

# Invitation to Bid

### Project: 2020 RAS/WAS PUMP IMPROVEMENTS

Release: August 18, 2020

Last day for Questions: August 24, 2020 by 12:00pm

Bids Due Date: September 1, 2020, no later than 12:00pm Kenai City Hall 210 Fidalgo Avenue Kenai, AK 99611 ATTN: Director of Public Works Or by email at scurtin@kenai.city Blank Page

Table of Contents

- 1) Advertisement
- 2) Instructions to Bidders
- 3) Bid Form
- 4) Tax Compliance Form
- 5) Non Collusion Affidavit
- 6) Sample Short Form Agreement
- 7) General Conditions
- 8) Contractor's Release Affidavit
- 9) Business Contractor's License
- 10) Sample Insurance Certificate

Attachments: Plans / Specifications

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#### Advertisement for Bid

Project Name: 2020 RAS/WAS Pump Improvements Last Day for Questions: No later than 2:00pm August 24, 2020 Bid Due Date and Time: No later than 2:00pm September 1, 2020 at City Hall

Scope of Work: This project is on a short timeline, replacement of these pumps is imperative to maintain the continued operations at the City's Waste Water Facility. Project includes demolition of two existing wasting pumps, concrete pads and appurtenances. Installation of two new pumps that the Owner has already acquired, new concrete housekeeping pads, all associated piping and electrical work.

Additionally supply and install three new fiberglass doors and jambs to replace existing corroded steel doors and jambs at the pump house and adjacent clarifiers.

Bidders should contact the Public Works Department at (907) 283-8236 to be placed on the plans holders list. Questions may be submitted to publicworks@kenai.city.

Bids must be delivered in a sealed envelope clearly marked with the project name to the Public Works Department at the address above. Bid documents can be obtained on City of Kenai website at <u>www.kenai.city</u> or at City Hall for a nonrefundable fee of \$20.00 including sales tax for each set of documents.

Publish: <u>Anchorage Daily News</u>- August 18, 2020 <u>Peninsula Clarion</u> – August 19, 2020 Blank Page



То:	All Prospective Participants
From:	Public Works Department
Date:	August 18, 2020
Subject:	Invitation to Bid – RAS/WAS Pump Improvements

This Invitation to Bid (ITB) is intended to provide potential Vendors with information regarding the services/materials being sought which are estimated to **cost** *less than \$100,000*.

#### Timeline:

ITB Release Date	August 18, 2019
Pre-Quote Meeting / Site Visit	By Appointment Only
Final Questions Due	August 24, 2020 by 12:00pm
Quotes Due	September 1, 2020 by 12:00pm
Completion Date	

<u>Scope of Work</u>: This project will provide for the demolition and installation of new Wasting Pumps at the City of Kenai Waste Water Treatment Plant. The City has already acquired the pumps, they are on site. The Work will require a phased demo, one pump at a time, demo of existing concrete housekeeping pad and installation of new concrete pad; demo and installation of new pump piping, valves and appurtenances, demo and installation of new electrical connections. Attached Drawings depict all associated work.

Contractor is to maintain one pump operational at all times to avoid causing issues with treatment process. Normal working hours of 7am – 4pm, access is available seven days a week. Contractor's bid shall provide for a complete and operational pump setup for both pumps. Any minor fasteners, reducers, connectors, conductors, etc. required to accomplish this shall be deemed included in Contractor's Bid whether fully illustrated in drawings or not.

Time is of the essence with this work and Contractor shall begin work immediately upon Notice to Proceed. Owner would like one pump operational as soon as possible, within 21 calendar days. This may require temporary hose connections, until the ductile iron piping arrives, which shall be included within contractors bid. Contractor shall coordinate with Waste Water Treatment Plant staff throughout the project.

Additionally there is an item that is not depicted within the Construction Drawings which shall also be included with this work. Contractor shall provide a submittal to replace three existing rusted steel doors and frames with new fiberglass doors and frames. Each door shall be half glass, with a single hole bore for lock set, and shall be painted with two coats of a Sherwin Williams exterior paint color selected by the Owner. Hardware Lockset shall be supplied and installed by Owner. Contractor shall field verify measurements prior to ordering, doors are roughly 3'0 x 7'0. Doors shall be heavy duty industrial rate purposed doors for this type of application with rust resistant type hinges.

<u>Licensing</u>: Section 43.70.020 of the Alaska State Statutes requires that all businesses wishing to engage in business in Alaska obtain a license. All suppliers/contractors are required to furnish, a current, valid Alaska Business License Number and, if applicable, a current, valid Contractor's License Number, Specialty Contractor License Number, etc. prior to entering into a contract.

<u>Tax Compliance</u>: No contract that requires competitive bidding pursuant to a City Ordinance may be awarded to an individual or business that is in violation of City tax ordinances unless the violation is cured within ten (10) business days of notice; in compliance with KMC 7.15.110.

<u>Local Preference</u>: A five (5%) percent local preference policy has been established and may be applied to all purchases under \$25,000. A local business is defined as any business or company having a physical presence within the City, registered to collect sales tax and locally provides the products and services sought; in compliance with KMC 7.15.080.

Bonding: As this project is anticipated to cost under \$100K bonding will not be required.

Site Visit: Call Scott Curtin at 907 740-8103 if interested in touring the Site.

<u>Questions</u>: Questions regarding this project should be directed to Scott Curtin, Public Works Director, and submitted via email to <u>scurtin@kenai.city</u>. Questions must be received by noon 12:00pm on August 24, 2020.

<u>Award of Contract</u>: It is the intent of the City of Kenai to award a contract to the lowest responsive and responsible bidder for services offered.

<u>Contracts</u>: This work will be accomplished through a City of Kenai short form contract (sample attached). This contract shall be subject to the provisions of the State of Alaska, Title 36, Minimum Wage Rates and Notice of Work/Notice of Completion Requirements and will require certificates of insurance. Insurance requirements are \$1,000,000 for both commercial general liability (CGL) and auto, \$1,000,000 for errors and omissions (E&O) if required by contract. See attachment Sample Contract.

<u>Quotes Due Date/Time</u>: Bids may be emailed to <u>scurtin@kenai.city</u> or mailed to 210 Fidalgo Ave. Kenai, AK 99611 ATTN: RAS/WAS Pump Improvements. Bids must be received no later than 12:00pm on September 1, 2020.

<u>Attachments</u>: Drawings, specifications and associated forms for the above reference project.

Bid Form

No.	Description	Qty	Cost
1	Mobilization / Demobilization	LS	\$
2	Concrete Work	LS	\$
3	Plumbing Work	LS	\$
4	Electrical Work	LS	\$
5	Final Closeout / Certified Payrolls, Invoicing, etc	LS	\$
6	All Work associated with the three (3) additional	LS	
	Fiberglass Doors		\$
	Total Base Bid	\$	
	Contract Award shall be by lowest Total Base Bid		

Company Name:\_\_\_\_\_

Contact:\_\_\_\_\_

Phone:\_\_\_\_\_

Tax Com	pliance Cei	rtificatio	on	Γ	
Kenai F Finc					
144 N. Binkley Street Soldotna, Alaska 99669-7599 www.kpb.us		Phon c Fo	e: (907) 714- or: (907) 714- x: (907) 714-	2197 2175 2376	
1.) Fill in all information requested.	2.) Sign and date. 3.)	Submit with	solicitation, or	other.	For Official Use Only
Reason for Certificate:		-	For Departm	ent:	
Solicitation Other:			Dept. Conta	ct:	
Business Name:					
Business Type:	🗌 Individual 🗌	Corporatio	n 🗌 Partne	ership	Other:
Owner Name(s):					
Business Mailing Address:					
Business Telephone:			Business Fax:		
Email:					
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KPB Finance Department (signature	required)	Dc	te		
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KPB Sales Tax Division (signature rec	quired)		te	🗌 In Com	pliance 🗌 Not in Compliance
CERTIFICATION: 1,	f Applicant) nformation is correc	thet thet as of	(Title) 	,	hereby certify that, to the
				Signature a	f Applicant (Required)

IF ANY BUSINESS IS CONDUCTED OR IS AWARDED A BID WITHIN THE KENAI PENINSULA BOROUGH YOU MUST BE REGISTERED TO COLLECT SALES TAX. THE SALES TAX DEPARTMENT CAN BE REACHED AT (907) 714-2175. Blank Page

#### NON – COLLUSION AFFIDAVIT

(To be executed and submitted with Bid Proposal)

I, \_\_\_\_\_\_of \_\_\_\_\_ Firm Name

being duly sworn, do depose and state:

I, or the firm, association, or corporation of which I am a member, who bid on the Contract to be executed by the City of Kenai, for the construction of that certain construction project designated as:

#### 2020 RAS/WAS Pump Improvements

located at Kenai, Alaska in the State of Alaska, have not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with such Contract.

