print)_____

Date_____

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

CERTIFICATE OF ACKNOWLEDGMENT OF RECEIPT OF ADDENDUM

THE CITY OF READING

ADDENDUM NO.2

RFP: Reading Fire Department 3rd and Court Electrical Service, Generator and Boiler Replacement

DUE DATE: July 14, 2020
3:00 P.M. Prevailing Time

NOTICE

This addendum must be signed, attached to, and returned with your proposal to the City of Reading by the time and date indicated ABOVE:

Q1. May we have a range of probable cost?

A1. Probable cost of the project is approximately $250,000 to 270,000.

Q2. What is the estimated cost?

A2. Mechanical portion estimated at $ 120,000 and Electrical portion $ 150,000

Q3. Does this project involve asbestos removal?

A3. Asbestos will be removed by the City prior to the work starting

Q4. Is this job a prevailing wage project? There is one specification that says "N/A" and one that specifies to adhere to prevailing wages.

A4. Yes

Q5. What is the process on seeking approval for an alternate generator manufacturer?

A5. Generator MFGs are NOT predetermined. Provide basis of design or named alternate manufacturers.

Q6. Please provide the prevailing wage rates.

A6. Here are the prevailing wage rates:
https://www.dlisecureweb.pa.gov/PrevWage/Pages/Project.aspx?ID=137270&PageType

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

I, HEREBY CERTIFY THAT THE CHANGES COVERED BY THIS ADDENDUM HAVE BEEN TAKEN INTO ACCOUNT.

Firm Name (Type or Print)_____

Authorized Signature _____

Title_____

Name (Type or Print)_____

Date_____

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

3. Submittals (Stipulation Against Liens)

DocuSign Envelope ID: C7E7C132-7A74-4530-B31E-6C7671B010E3

STIPULATION AGAINST LIENS

WHEREAS, **3B SERVICES, INC.**, hereinafter called the CONTRACTOR, has entered into a CONTRACT, dated _____, with **CITY OF READING**, hereinafter called the CITY, to provide materials and perform labor necessary for the manufacture and furnishing of the: for Electrical Service, Generator and Boiler Replacement at 3rd and Court Fire Station as set forth in the CONTRACT DOCUMENTS as prepared by the City of Reading.

NOW, THEREFORE, it is hereby stipulated and agreed by and between the said parties, as part of the said CONTRACT, and for the consideration therein set forth, that either the undersigned CONTRACTOR, any SUBCONTRACTOR or material man, nor any other person furnishing labor or materials to the said CONTRACTOR under this CONTRACT shall file a lien, commonly called a mechanic's lien, for WORK done or materials furnished for the above manufacture.

This stipulation is made and shall be filed with the Berks County Prothonotary within ten (10) days after execution, in accordance with the requirements of Section 1402 of the Mechanics Lien Law of 1963 of the Commonwealth of Pennsylvania in such case provided.

IN WITNESS WHEREOF, the parties hereto have caused the signature of their property officers to be affixed thereto on the day and year first above written.

ATTEST:

DocuSigned by:

By: Linda A. Kelleher CMC, City Clerk

73DE031C240D451...

City Clerk

CITY OF READING

DocuSigned by:

By: Mayor Eddie Moran

9DBC26E27C594BB...

Mayor

3B SERVICES, INC.

DocuSigned by:

By: Matthew Blanski

FDAD6F9D36CD47A...

Title President