CITY OF VALDEZ
ALASKA

CONTRACT DOCUMENTS

Project: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project Number: 23-315-1623
Contract Number: 2161
Cost Code: 315-0310-55000.1623
Issued for Construction
Date: December 14, 2023

City of Valdez
Capital Facilities and Engineering
300 Airport Road, Suite 201
P.O. Box 307
Valdez, Alaska 99686

Project Manager:
Brad Sontag

Construction Plan Set Completed By:
AMC Engineers
701 East Tudor Road, Suite 250
Anchorage, Alaska 99503

City of Valdez
Contract Documents

Project: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project Number: 23-315-1623/ Contract Number: 2161

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Addendums 1, 2, 3, 4, 5, 6 Attached

Drawings and Specifications Titled,

"Providence Valdez Medical Center Level 1 Replacement Generator" Attached

City of Valdez
Invitation to Bid

Date: December 14, 2023

Project: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project Number: 23-315-1623/ Contract Number: 2161

This project includes, but is not necessarily limited to:

General project scope includes providing a replacement diesel fired, level 1, emergency power system (EPS) CAT generator in a sound attenuated, heated, full walk-in artic enclosure for the Providence Valdez Medical Center (PVMC). Provide a dry agent fire suppression system within the generator enclosure.

An owner Furnish, contractor installed temporary portable generator will be utilized to function as a temporary level 1 EPS generator for the PVMC while the replacement generator is furnished and installed.

The existing generator will be removed from the maintenance building, its associated maintenance pad removed, and related walls patched/finished where louvers and exhaust stacks penetrate the exterior skin. The existing clinic generator and associated concrete pad will also be removed; related equipment feeder conduit will be intercepted and connected to the new generator.

The existing 208 volt automatic transfer switch (ATS) will be replaced with a new 480 volts ATS to be installed in the maintenance building. The normal feed will be intercepted from existing transformer normal feed.

Provide a building automated system(BAS) panel within the generator enclosure and replace the existing generator remote annunciator panel with a new panel at the same location.

Electrical scope includes providing the replacement generator, generator enclosure, and other related equipment. Other equipment as indicated on the drawings and conduit, conductors, and connections to provide a complete and functional replacement level 1 EPS generator for PVMC.

The scope of work is more specifically described in the attached drawings and specification titled "Providence Valdez Medical Center Level 1 Replacement Generator."

Engineers Estimate for construction under $1,200,000.

Sealed bids will be accepted electronically until 2:00pm local time on January 18, 2024, at www.bidexpress.com. The bids will be publicly opened at that time.

A non-mandatory pre-bid conference will be held at the office of the Capital Facilities Director, 300 Airport Road, Suite 201, Valdez, Alaska on January 4, 2024 at 2:00pm. Please contact the City's project manager, Brad Sontag (bsontag@valdezak.gov) if you would like to join the meeting remotely via Microsoft Teams.

If necessary, a site visit will immediately follow the pre-bid conference.

Complete sets of the bid documents may be purchased from Digital Blueprint, 903 West Northern Lights Blvd., Anchorage, AK 99503, (907) 274-4060. Bid documents may also be downloaded from the City of Valdez solicitation page at www.bidexpress.com Bidders are encouraged to register as a plan holder at the link listed within the bid posting to ensure receipt of any addendum issued for this project.

Deadline for all questions is January 15, 2024 at 2:00pm.

Bid security in the amount of 5% of the total bid is required.

The City reserves the right to waive any irregularities or informalities in a bid and to reject any and all bids without cause.

Current minimum prevailing wage rates as published by the Alaska Department of Labor must be paid if required by law.

Requirements of the Alaska Employment Preference (AS 36.10) must be met.

The City of Valdez encourages disadvantaged, minority and women-owned firms to respond and is available to assist said firms in learning how to do business with the City.

The City of Valdez "Standard Specifications and Standard Details" shall be used. An electronic copy is available from the City of Valdez website at http://www.valdezak.gov under "standards and specifications" located on the "quick links" portion of the Capital Facilities Department page.

City of Valdez
Instructions to Bidders

Project: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project Number: 23-315-1623/ Contract Number: 2161

CAUTION:
Your bid may be rejected if it is not properly executed. Check that the following items have been accomplished to help assure a responsive bid. Please read Sections 6 and 7 carefully.