		Signature				
	Ī	Name				
	Ξ	Title				
	Ī	Date				
ACKNO	OWLED	DGMENT				
STATE OF ALASKA	)					
) THIRD JUDICIAL DISTRICT	SS					
The foregoing instrument was acknowledged before me this day of, 2020, by						
	1 1 1	NOTARY PUBLIC for State of Alaska My Commission Expires:				

Blank Page

Contractor's	Printed	Name:
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Contractor's Fed. Tax ID #:



#### THE CITY OF KENAI SHORT FORM AGREEMENT

This agreement is not valid until properly signed by the parties and accompanied by a valid City of Kenai Purchase Order City of Kenai 210 Fidalgo Ave. Kenai, AK 99611 907-283-8236

CONTRACTOR WILL PROVIDE THE CITY OF KENAI THE FOLLOWING SERVICE(S);

**Interpretation:** The following documents are incorporated herein by reference and shall be given the following order of precedence:

1. Addenda

2. Bid Specifications / Drawings / Instructions to Bidders

3. This Short Form Agreement

4. General Conditions (See page two / reverse of this form if double sided)

5.Contractor's Bid

Contractor's compensation will be (In words and numbers):

Time of commencement and completion:

BY SIGNING BELOW, THE CO ACCEPTS ALL TERMS AND C CONDITIONS	Contractor's Address & P	hone / Fax Numbers:			
Contractor's Signature		Date			
Recommended by:		Purchase Order Number:	Арр	proved by City Manager:	
Signature	Date		Sigr	ature	Date

Short Form Agreement

#### **GENERAL CONDITIONS**

Section 1. Execution of This Agreement. This agreement is not valid until properly signed by the parties and accompanied by a valid City of Kenai Purchase Order.

Section 2. Independent Contractor. The Contractor shall provide services as an independent contractor to the City.

Section 3. Compliance With Laws. The Contractor shall comply with all statutes, ordinances, and regulations governing its performance, post all required notices, and obtain all permits, licenses, and other entitlements necessary to its performance. The Contractor shall pay all taxes related to its performance and shall be current on all borough taxes at the time of entering this agreement. The Contractor shall acquire and maintain in good standing all permits, licenses; and other entitlements necessary to the legal performance of this agreement.

#### Section 4. Equal Employment Opportunity.

- A. The Contractor will not discriminate against any applicant for employment because of race, color, religion, national origin, ancestry, age, sex, marital status, or mental or physical handicap. The Contractor will take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to the characteristics listed above. Such action shall include, without limitation, employment, upgrading, demotion or transfer, recruitment or recruiting or recruiting advertising, lay-off or termination, rates of pay or other forms of compensation, and selection for training including apprenticeship. The Contractor will post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.
- B. The Contractor shall state in all solicitations or advertisements for employees to work on agreement jobs, that all qualified applicants will receive consideration for employment without regard to race, color, religion, national origin, ancestry, age, sex, marital status, or physical or mental handicap.
- C. The Contractor shall include the provisions of subsections A and B of this section in every subcontract or purchase order under this agreement, so as to be binding upon every subcontractor or vendor of the Contractor under this agreement.

Section 5. Insurance. During the term of this agreement the Contractor shall maintain a policy of workers' compensation and employers' liability insurance as required by law. Contractor shall also be required to carry Commercial general liability with minimum coverage of \$1,000,000 and automobile liability insurance with minimum coverage of \$1,000,000 combined single limit bodily injury and property damage per occurrence. This insurance shall be primary and exclusive of any other insurance carried by the City of Kenai. The commercial general liability insurance shall be without limitation on the time within which the resulting loss, damage, or injury is actually sustained. Certificate(s) of Insurance shall be provided by Contractor and all subcontractors, or their Insurance Companies and/or their Agents, naming the City of Kenai as an additional insured for the work specified in this contract with a waiver of subrogation for commercial general liability insurance and automobile liability insurance. The certificates of insurance must reference the specific contract by name and project number. Workers compensation insurance must be endorsed for waiver of subrogation against the City. Such insurance shall be by a company/corporation currently rated "A-"or better by A.M. Best. If providing professional services, \$1,000,000 against any claim arising out of professional liability/errors or omissions of Consultant and/or Consultant's subcontractors must be provided.

Section 6. Assignments. Unless the City provides otherwise in writing, any assignment by the Contractor of its interest in any part of this agreement or any delegation of its duties shall be void, and permit the City to terminate this agreement without liability for work performed.

Section 7. Ownership, Publication, Reproduction, and Use of Material. Unless the City provides otherwise in writing, all data, documents, and materials that the Contractor produces shall be property of the City, which shall retain the exclusive right to publish, disclose, distribute and otherwise use, in whole or in part, any such data, documents, or other materials. This exclusive right does not apply to any materials presently in the public domain or not subject to copyright.

Section 8. Indemnity. The contractor shall indemnify, hold harmless, and defend the City at its own expense from and against any and all claims, losses, damages or expenses, including reasonable attorney's fees, of, or liability for, any wrongful or negligent acts, errors, or omissions of the contractor, its officers, agents or employees, or any subcontractor under this agreement. The contractor shall not be required to defend or indemnify the City for any claims of, or liability for, any wrongful or negligence of the City, the indemnification and hold harmless obligation shall be apportioned on a comparative fault basis. Apportionment shall be determined upon final determination of percentage of fault. If any such determination is by settlement, the percentage of fault attributed to each party for purposes of this indemnification provision shall only be binding upon the parties included in the settlement agreement. "Contractor" and "City" as used in this article include the employees, agents, officers, directors, and other contractors who are directly responsible, respectively, to each. The term "independent negligence of the City" is negligence other than in the City's selection, administration, monitoring, or controlling of the contractor and in approving or accepting the contractor's work.

#### Section 9. Termination.

This agreement may be terminated for cause immediately or by the City for its convenience upon fifteen (15) days' written notice to the Contractor. Upon termination and the Contractor's furnishing to the City all finished and unfinished data, documents or other materials prepared under the agreement, the City shall pay the Contractor for all satisfactory work performed before termination.

Section 10. Nonwaiver. Either party failing to enforce a provision of this agreement does not waive the provision or affect the validity of the agreement or a party's right to enforce any provision of the agreement.

Section 11. Jurisdiction and Choice of Law. Any civil action arising from this agreement shall be brought in the trial courts for the Third Judicial District of the State of Alaska at Kenai. The laws of the State of Alaska govern this agreement.

Section 12. Integration. This document and all documents incorporated in it by reference are the entire agreement of the parties and supersede all previous communications, representations or agreements regarding this subject, whether oral or written, between the parties.

#### <u>CONTRACTOR'S RELEASE AND AFFIDAVIT OF PAYMENTS</u> OF DEBTS AND CLAIMS ("Release")

#### PROJECT NAME: 2020 RAS/WAS Pump Improvements

The undersigned, being first duly sworn, deposes and says:

1. That pursuant to this contract for project \_\_\_\_\_\_between the undersigned and the City of Kenai dated \_\_\_\_\_\_\_the undersigned hereby certifies that, except as listed below, he has paid in full or has otherwise satisfied all obligations for materials and equipment furnished for all work, labor, and services performed and for all known indebtedness and claims for which the Contractor or the City of Kenai is or may become liable in connection with performance under this contract. The Contractor warrants that he has made diligent search and inquiry to determine the existence of any such claim, debt, or liability and that all such obligations, whether liquidated, unliquidated, or disputed, have been satisfied.

2. The Contractor further certifies he did not extend any loan, gratuity, or gift of money of any form whatsoever to any employee or agent of the City, that he did not rent or purchase any equipment or materials from any employee of the City, nor to the best of his knowledge, from any agent of any employee of the City, and that he has not made any promise to an employee or agent of the City to do or undertake any such action after completion of the subject contract.

3. Pursuant to the above-described contract and in consideration of the final payment in the amount of \$\_\_\_\_\_\_, the undersigned Contractor hereby releases and discharges the City of Kenai, its officers, agents and employees of and from any and all further claim, debt, charge, demand, liability, or other obligation whatsoever under or arising from said contract, whether known or unknown and whether or not ascertainable at the time of the execution of this instrument. This release is complete, final, binding and irrevocable.

4. The Contractor shall indemnify, defend, save and hold the City, its elected and appointed officers, agents and employees, harmless from any and all claims, demands, suits, or liability of any nature, kind or character including costs, expenses, and attorneys fees resulting from Contractor or Contractor's officers, agents, employees, partners, attorneys, suppliers, and subcontractors' performance or failure to perform this Agreement in any way whatsoever. This defense and indemnification responsibility includes claims alleging acts or omissions by the City or its agents which are said to have contributed to the losses, failure, violations, or damage. However, Contractor shall not be responsible for any damages or claim arising from the sole negligence or willful misconduct of the City, its agents, or employees. Contractor and subcontractors shall also not be required to defend or indemnify the City for damage or loss that has been found to be attributed to an independent contractor directly responsible to the City under separate written contract.

#### CONTRACTOR'S RELEASE AND AFFIDAVIT OF PAYMENTS OF DEBTS AND CLAIMS ("Release")

If any portion of this Release is voided by law or court of competent jurisdiction, the remainder of this Release shall remain in full force and effect.

IN WITNESS WHEREOF, this Release has been executed this_	_day of	<u>,</u> 2020.
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(Contractor's signature)

Title

#### ACKNOWLEDGMENT

) ss

THIRD JUDICIAL DISTRICT

STATE OF ALASKA

THIS IS TO CERTIFY that o	n this d	ay of	, 2020, before the
undersigned, a Notary Public	in and for the St	ate of Alaska, du	Ily commissioned and sworn,
personally appeared			, who,
having produced satisfactory e	vidence of identifi	cation, and havin	g acknowledged the voluntary
and authorized execution of	the foregoing ins	trument for the	purposes therein mentioned,
executed the above and forego	ing instrument.		

Notary Public for Alaska

My Commission Expires: \_\_\_\_\_

(NOTE: In case of a corporation, the attached Certificate of Authority must be completed by a corporate officer other than the one who signs above.)

SAMPLE
Alaska Department of Commerce, Community, and Economic Development P.O. Box 110806, Juneau, Alaska 99811-0806
ALASKA BUSINESS LICENSE
The licensee named below holds Alaska Business License Number
Line of Business:
COMPANY NAME ADDRESS
Owner: NAME OF OWNER
This license shall not be taken as permission to do business in the state without having complied with The other requirements of the laws of the State of Alaska or of the United States.
Alaska Department of Commerce, Community, and Economic Development
Commissioner:
This license must be posted in a conspicuous place at the business location. It is not transferable or assignable.
SAMPLE
No STATE OF ALASKA
Expires: DEPARTMENT OF COMMERCE, COMMUNITY & ECONOMIC DEVELOPMENT Division of Occupational Licensing
Division of Occupational Licensing
Certifies that
COMPANY NAME
Is a Registered
Specialty Commissioner:

ACORD

1

## CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

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City of Yanni						SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.				ED BEFORE
City of Kenai Public Works 210 Fidalgo Ave Kenai, AK 99611					AUTHORIZED REPRESENTATIVE					
ACORD 25 (2010/05)						© 19	88-2010 ACC	ORD CORPORATION. A	ll rigt	nts reserved.
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# KENAI WWWTP **RAS/WAS PUMP IMPROVEMENTS** KENAI, ALASKA PUBLIC WORKS PROJECT NO: 2020-01 OWNER

THE CITY OF KENAL PUBLIC WORKS DEPARTMENT 210 FIDALGO AVENUE KENAI, AK 99611-7794 TEL: (907) 283-8236 CONTACT: SCOTT CURTIN

# MECHANICAL

MBA CONSULTING ENGINEERS, INC. 3812 SPENARD ROAD SUITE 200 ANCHORAGE, AK 99517 TEL: (907) 274-2622 FAX: (907) 274-0914 CONTACT: SCOTT HALA, P.E.

# ELECTRICAL

MBA CONSULTING ENGINEERS, INC. 3812 SPENARD ROAD SUITE 200 ANCHORAGE, AK 99517 TEL: (907) 274-2622 FAX: (907) 274-0914 CONTACT: EDWARD CARLSON, P.E.

#### TITLE SHEET LEGEND, SCHEDULES, AND SPECIFICATIONS M0.1 M1.0 MECHANICAL ROOM PLAN

M2 0

SCHEMATICS, DETAILS, AND EXISTING CONSTRUCTION PHO

REPLACE WASTE ACTUATED SLUDGE PUMPS WITH OWNER PROVIDED PUMPS. DEMO AND PROVIDE NEW HOUSEKEEPING PADS, PIPE, VALVES, AND ELECTRICAL AS INDICATED.

# Activated Sludge Pump Station Interior



# **DRAWING INDEX**

	E1.0	MECHANICAL ROOM PLAN
	E2.0	EXHIBIT DRAWINGS
	E3.0	ELECTRICAL SPECIFICATIONS
DTOS	E3.1	ELECTRICAL SPECIFICATIONS

SCOPE OF WORK



**PROJECT LOCATION:** ACTIVATED SLUDGE PUMP STATION

Imagery © 2020 Maxar Technologies, Map data © 2020, Courtesy of Google Maps

Vicinity Map

# New TrashFlow Pump





PROJECT LOCATION 1450 KENAI AVE, KENAI, AK 99611



# **Enlarged Satellite View**

	LEGEND & ABBREVIATION	S
ABBR.	EXPLANATION	SYMBOL
AFF	ABOVE FINISHED FLOOR	
APPROX.	APPROXIMATELY	
	BALANCING VALVE	
	BALL VALVE	
CFM	CUBIC FEET/MINUTE	
CO	CLEANOUT	ŀ
CV	CHECK VALVE	/
CW	COLD WATER	
(E)	EXISTING	
FCO	FLOOR CLEANOUT	$\overline{\otimes}$
FD	FLOOR DRAIN	
	FLANGED COUPLING ADAPTER	
	ECCENTRIC PLUG VALVE	×
NC	NORMALLY CLOSED	
NIC	NOT IN CONTRACT	
	PIPE ANCHOR	<del>×</del>
	PIPE GUIDE	
P.0.C.	POINT OF CONNECTION	
P.O.D.	POINT OF DISCONNECT	
	PRESSURE GAGE	-₩0
	PRESSURE SWITCH	H0
PRV	PRESSURE RELIEF VALVE	灸
	THERMOMETER	
WAS	WASTE ACTIVATED SLUDGE	

PUMP SCHEDULE										
SYMBOL	LOCATION	SERVICE	FLI TYPE	UID TEMP	GPM	HEAD FT.	RPM	MOTOR HP/VOLTS/PH	DESIGN	BASIS PRODUCT
P300-1	ACTIVATED	WAS	WAS	60	100	24	1150	3/460/3	WASTECORP	TFCC-3F, OFCI
P300-2	SLUDGE PUMP	WAS	WAS	60	100	24	1150	3/460/3	WASTECORP	TFCC-3F, OFCI

DIVISION 15 – MECHANICAL

PART 1 – GENERAL

1.1 WORK INCLUDED

A. WORK CONSISTS OF PROVIDING LABOR, PRODUCTS, AND IN PERFORMING ALL OPERATIONS REQUIRED FOR THE COMPLETE OPERATING INSTALLATION OF ALL PART 2 - PRODUCTS MECHANICAL SYSTEMS AS SHOWN AND SPECIFIED, IN STRICT ACCORDANCE WITH SPECIFICATIONS, APPLICABLE DRAWINGS, TERMS, AND CONDITIONS OF THE CONTRACT AND ALL APPLICABLE CODES AND ORDINANCES GOVERNING INSTALLATION OF THE VARIOUS MECHANICAL SYSTEMS. CORRELATE ALL WORK FULLY WITH THE WORK OF OTHER CRAFTS. PROVIDE ALL SYSTEMS COMPLETE AND IN PROPER OPERATING ORDER.