1. Bid Form
   A. The Bid Form has been executed and signed.
   B. Addendum Acknowledgement Form has been executed and signed.
2. Bid Security or Bid Bond
   A. An executed Bid Security (Bid Bond) in the amount indicated on the Invitation to Bid.
   B. Verify that the Certificate showing the Corporate Principal on the form is executed if applicable.
3. Alaska Business License, a copy of your current license must be included.
4. Alaska Contactor Certificate of Registration
   A. A copy of your current Alaska Contractor License of Registration in the bidder's name must be included with the bid.
   B. The Contractor is required to verify that the appropriate license(s) is in place prior to submitting their bid for the project's scope of work.
5. A bid may be rejected if it contains any alterations or erasures that are not initialed by the signer of the bid.

Note: Any certified checks may be held uncollected at the risk of bidders submitting them.

1. General

Bidders are requested to study and follow these instructions about the method and form for submitting bids to avoid having their bid rejected.

Bidders will find all required forms and documents contained within this assembly. Please notice under Section 7, Required Documents for Bid, as to which forms and documents are required for your bid to be considered.

2. Explanation to Bidders

Requests from bidders concerning interpretations or clarifications of the bid documents shall be made in writing to the project manager or project engineer through Bid Express at **www.bidexpress.com**. Such requests shall arrive at least three working days prior to the date for opening bids. There needs to be sufficient time allowed for a reply to reach all bidders before the submission of the bids. Explanations made will be in the form of an addendum to the specifications or drawings and will be furnished to all bidders and receipt of the addendum must be acknowledged on the Addendum Form.

3. Site Conditions

Bidders are encouraged to visit the site to ascertain pertinent local conditions, location, accessibility, terrain, labor conditions, conditions of surrounding areas, and any other aspect that may impact the project.

4. Addenda Requirements

All bids must include the Addendum Acknowledgement Form. If addendums have been issued the bidder must state on the form all the addendums have been acknowledged. If no addendums were issued then the bidder is to write "NONE" on the form. The Addendum Acknowledgement Form shall be reviewed prior to acceptance of the bid.

5. Submissions of Bids

All bids must be submitted electronically through Bid Express at www.bidexpress.com. Hard copy or paper submissions will not be accepted.

All electronic bidders must first register on bidexpress.com. Instead of paying paper bidding costs (hand or hired delivery costs), a fee of $40 will be incurred for those who wish to bid electronically on a pay-per solicitation basis. Alternatively, you may subscribe for $50 per month for unlimited electronic bid submission for all agencies posting solicitations on the bidexpress.com website, plus get email notifications by agency/work type/commodity code.

For bidders who are bidding online and wish to utilize the electronic bid bond option, please see the FAQs page regarding electronic bid bonds (bottom of the page in the link).

For additional guidance, please contact the Bid Express team at toll free (888) 352-2439 (select option 1) or at support@bidexpress.com

6. Preparation of Bids

Bids shall be submitted on the forms furnished on Bid Express.

The Bid Form will provide for quotation or price for all items. Bidders must quote on all items. Failure to do so may result in disqualification. Alternative bids will not be acceptable unless requested.

Bids can be modified until the bid deadline on Bid Express. Modification by facsimile or email will NOT be allowed for bids.

7. Required Documents for Bid

The following listed documents are to be completed and submitted at the time of bidding. Deviation from these requirements will be grounds for rejection of the bid.

A. Addendum Acknowledgement Form, fully completed original (see Item 6 above also)
B. Bid Schedule, fully completed original (see Item 6 above also)
C. Bid Bond, original
D. Copy of current and appropriate Alaska Contractor License for this Scope of Work.
E. Copy of current Alaska Business License

8. Required Documents for Award of the Contract

The following documents must be executed prior to award of the contract and the initiation of work. Contractors are urged to expedite the completion of these documents. This will allow the contract award and notice to proceed to be issued expeditiously. These documents must be submitted within ten (10) working days after the date of notice of award.

A. Agreement Pages (2 signed copies)
B. Entity Acknowledgement (Corporate, LLC, Limited Partnership, Individual)
C. Non-collusion Affidavit
D. Contract Bond (Payment Bond: See Bonding Requirements below)
E. Contract Bond (Performance Bond: See Bonding Requirements below)
F. Certificate of Insurance naming City of Valdez as an "Additional Insured"
G. Original signature pages (last page of bid schedule and bid bond)
H. Certificate of good standing for a Corporation or LLC
I. City of Valdez Business Registration
J. Executed W-9 Form
K. Proof of application for City of Valdez building permit submitted to the Planning Department.