1.2 REGULATORY REQUIREMENTS

A. COMPLY WITH ALL APPLICABLE LOCAL, STATE, AND NATIONAL CODES, ORDINANCES AND REGULATIONS IN EXISTENCE AT BID DATE AFFECTING MATERIALS AND METHODS OF INSTALLATION OF THE MECHANICAL SYSTEMS. FOLLOW RECOMMENDED PRACTICES AS SET DOWN BY ASME, SMACNA, INTERNATIONAL BUILDING CODE, INTERNATIONAL MECHANICAL CODE, UNIFORM PLUMBING CODE, INTERNATIONAL FIRE CODE, NATIONAL ELECTRICAL CODE, AND OSHA AS THEY APPLY TO THIS PROJECT EXCEPT IN CASES WHERE STATUTES GOVERN.

1.3 MANUFACTURER'S WARRANTIES

A. IN THE EVENT OF EQUIPMENT OR COMPONENT FAILURE, IT IS THE CONTRACTOR'S RESPONSIBILITY TO REPAIR OR REPLACE SUCH DEFECTIVE EQUIPMENT OR COMPONENTS AND BEAR ALL ASSOCIATED COSTS. THE CONTRACTOR SHALL PURSUE MANUFACTURER'S WRITTEN IMPLIED WARRANTIES TO THE EXTENT NECESSARY TO OBTAIN REPLACEMENT EQUIPMENT OR COMPONENTS PRIOR TO ANY OTHER ACTION BEING INITIATED.

1.4 ELECTRICAL WORK

A. ALL WIRING SHALL BE IN ACCORDANCE WITH NEC, STATE, AND LOCAL CODES.

1.5 TESTS AND INSPECTIONS

- A. SCHEDULE, OBTAIN, AND PAY ALL FEES AND/OR SERVICES REQUIRED BY LOCAL AUTHORITIES AND BY THESE SPECIFICATIONS, TO TEST THE MECHANICAL SYSTEMS AS SPECIFIED.
- B. DEFICIENCIES: IMMEDIATELY CORRECT ALL DEFICIENCIES. WHICH ARE EVIDENCED DURING THE TESTS AND REPEAT TESTS UNTIL SYSTEM IS APPROVED. DO NOT COVER OR CONCEAL PIPING, EQUIPMENT, OR OTHER PORTIONS OF THE MECHANICAL INSTALLATIONS UNTIL SATISFACTORY TESTS ARE MADE AND APPROVED.
- C. COMPLETION: UPON COMPLETION OF THE MECHANICAL INSTALLATION, DEMONSTRATE TO THE CONTRACTING AGENCY'S SATISFACTION THAT THE SYSTEMS HAVE BEEN INSTALLED IN A SATISFACTORY MANNER IN ACCORDANCE WITH THE PLANS, SPECIFICATIONS, AND APPLICABLE CODES. DEMONSTRATE DYNAMIC OPERATION OF ALL SYSTEMS. SHOW THAT ALL CONTROLS ARE OPERABLE AND ARE PROPERLY ADJUSTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE FINAL SYSTEMS BALANCE, THAT ALL SYSTEMS ARE PROPERLY BALANCED, THAT ALL EQUIPMENT OPERATES PROPERLY, THAT FILTERS AND STRAINERS ARE CLEAN. AND THAT ALL COMPONENTS OF ALL SYSTEMS ARE INSTALLED AND ADJUSTED FOR PROPER OPERATION.
- 1.6 PROJECT/SITE CONDITIONS
- A. INSTALL WORK IN LOCATIONS SHOWN ON DRAWINGS, UNLESS PREVENTED BY PROJECT CONDITIONS.
- B. PROVIDE INFORMATION SHOWING PROPOSED REARRANGEMENT OF WORK TO MEET PROJECT CONDITIONS, INCLUDING CHANGES TO WORK SPECIFIED IN OTHER SECTIONS 2.4 PIPING EXECUTION OR INTERFERENCE WITH SITE CONDITIONS NOT IN THE CONTRACT. OBTAIN PERMISSION OF OWNER BEFORE PROCEEDING.

1.7 SUBMITTALS

- A. SUBMITTAL REVIEW IS FOR GENERAL DESIGN AND ARRANGEMENT ONLY AND DOES NOT RELIEVE THE CONTRACTOR FROM ANY REQUIREMENTS OF CONTRACT DOCUMENTS. PROVISION OF A COMPLETE AND SATISFACTORY WORKING INSTALLATION IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
- 1.8 SEISMIC RESTRAINT
- A. CONTRACTOR SHALL SUBMIT STRUCTURAL CALCULATIONS AND STRUCTURALLY ENGINEERED SHOP DRAWINGS FOR SEISMIC RESTRAINT OF ALL NEW MECHANICAL COMPONENTS AND EQUIPMENT, INCLUDING DUCTWORK AND PIPING. CALCULATIONS TO BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 16 OF THE 2012 INTERNATIONAL BUILDING CODE AND DRAWINGS ARE TO BE STAMPED BY A REGISTERED PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF

THIS IS A STANDARD LEGEND, SOME SYMBOLS SHOWN ON LEGEND ARE NOT NECESSARILY ON THE DRAWING.

VALVE SCHEDULE						1
VALVE NO.	TYPE	SIZE	WORKING PRESS. (PSI)	OPERATOR	PRESS. SETTINGS	
V-1	SWL SERIES SWING CHECK VALVE	4"	150	OUTSIDE LEVER & WEIGHT		CRISPI VERTIC 4"CL4 ANDC STAINL NUTS, TNEME PRESS
(E) V-42	VACUUM BREAKER	1"				EXISTIN
V-50	PLUG VALVE	4"	150	LEVER		FLANGI BUNA- EPOXY

ALASKA.

B. SEISMIC RESTRAINT DESIGN TO BE BASED ON SEISMIC RISK CATEGORY III, SEISMIC DESIGN CATEGORY D, AND IMPORTANCE FACTOR 1.0 FOR MECHANICAL EQUIPMENT. REFER TO STRUCTURAL DRAWINGS AND/OR SPECIFICATIONS FOR ADDITIONAL SEISMIC CRITERIA.

2.1 SUPPORTS AND ANCHORS

A. PIPE HANGERS AND SUPPORTS

- 1. USE PIPE MEMBER SUPPORTS FROM PLUG VALVES SIMILAR TO EXISTING
- 2. PIPING SUPPORT SPACING PER UNIFORM PLUMBING CODE.

2.2 MECHANICAL IDENTIFICATION

- A. EQUIPMENT
- 1. PLASTIC NAMEPLATES: LAMINATED THREE-LAYER PLASTIC WITH ENGRAVED WHITE LETTERS ON DARK CONTRASTING BACKGROUND COLOR.
- B. VALVES AND PUMPS
- 1. METAL TAGS: BRASS WITH STAMPED LETTERS; TAG SIZE MINIMUM 1-1/2 INCH DIAMETER WITH SMOOTH EDGES.

C. PIPING

- 1. STENCILS: WITH CLEAN CUT SYMBOLS AND LETTERS INDICATING FLOW DIRECTION ARROW AND FLUID BEING CONVEYED.
- 2. STENCIL PAINT: SEMI-GLOSS ENAMEL, COLORS CONFORMING TO ASME A13.1.
- 3. PLASTIC PIPE MARKERS: FACTORY FABRICATED, FLEXIBLE, SEMI-RIGID PLASTIC, 2.5 TESTING, ADJUSTING, AND BALANCING PREFORMED TO FIT AROUND PIPE OR PIPE COVERING, AND INDICATING FLOW DIRECTION ARROW AND FLUID BEING CONVEYED. BRADY STRAP-ON, SETON OR APPROVED.
- 4. PLASTIC TAPE PIPE MARKERS: FLEXIBLE, VINYL FILM TAPE WITH PRESSURE SENSITIVE ADHESIVE BACKING AND PRINTED MARKINGS. BRADY STRAP-ON, CRAFTMARK, SETON OR APPROVED.
- D. VALVE CHART AND SCHEDULE
- 1. PROVIDE VALVE CHART AND SCHEDULE IN ALUMINUM FRAME WITH CLEAR PLASTIC SHIELD. INSTALL AT LOCATION AS DIRECTED.

2.3 PLUMBING PIPING

A. WASTE ACTIVATED SLUDGE

- 1. DUCTILE IRON PIPE: AWWA C110, C115, C150, AND C151. FABRICATED PIPE WITH ONE END FLANGED AND ONE END PLAIN FOR CONNECTION BY FLANGE ADAPTER, EPOXY COATED.
- a. FITTINGS: AWWA C110. DUCTILE IRON. STANDARD THICKNESS. EPOXY COATED.

b. JOINTS: FLANGED AND FLANGE ADAPTERS FOR DISMANTLING.

- B. FLANGES. UNIONS. AND COUPLINGS
- 1. FABRICATED ON PIPE OR INCLUDED WITH FITTING, VALVES, AND EQUIPMENT, PREFORMED NEOPRENE GASKETS.
- 1. SEE DRAWINGS.

A. INSTALLATION

C. VALVES

- 1. REAM PIPE AND TUBE ENDS. REMOVE BURRS. BEVEL PLAIN END FERROUS PIPE.
- 2. REMOVE SCALE AND DIRT, ON INSIDE AND OUTSIDE OF PIPE, BEFORE ASSEMBLY.
- 3. PREPARE PIPING CONNECTIONS TO EQUIPMENT WITH FLANGES OR UNIONS.
- 4. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- 5. ROUTE PIPING IN ORDERLY MANNER AND MAINTAIN GRADIENT.
- 6. INSTALL PIPING TO CONSERVE BUILDING SPACE AND NOT INTERFERE WITH USE OF SPACE.
- 7. GROUP PIPING WHENEVER PRACTICAL AT COMMON ELEVATIONS.
- 8. INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS, OR CONNECTED EQUIPMENT

9. INSTALL VA

**10.PROTECT** TEMPORARY OF COMPL

11.PROVIDE C

12.WHERE P FRAMING.

TO WELDIN

13.PREPARE FINISHED

14.USE FLANG

#### B. TESTING

- 1. SANITARY a. TEST AL
  - THE UN
  - FOR WATER TEST.

- A. EXAMINATION

  - EQUIPMENT.

- SOON AS OBSERVED.
- B. PREPARATION
- OPERATIONS. C. ADJUSTING
- CONDITION.

REMARKS	
N PART NUMBER BG04A14SWL41-LWV, CAL INSTALLATION, CRISPIN MODEL SWL41-LWV, ASS 150# FLANGED ENDS, DUCTILE IRON BODY COVER, 316 STAINLESS STEEL & BUNA SEATING, ESS STEEL & BRONZE TRIM, STEEL BOLTS & LINED & COATED WITH 8 +/-4 MILS DFT OF EC 141 EPOXY, 250 PSI MAXIMUM WORKING SURE	
NG ANGLE VALVE W/ VACUUM BREAKER	
ED WITH CAST IRON BODY, DUCTILE IRON/ -N PLUG, NICKEL SEAT, 8 MILS AMERLOCK 400 ' LINING & COATING, & LEVER HANDLE	
ALVES WITH STEMS UPRIGHT, NOT INVERTED. PIPING SYSTEMS FROM ENTRY OF FOF Y COVERS, COMPLETING SECTIONS OF THE WORK ETED SYSTEM.	REIGN MATERIALS BY X, AND ISOLATING PARTS
LEARANCE FOR ACCESS TO VALVES AND FITTINGS	5.
IPE SUPPORT MEMBERS ARE WELDED TO SCRAPE, BRUSH CLEAN, AND APPLY ONE COAT IG.	STRUCTURAL BUILDING OF ZINC RICH PRIMER
UNFINISHED PIPE, FITTINGS, SUPPORTS, AN PAINTING.	ND ACCESSORIES FOR
GES AT VALVES AND AT EQUIPMENT OR APPARATI	JS CONNECTIONS.
SEWER, VENT, AND STORM WATER	
L PIPING IN ACCORDANCE WITH THE REQUIREME IFORM PLUMBING CODE.	NTS OF CHAPTER 7 OF

b. TEST ALL SYSTEMS WITH WATER, EXCEPT IN CASES WHERE TO DO SO WOULD ADVERSELY SUBJECT THE PIPING TO DAMAGE FROM FREEZING. OBTAIN APPROVAL FROM CONTRACTING AGENCY IF AIR TEST IS TO BE SUBSTITUTED

c. REPAIR LEAKS AND RETEST SYSTEM, REPEATING THIS PROCESS UNTIL PIPING SYSTEM IS FREE OF LEAKS.

d. PROVIDE CERTIFICATION THAT TESTING HAS BEEN ACCOMPLISHED. TESTING CERTIFICATION TO BE INCLUDED IN OPERATION AND MAINTENANCE MANUALS.

1. BEFORE COMMENCING WORK, VERIFY THAT SYSTEMS ARE COMPLETE AND OPERABLE. ENSURE THE FOLLOWING:

a. EQUIPMENT IS OPERABLE AND IN A SAFE AND NORMAL CONDITION.

b. PROPER THERMAL OVERLOAD PROTECTION IS IN PLACE FOR ELECTRICAL

c. CORRECT PUMP ROTATION.

d. PROPER STRAINER BASKETS ARE CLEAN AND IN PLACE.

e. SERVICE AND BALANCE VALVES ARE OPEN.

2. REPORT ANY DEFECTS OR DEFICIENCIES NOTED DURING PERFORMANCE OF SERVICES TO ARCHITECT/ENGINEER.

3. PROMPTLY REPORT ABNORMAL CONDITIONS IN MECHANICAL SYSTEMS OR CONDITIONS WHICH PREVENT SYSTEM BALANCE

4. IF. FOR DESIGN REASONS, SYSTEM CANNOT BE PROPERLY BALANCED, REPORT AS

5. BEGINNING OF WORK MEANS ACCEPTANCE OF EXISTING CONDITIONS.

1. PROVIDE INSTRUMENTS REQUIRED FOR TESTING, ADJUSTING, AND BALANCING

1. RECORDED DATA SHALL REPRESENT ACTUALLY MEASURED, OR OBSERVED

2. PERMANENTLY MARK SETTINGS OF VALVES, DAMPERS, AND OTHER ADJUSTMENT DEVICES ALLOWING SETTINGS TO BE RESTORED. SET AND LOCK MEMORY STOPS.

3. AFTER ADJUSTMENT, TAKE MEASUREMENTS TO VERIFY BALANCE HAS NOT BEEN DISRUPTED OR THAT SUCH DISRUPTION HAS BEEN RECTIFIED.

4. LEAVE SYSTEMS IN PROPER WORKING ORDER, REPLACING BELT GUARDS, CLOSING ACCESS DOORS, CLOSING DOORS TO ELECTRICAL SWITCH BOXES, AND RESTORING THERMOSTATS TO SPECIFIED SETTINGS.

D. WATER SYSTEM PROCEDURE

1. ADJUST WATER SYSTEMS TO PROVIDE REQUIRED OR DESIGN QUANTITIES.











## **GENERAL NOTES:**



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SCH

01/24/2020











POD TO (E) ¬ WAS TO DIGESTER

PRESSURE SWITCH -

FLOW SWITCH -

ANGLE VALVE W/ · VACUUM BREAKER

POD TO (E) WAS INTAKE -

TYP. 2

TYP.2

<u>(E) P300-1</u>-

- ISOLATION VALVE, TYP.