9. Bonding Requirements

A. Bid Security (Bid Bond or Certified Check)

Bid Security is required and shall be in the form of a Certified Check for each bid or a Bid Bond prepared on the attached Bid Bond Form.

The Bid Bond must be executed by the bidder as principal and be executed by a surety company authorized to transact business in the State of Alaska. The Owner must approve the surety company.

The Bid Security shall be issued for five percent (5%) of the bid amount.

Bid Securities will be returned to all except the three lowest bidders. The remaining certified checks or bid bonds will be returned, after the Owner and the accepted bidder have executed the Contract. Failure of the Owner to return the certified checks or bid bonds in a timely manner will create no liability on the part of the Owner. If no award has been made within sixty (60) days after the bid opening, all bidders except the one

who has received the notice of intent to award may request the return of their cash, check or bid bonds.

B. Contract Payment Bond

A Contract Payment Bond is not required if the total dollar amount of the contract is less than One Hundred Thousand Dollars ($100,000).

A Contract Payment Bond is required if the total dollar amount of the contract is equal to or greater than One Hundred Thousand Dollars ($100,000). Contract Payment Bond will be in the amount of One Hundred Percent (100%) of the Bid amount.

Contract Payment Bond shall be prepared on the Payment Bond Form that is attached. The Bond must be executed by the Contractor as principal and executed by a surety company authorized to transact business in the State of Alaska. The Owner must approve the surety company.

C. Contract Performance Bond

A Contract Performance Bond is not required if the total dollar amount of the contract is less than One Hundred Thousand Dollars ($100,000).

A Contract Performance Bond is required if the total dollar amount of the contract is equal to or greater than One Hundred Thousand Dollars ($100,000). Contract Performance Bond) will be in the amount of One Hundred Percent (100%) of the Bid amount.

Contract Performance Bond shall be prepared on the Performance Bond Form that is attached. The Bond must be executed by the Contractor as principal and executed by a surety company authorized to transact business in the State of Alaska. The Owner must approve the surety company.

Section 2.80.080 of Valdez City Code provides for a modified contractor bond. Bidders shall familiarize themselves with exemptions allowed and the requirements for exemptions.

10. Bidder Qualifications

Before a bid is considered for award, the apparent low bidder may be requested to submit a statement of facts or proof in detail as to his previous experience in performing similar or comparable work, technical abilities, equipment, size, manpower and financial resources to complete and perform the work as outlined in the contract documents, plans and specifications.

11. Withdrawal of Bids

Bids may be withdrawn by written request received from the bidder prior to the bid opening time. Errors on the part of the bidder in preparing the bid, confers no right for the withdrawal of the bid after the bid has been opened.

12. Bidders Interested in More than One Bid

If any one party, by or in name of his or their agent, partner or other person, offers more than one bid, all such bids will be rejected. A party who quoted prices to a bidder is not disqualified from quoting prices to other bidders or from a bid directly for the work.

13. Rejection of Bids

The Owner reserves the right to reject any and all bids, when such rejection is in the interest of the Owner; to reject the bid of a bidder who previously failed to perform properly or to complete on time; and to reject the bid of a bidder who is not, in the opinion of the Owner in, in a position to perform the contract; or to waive any irregularities or informalities in a bid.

14. Hiring of Local Labor

The Owner encourages every Contractor and Subcontractor to employ, to the maximum extent practical and allowed by law, qualified people who regularly reside in the project area.