<u>(E) P300-2</u>

- POD TO (E) SCUM BASIN INTAKE

 $\bigcirc$ 

 $\odot$ 



















5 PHOTO - EXISTING CONSTRUCTION

EXISTING CONSTRUCTION **PHOTO** \_\_\_\_









PROVIDING SEISMIC ANCHORAGE CALCULATIONS PRIOR TO CASTING HKP





# POWER LEGEND

	ELECTRICAL POWER PANEL
	ELECTRICAL DISTRIBUTION PANEL
	ELECTRICAL LIGHTING PANEL
	PANELBOARD CABINET FLUSH MOUNT
	PANELBOARD CABINET SURFACE MOUNT
X WIDE / X DEEP	SWITCHBOARD NEW
X WIDE / X DEEP	SWITCHBOARD EXISTING
$\square$	METER
$\boxtimes^{\!$	CONTROLLER/DISCONNECT
	UNFUSED DISCONNECT
$\square$	FUSED DISCONNECT
	VARIABLE FREQUENCY DRIVE
$\boxtimes$	CONTROLLER
ΗH	CONTACTOR
6	MOTOR SINGLE PHASE
×	MOTOR SINGLE PHASE : $X = HORSE POWER$
$\Diamond$	MOTOR 3PH
(	MOTOR 3PH : $X = HORSE POWER$
G	GENERATOR POWER
Τ	TRANSFORMER
\$T	THERMAL SWITCH

![](_page_24_Picture_5.jpeg)

$\left( \right)$	$\overline{\mathbf{i}}$
	N

LOAD SUMMARY:

REMOVE 2 @ 5HP

<u>2 @ 3HP</u>

- 4HP

<u>ADD</u> NET

![](_page_25_Figure_0.jpeg)

![](_page_25_Figure_1.jpeg)

# THESE ARE SELECTED DETAILS FROM AS-BUILTS FOR REFERENCE ONLY

![](_page_25_Picture_3.jpeg)

- 1.1 SCOPE
  - A. PROVIDE COMPLETE ELECTRICAL SYSTEMS AS SHOWN ON DRAWINGS AND SPECIFIED. FURNISH ALL LABOR, EQUIPMENT, APPLIANCES, MATERIALS, AND PERFORM OPERATIONS REQUIRED FOR COMPLETE INSTALLATION IN ACCORDANCE WITH ALL SECTIONS OF SPECIFICATIONS, DRAWINGS, CODES. AND CONDITIONS OF CONTRACT.
- 1.2 CODES, STANDARDS, FEES, PERMITS
  - A. COMPLY WITH LATEST EDITION OF THE NATIONAL ELECTRICAL CODE. NATIONAL ELECTRICAL SAFETY CODE, LOCAL CODES, AMENDMENTS, ORDINANCES AND REQUIREMENTS OF UTILITY COMPANIES' FURNISHING SERVICES TO INSTALLATION. COMPLY WITH NEMA, UL, ANSI, ICEA AND OTHER INDUSTRY STANDARDS. COMPLY WITH REQUIREMENTS OF IBC, IMC, UPC, AND OTHER APPLICABLE CODES.
- 1.3 DRAWINGS
  - A. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC AND DO NOT SHOW ALL FEATURES OF WORK. INSTALL ELECTRICAL ITEMS TO PROVIDE SYMMETRICAL APPEARANCE. DO NOT SCALE DRAWINGS. REVIEW OTHER DRAWINGS AND ADJUST WORK TO CONFORM TO CONDITIONS SHOWN. VERIFY FIELD CONDITIONS. IMMEDIATELY CONTACT THE OWNER'S REPRESENTATIVE FOR CLARIFICATION OF QUESTIONABLE, OBSCURE ITEMS, OR APPARENT CONFLICTS. THE OWNER'S REPRESENTATIVE'S DECISION IS FINAL FOR ALL CLARIFICATIONS REQUESTED. EXTRA COST RESULTING FROM A CONDITION WHERE CLARIFICATION WAS NOT REQUESTED: MADE AT NO INCREASE IN CONTRACT AMOUNT UNLESS EXTRA COST IS APPROVED IN WRITING.
- 1.4 WORKMANSHIP
  - A. CONSIDERED AS IMPORTANT AS ELECTRICAL AND MECHANICAL EFFICIENCY AND SUBJECT TO APPROVAL. EMPLOY WORKMEN SKILLED IN TRADE AND FAMILIAR WITH PARTICULAR TECHNIQUES APPLICABLE TO VARIOUS SECTIONS OF WORK. INSTALL IN ACCORDANCE WITH NECA "STANDARD PRACTICES FOR GOOD WORKMANSHIP IN ELECTRICAL CONTRACTING."
- 1.5 COORDINATION
  - A. COORDINATE WITH OTHER TRADES FOR PROPER INSTALLATION AND TIMELY EXECUTION. ANY CHANGES NECESSITATED BY FAILURE TO PROPERLY COORDINATE WORK: MADE AT NO INCREASE IN CONTRACT AMOUNT.
  - B. VERIFY INFORMATION SHOWN ON PLANS WITH EQUIPMENT ITEMS ACTUALLY FURNISHED WHERE EQUIPMENT IS FURNISHED OR INSTALLED BY OTHERS. NOTIFY OWNER'S REPRESENTATIVE OF ANY CONFLICTS.
- 1.6 REMODEL WORK
  - A. EXISTING CONDITIONS NOTED ON THE DRAWINGS WERE PREPARED FROM PREVIOUS CONSTRUCTION DRAWINGS. VISIT SITE, VERIFY EXISTING CONDITIONS AND ALLOW ADEQUATE MONIES TO COVER ADDITIONAL WORK REQUIRED AS A RESULT OF AS-BUILT CONDITIONS. ASSUME THAT THE AS-BUILT INFORMATION DOES NOT INDICATE EXACT CONDUIT ROUTING OR CIRCUITING. INCLUDE NECESSARY WORK TO PROVIDE CIRCUIT CONTINUITY TO EXISTING CIRCUITS THAT MAY BE AFFECTED BY NEW WORK. CUT BACK EXISTING WORK BEING REMOVED OR ABANDONED BEYOND FINISHED SURFACES TO ALLOW REPAIR AND REFINISHING. ASSUME CONDITION OF WIRING IS SUITABLE FOR RECONNECTING.
  - B. NOTIFY OWNER'S REPRESENTATIVE OF ANY FIELD CONDITIONS WHERE CONTRACTOR CANNOT REUSE EXISTING MATERIAL OR EQUIPMENT BECAUSE OF DETERIORATED CONDITIONS. ALSO NOTIFY OWNER'S REPRESENTATIVE OF ANY EXISTING CONDITIONS WHICH MAY BE CONSIDERED UNSAFE OR IN NEED OF REPAIR.
  - C. CERTAIN ITEMS ARE NOTED ON DRAWINGS TO BE REUSED. THOROUGHLY CLEAN, PLACE IN LIKE NEW CONDITION.
- 1.7 SUBMITTALS
  - A. SUBMITTAL REVIEW IS FOR GENERAL DESIGN AND ARRANGEMENT ONLY AND DOES NOT RELIEVE THE CONTRACTOR FROM ANY REQUIREMENTS OF CONTRACT DOCUMENTS. PROVISION OF A COMPLETE AND SATISFACTORY WORKING INSTALLATION IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
- 1.8 SUBSTITUTIONS
  - A. MAKE NO SUBSTITUTIONS OR REVISIONS WITHOUT WRITTEN APPROVAL. FOR EQUIPMENT SCHEDULED BY MANUFACTURER'S NAME AND CATALOG DESIGNATIONS: MANUFACTURER'S PUBLISHED DATA AND/OR SPECIFICATION FOR THAT ITEM ARE CONSIDERED PART OF SPECIFICATION. ALL SIMILAR EQUIPMENT SAME MANUFACTURER THROUGHOUT.

#### 1.9 PROJECT COMPLETION

- A. CLEAN PREMISES OF CONSTRUCTION DEBRIS. CALL FOR FINAL CONSTRUCTION OBSERVATION. CONDUCT OPERATING TEST FOR APPROVAL. DEMONSTRATE INSTALLATION TO OPERATE SATISFACTORILY IN ACCORDANCE WITH REQUIREMENTS OF CONTRACT DOCUMENTS. PROVIDE PERSONNEL TO ASSIST ENGINEER IN REMOVAL AND REPLACEMENT OF FQUIPMENT FOR OBSERVATION PURPOSES.
- B. SHOULD ANY PORTION OF INSTALLATION FAIL, REPAIR OR REPLACE ITEMS UNTIL ITEMS CAN BE DEMONSTRATED TO COMPLY.
- C. FIRE ALARM AND EMERGENCY SYSTEMS MUST BE OPERATIONAL PRIOR TO OCCUPANCY.
- D. SUBMIT A LETTER CERTIFYING COMPLETION OF PROJECT IN ACCORDANCE WITH PLANS AND SPECIFICATIONS. TURN OVER RECORD DRAWINGS TO OWNER.
- E. SUBMIT OPERATING AND MAINTENANCE MANUALS TO OWNER, TRAIN OWNER'S PERSONNEL IN OPERATION AND MAINTENANCE OF ELECTRICAL SYSTEMS.

#### 1.10 GUARANTEE

- A. GUARANTEE ALL MATERIAL TO BE NEW, ALL WORK TO BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP FOR ONE YEAR FROM DATE OF FINAL ACCEPTANCE. REPAIR OR REPLACE ANY WORK OR MATERIAL DEEMED DEFECTIVE DURING THE GUARANTEE PERIOD AT NO COST TO THE OWNER.
- PART 2 PRODUCTS

#### 2.1 RACEWAYS

- A. GALVANIZED RIGID STEEL CONDUIT OR INTERMEDIATE METAL CONDUIT: USE IN DAMP OR WET LOCATIONS, UNDERGROUND, IN CONCRETE OR CMU, WHERE SUBJECT TO PHYSICAL DAMAGE, FOR SERVICE CONDUCTORS AND PANELBOARD FEEDERS.
- B. PVC COATED RIDGED STEEL CONDUIT .: USE IN WET OR DAMP CORROSIVE ENVIRONMENTS.
- C. ELECTRICAL METALLIC TUBING: USE IN ALL OTHER AREAS UNLESS OTHERWISE INDICATED. PROVIDE RAINTIGHT/CONCRETE-TIGHT COMPRESSION FITTINGS.
- D. FLEXIBLE METALLIC CONDUIT: USE FOR FINAL CONNECTIONS TO FIXTURES AND EQUIPMENT TO ISOLATE VIBRATION OR ALLOW RELOCATION. PROVIDE FLEXIBLE WATERTIGHT CONDUIT IN DAMP OR WET LOCATIONS (PUMPS, ETC.). WHERE USED OUTDOORS, USE LIQUIDTIGHT FLEXIBLE CONDUIT RATED FOR -60 DEGREES F AND LISTED FOR DIRECT BURY.
- E. NO CONDUIT ALLOWED EMBEDDED IN SPRAY-APPLIED FIREPROOFING OR BETWEEN STRUCTURAL STEEL MEMBERS AND GYPSUM WALL BOARD.
- F. UNLESS NOTED, INSTALL RACEWAYS CONCEALED EXCEPT AT SURFACE CABINETS, MOTOR AND EQUIPMENT CONNECTIONS, AND IN UTILITY ROOMS. LOCATE RACEWAYS TO NOT ENDANGER STRENGTH OF STRUCTURAL MEMBERS, AND SIX INCHES MINIMUM FROM PARALLEL RUNS OF HEAT PIPING. DO NOT INSTALL RACEWAYS IN OR THROUGH STRUCTURAL MEMBERS UNLESS SPECIFICALLY APPROVED. CROSS EXPANSION JOINTS WITH EXPANSION FITTINGS AND BONDING CONDUCTOR.
- G. PROVIDE PULL WIRE IN RACEWAYS INSTALLED BUT LEFT EMPTY.
- H. WATERPROOF ALL ROOF AND EXTERIOR WALL PENETRATIONS AS APPROVED.

#### 2.2 WIRE AND CABLE

- A. INSTALL ALL CONDUCTORS IN APPROVED RACEWAY SYSTEMS. ALL CONDUCTOR SIZES BASED ON COPPER.
- B. MINIMUM INSULATION RATING: 75 DEGREES C, 600 VOLT. IN LIGHTING FIXTURE CHANNELS, HIGH TEMPERATURE AREAS: 90 DEGREES C. 600 VOLT.
- C. MINIMUM WIRE SIZE #12 FOR POWER AND #14 FOR CONTROLS.
- D. 120 VOLT BRANCH CIRCUIT LENGTHS FROM PANEL TO FIRST OUTLET EXCEEDING 75', USE NO. 10 AWG MINIMUM.
- E. INCREASE CONDUCTOR SIZES TO #10 AWG OR USE 90 DEGREES C-RATED INSULATION TO OFFSET DERATING FACTOR, WHEN MORE THAN THREE 20 AMP CONDUCTORS ARE INSTALLED IN SINGLE RACEWAY.
- F. CABLE FOR FIRE ALARM SYSTEMS AND OTHER SPECIAL INSTALLATIONS: AS DESCRIBED UNDER OTHER SECTIONS OF SPECIFICATIONS, NOTED ON DRAWINGS, OR RECOMMENDED BY MANUFACTURER.

- TEMPERATURE IS BELOW 20 DEGREES F.
- I. CONNECTIONS:

1. #6 AND LARGER: SOLDERLESS LUGS.

#### 2.3 BOXES

WALL SWITCHES, PUBLIC TELEPHONE OUTLETS 4'-0" CONVENIENCE OUTLETS, INDIVIDUAL TELEPHONE OUTLETS 1'-6" WEATHERPROOF OUTLETS 2'-6''

- 2.4 WIRING DEVICES

  - LISTED FOR WET LOCATIONS WHILE IN USE.
- 2.5 MOTORS AND CONNECTIONS
- RISE.

### 2.6 MOTOR STARTER AND DISCONNECTS

G. COLOR CODE 120/208 VOLT SYSTEMS: BLACK, RED, BLUE AND WHITE. 277/480 SYSTEMS: BROWN, YELLOW, ORANGE AND WHITE WITH AN IDENTIFIABLE COLORED STRIPE. MATCH EXISTING COLOR CODE IN REMODEL AREAS IF DIFFERENT FROM ABOVE. IF NO COLOR CODE IS PRESENT, PROVIDE NEW WORK WITH SPECIFIED COLOR CODE. CODE SOUND AND SIGNAL SYSTEMS WIRING AND ANY SPECIAL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S DIAGRAMS OR RECOMMENDATIONS.

H. INSTALL NO THERMOPLASTIC INSULATED CONDUCTORS WHEN

2. #8 AND SMALLER: INSULATED WIRE NUT CONNECTOR, IDEAL "WINGNUT" HARD SHELL. IN WET OR DAMP LOCATIONS USE SILICONE FILLED WIRE CONNECTORS IDEAL "WEATHERPROOF" OR AS APPROVED

I. LOW VOLTAGE, SPECIAL PURPOSE, COAXIAL CABLES, ETC.: INSTALL AND TERMINATE PER MANUFACTURER'S RECOMMENDATIONS.

A. PROVIDE GALVANIZED OR CADMIUM PLATED, ONE PIECE PRESSED OR WELDED STEEL WITH DEVICE FINISH RING AND GANG COVER. FOUR INCH SQUARE OR OCTAGONAL, 1-1/2" DEEP MINIMUM SIZE. PROVIDE STEEL SQUARE CORNER MASONRY BOXES AND FINISH RINGS IN MASONRY, CONCRETE OR CONCRETE BLOCK WALLS.

B. PROVIDE CONCRETE-TIGHT FLOOR BOXES WITH ADJUSTABLE TOPS; MINIMUM SIZE, FOUR INCH OCTAGON STEEL 2-1/8" DEEP, INTEGRAL LEVELING SCREWS AND TIEDOWN HOLES. PROVIDE WITH FLANGE, COVER, CARPET FLANGES, EXTENSION COLLARS, VARIOUS SERVICE FITTINGS, AS REQUIRED OR SHOWN. LEVEL AND SECURE TO PREVENT MOVEMENT. PROVIDE WATERTIGHT BOXES IN ON GRADE SLABS.