15. Local Bidder Preference

The Valdez City Code provides for a local bidder preference as follows:

> Section 2.80.020 Definitions
>
> "Local bidder" means a bidder that is not delinquent in the payment of any taxes, fees, assessments, or other charges owing the city and satisfies one of the requirements set forth in subsections (1) through (3) of this definition for a period of eighteen consecutive months immediately prior to the opening of a competitive city bid for which the bidder wishes to utilize the local bidder preference:
> 1. If the bidder is a corporation or limited liability company, the bidder's primary business address has a city of Valdez postal zip code, as reflected on the bidder's state of Alaska business license or the records of the State of Alaska Department of Commerce, Community and Economic Development, Division of Corporations;
> 2. If the bidder is an individual, the bidder's primary business or residential address has a city of Valdez postal zip code, as reflected on the bidder's state of Alaska business license;
> 3. If the bidder is a general partnership, a limited partnership, or a joint venture, at least one of the general partners has a postal zip code compliant with subsection (1) or (2) of this definition.
>
> Section 2.80.065H Competitive Bidding
>
> Except where prohibited by state or federal grant requirements, a local bidder, as defined in Section 2.80.020, may be given consideration as low bidder where the offer is the lesser of ten percent or fifty thousand dollars in excess of the lowest offer received from a bidder not qualified as a local bidder. The city may split the award between two or more suppliers in any manner the city deems to be in its best interest.

16. Award of Bid

The bid, if awarded, will be awarded to the lowest responsive responsible bidder as determined by the terms of the City Code and this document.

17. Pre-Bid Conference

A non-mandatory Pre-Bid Conference will be held January 4, 2024, at 2:00pm at the office of the Capital Facilities Director, Suite 201 300 Airport Road, Valdez, Alaska. Please contact the City's project manager, Brad Sontag (bsontag@valdezak.gov) if you would like to join the meeting remotely via Microsoft Teams.
If necessary, a site visit will immediately follow the pre-bid conference.

18. Pre-Award Conference

Before the award of the contract a Pre-Award Conference may be held between the Engineer or Project Manager and the apparent low bidder.

City of Valdez
Addendum Acknowledgement

Project: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project Number: 23-315-1623/ Contract Number: 2161

The bidder acknowledges receipt of the following addenda and certifies that their contents have been considered in the preparation of this Bid. If there are no addendums, please state NONE above your name.

Addendum Number _____ Dated _____ Initials _____

Addendum Number _____ Dated _____ Initials _____

Addendum Number _____ Dated _____ Initials _____

Addendum Number _____ Dated _____ Initials _____

Addendum Number _____ Dated _____ Initials _____

Addendum Number _____ Dated _____ Initials _____

Addendum Number _____ Dated _____ Initials _____

Addendum Number _____ Dated _____ Initials _____

Addendum Number _____ Dated _____ Initials _____

Addendum Number _____ Dated _____ Initials _____

_____ _____
Company Name Authorizing Name

_____ _____
Date Title

_____
Signature

See Attached Electronic Exhibit A

Addendum Acknowledgment

The bidder acknowledges receipt of the following addenda and certifies that their contents have been considered in the preparation of this Bid. If an addendum is issued after you have submitted your bid, you will need to come back to this form and update your Addendum Acknowledgment to reflect the new addendum.

Addendum Acknowledgment

Addendum 1 issued January 2, 2024

Initials *

DW

Addendum 2 issued January 25, 2024

Initials *

DW

Addendum 3 issued February 1, 2024

Initials *

DW

Addendum 4 issued February 5, 2024

Initials *

DW

Addendum 5 issued February 9, 2024

Initials *

DW

Addendum 6 issued February 14, 2024

Initials *

DW

Company Name *

Sturgeon Electric Company, Inc

Authorizing Name *

David Weaver

Date *

2/22/2024

Title *

Project Coordinator

.

Signature *

David Weaver

City of Valdez
Non-Collusion Affidavit

Project: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project Number: 23-315-1623/ Contract Number: 2161

(to be executed prior to award)

UNITED STATES OF AMERICA)
)SS.
STATE OF ALASKA)

I, Alan A. Growden, of Sturgeon Electric Company, Inc., being duly sworn, do depose and state:

I, or the firm, association, or corporation of which I am a member, a bidder on the Contract to be awarded, by the City of Valdez, Alaska, for the construction of that certain construction project designated as:

Project: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project Number: 23-315-1623/ Contract Number: 2161

Located at Valdez, 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.

Alan A. Growden
Signature

Subscribed and sworn to this 11th day of January, 2024.