C. VERIFY LOCATION OF ALL OUTLETS. UNLESS NOTED, MOUNT OUTLETS AS FOLLOWS, FINISHED FLOOR TO CENTERLINE OF OUTLET:

D. PROVIDE ADDITIONAL PULL BOXES AS REQUIRED TO AVOID EXCESS PULLING TENSIONS AND TO FACILITATE WORK.

A. DUPLEX RECEPTACLES: 20 AMP, 125 VOLT, NEMA TYPE 5-20R, MEET FEDERAL SPECIFICATION W-C-596F TESTS. COLOR AS DIRECTED BY ARCHITECT. PROVIDE OUTLETS DESIGNATED GFI WITH INTEGRAL CLASS A GROUND FAULT CIRCUIT INTERRUPTER UL 943-LISTED.

B. SPECIAL OUTLETS: CAPACITY. VOLTAGE AND NEMA CONFIGURATION NOTED. SAME QUALITY AS DUPLEX RECEPTACLES.

C. SWITCHES: 20 AMP, 120/277 VOLT, MEET FEDERAL SPECIFICATION W-S-896E, UL #20, SELF-GROUNDING. COLOR AS DIRECTED.

D. DEVICE PLATES: UL LISTED, ONE PIECE FLUSH PLATES STAINLESS STEEL. USE GALVANIZED PLATES FOR EXPOSED WIRING, GASKETED POLYCARBONATE SELF-CLOSING WEATHERPROOF PLATES OUTDOORS. U.L.

A. RATE FOR VOLTAGE AND PHASE STIPULATED IN THE VARIOUS SCHEDULES AND SUPPLY VOLTAGE SHOWN ON DRAWINGS. VERIFY FROM DRAWINGS AND SPECIFICATIONS AVAILABLE SUPPLY CHARACTERISTICS. FURNISH MOTORS THAT WILL PERFORM SATISFACTORILY UNDER CONDITIONS SPECIFIED. MOTORS, WHEN RUN AT FULL LOAD OR LESS, AND OPERATING AT SYSTEM VOLTAGE, NOT TO EXCEED 40 DEGREE C.

A. CONNECT EACH MOTOR WITH DISCONNECTING MEANS AND WITH SUITABLE CONTROLLER OR OTHER DEVICE AS REQUIRED, COMPLETE WITH MANUAL OR AUTOMATIC CONTROL OF STANDARD NEMA SIZES.

B. ARRANGE CONTROL CIRCUITS FOR MANUAL, AUTO AND OTHER SIGNAL INPUTS FROM MECHANICAL CONTROL PANELS, AND ARRANGE CONTROL POWER TO DE-ENERGIZE CONTROL CIRCUITS WHENEVER OPERATING POWER SUPPLY TO PARTICULAR EQUIPMENT IS DISCONNECTED.

C. PROVIDE HORSEPOWER RATED MANUAL MOTOR STARTING SWITCH WITH THERMAL OVERLOAD PROTECTION FOR EACH SINGLE PHASE MOTOR. SIZE HEATERS FOR 115% MEASURED FULL LOAD CURRENT.

![](_page_26_Picture_85.jpeg)

![](_page_26_Picture_86.jpeg)

Inc. eers, Engin isulting

<b>KENAI WASTWATER</b>	TREATMENT PLANT	CITY OF KENAI PUBLIC WORKS	RAS/WAS PUMPS	1450 KENAI AVE, KENAI, AK, 99611
DRAWN	N BY:			SNS
CHECH	KED BY	′: 0	1 /01	EWC
REVISI	ONS:	0	1/24	/ 2020
PHASE CONST		DN DC	CUM	ENTS
		F٠		
DRAWI ELECT SPECI	ng titi 'Rical Ficatio	INS		

![](_page_26_Picture_89.jpeg)

- 2.7 GROUNDING
  - A. GROUND ALL ELECTRICAL DEVICES, MOTORS, METALLIC PIPING, DUCTWORK, METAL FRAMING, ETC., IN ACCORDANCE WITH N.E.C. ARTICLE 250.
  - B. UTILIZE THE METALLIC RACEWAY SYSTEM AS THE SYSTEM GROUNDING PATH FOR ALL DEVICES AND PROVIDE SEPARATE GREEN GROUNDING CONDUCTOR IN ALL BRANCH CIRCUIT AND CONTROL CIRCUITS CONDUITS INSTALLED IN THE WORK.

PART 3 – EXECUTION

3.1 GENERAL

- A. INSTALL ALL MATERIAL AND EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, INSTRUCTIONS AND INSTALLATION DRAWINGS, UNLESS OTHERWISE INDICATED AND IN ACCORDANCE WITH NECA'S "STANDARD PRACTICES FOR GOOD WORKMANSHIP IN ELECTRICAL CONTRACTING".
- B. SEAL PENETRATIONS WITH UL-LISTED FIREPROOFING MATERIALS TO MAINTAIN FIREPROOFING INTEGRITY AND WATERTIGHTNESS.
- C. SEAL AIRTIGHT ALL PENETRATIONS THROUGH SMOKE PARTITIONING, FAN PLENUMS, DUCTWORK, AND VAPOR BARRIERS.
- D. REPLACE OR REPAIR ANY SPRAY-APPLIED FIREPROOFING OR INSULATION DAMAGED BY INSTALLATION OF ELECTRICAL EQUIPMENT.
- E. REPAIR ALL DAMAGE TO FINISHED SURFACES WHERE CAUSED BY INSTALLATION OF ELECTRICAL EQUIPMENT.
- F. PROVIDE PROPER IDENTIFICATION FOR PANELS, SWITCHES, OR ANY ITEM OF ELECTRICAL EQUIPMENT USED AS A CONTROL DEVICE OR DISCONNECTING MEANS FOR ANY EQUIPMENT. IDENTIFY BOXES CONTAINING EMERGENCY CIRCUITS PER N.E.C. ARTICLE 700-9.

3.2 SUPPORTS

- A. SUPPORT RACEWAYS ON APPROVED TYPES OF WALL BRACKETS, CEILING TRAPEZE HANGERS OR MALLEABLE IRON STRAPS. PLUMBERS PERFORATED STRAP NOT PERMITTED AS MEANS OF SUPPORT.
- B. DO NOT SUSPEND RACEWAYS OR EQUIPMENT FROM CEILING TIE WIRE OR T-BAR, FROM STEAM, WATER OR OTHER PIPING OR DUCTWORK, BUT SUPPORT INDEPENDENTLY.
- C. ANCHOR EQUIPMENT TO THE BUILDING STRUCTURE TO RESIST SEISMIC DESIGN CATEGORY D EARTHQUAKE FORCES. PROVIDE ADEQUATE BACKING AT STRUCTURAL ATTACHMENT POINTS TO ACCEPT THE FORCES INVOLVED.
- D. SECURE BOXES, WALL BRACKETS, CABINETS AND HANGERS BY MEANS OF TOGGLE BOLTS IN HOLLOW MASONRY AND GYPBOARD; PRESET INSERTS OR EXPANSION BOLTS IN SOLID MASONRY AND CONCRETE; MACHINE SCREWS, BOLTS OR WELDING ON METAL SURFACES; AND WOOD SCREWS IN WOOD CONSTRUCTION.
- 3.3 AS-BUILT DRAWINGS
  - A. KEEP CLEAN SET OF PRINTS AT JOB SITE AND RECORD ALL ELECTRICAL CHANGES THAT OCCURRED DURING CONSTRUCTION. FAILURE TO DO SO MAY DELAY PAYMENT.
  - B. AT END OF CONSTRUCTION, PROVIDE ONE COMPLETE SET OF DRAWINGS INDICATING ALL FIELD CHANGES FOR RECORD PURPOSES TO THE OWNER'S REPRESENTATIVE.

END OF SECTION

![](_page_27_Picture_21.jpeg)