Sheri L. Gorne
Notary Public

My Commission Expires: 1/3/2026

STATE OF ALASKA
NOTARY PUBLIC
Sheri L. Gorne
My Commission Expires Jan 3, 2026

City of Valdez
Bid Schedule
Page 1 of 2

Project: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project Number: 23-315-1623/ Contract Number: 2161

Item No.	Item Description	Quantity	Unit	Unit Price	Total Item Price
1	Mobilization and demobilization	1	LS	N/A	
2	Procure and install new CAT generator. All materials and labor required. Note: This includes all electrical and mechanical materials, the automatic transfer switch, fire suppression system, and building automated system panel.	All Req'	LS	N/A	
3	Demo existing PVMC generator. All materials and labor required.	All Req'	LS	N/A	
4	Demo existing Medical Clinic generator. All materials and labor required.	All Req'	LS	N/A	
5	Provide and install temporary generator. All materials and labor required.	All Req'	LS	N/A	
6	Field engineering, submittals, shop & record drawings, operating instructions, O&M manuals, and close-out punchlist	1	LS	N/A	
7	Owner's Contingency	CS	N/A	N/A	$50,000

See Attached Electronic Exhibit B

Bid Schedule Page 1 of 2

$1,267,915.00

Item No.	Item Description	Quantity	Unit	Unit Price	Extension
1	Mobilization and demobilization	1.0000	LS	$48,920.00	$48,920.00
2	Procure and install new CAT generator. All materials and labor required. NOTE: This includes all electrical and mechanical materials, the automatic transfer switch, fire suppression system, and building automated system panel.	1.0000	LS	$1,011,340.00	$1,011,340.00
3	Demo existing PVMC generator. All materials and labor required.	1.0000	LS	$51,755.00	$51,755.00
4	Demo existing Medical Clinic generator. All materials and labor required.	1.0000	LS	$16,410.00	$16,410.00
5	Provide and Install temporary generator. All materials and labor required.	1.0000	LS	$56,610.00	$56,610.00
6	Field Engineering, submittals, shop & record drawings, operating instructions, O&M manuals, and close-out punch list	1.0000	LS	$32,880.00	$32,880.00
7	Owner's Contingency	1.0000	CS	$50,000.00	$50,000.00
				Total:	**$1,267,915.00**

City of Valdez
Bid Schedule
Page 2 of 2

Project: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project Number: 23-315-1623/ Contract Number: 2161

Total Base Bid Amount:

_____ Dollars _____ Cents

($ _____)

I, _____, hereinafter called Bidder, an individual doing business as _____, (strike out inapplicable words:) a partnership, a corporation incorporated in the State of Alaska, a joint venture, hereby submits this bid and agrees: to hold this bid open for forty five (45) days; to accept the provisions of the Instruction to Bidders, to accomplish the work in accordance with the contract documents, plans, specifications, for the lump sum and unit price amounts as set forth in this bid schedule.

Respectfully submitted this _____ day of _____, 2024

BIDDER:

_____	_____
Company Name	Authorizing Name
_____	_____
Address	Title
_____	_____
City, State, Zip Code	Signature
_____	_____
Telephone Number	Email Address
	CORPORATE SEAL
_____	
Federal I.D. or S.S.N.	
	ATTEST:
	_____
	Signature of Corporate Sec.
	_____
	Print Name

See Attached Electronic Exhibit C

Bid Schedule Page 2 of 2 - ORIGINAL WILL NEED TO BE SUBMITTED BY SUCCESSFUL BIDDER

I *(authorized name below)*, herinafter called Bidder, an individual doing business as *(company name below)*, (strike out inapplicable words in original document:) a partnership, a corporation incorporated in the State of Alaska, a joint venture, hereby submits this bid and agrees: to hold this bid open for forty five (45) days, to accept the provisions of the Instruction to Bidders, to accomplish the work in accordance with the contract documents, plans, specifications for the lump sum and unit price amounts as set forth in this bid schedule.

Company Name *

Sturgeon Electric Company, Inc

Authorizing Name *

David Weaver

Address *

1301 E. 64th Ave

Date *

2/22/2024

City, State, Zip Code *

Anchorage, AK 99518

Title *

Project Coordinator

Telephone Number *

(907) 344-0321

Signature (typed) *

David Weaver

Federal I.D. or S.S.N. *

84-0681206

City of Valdez
Bid Bond

KNOW ALL MEN BY THERE PRESENTS, that we
Sturgeon Electric Company, Inc.
12150 E. 112th Avenue (Insert full name and address or legal title of Contractor)
Henderson, CO 80640
as Principal, hereinafter called the Principal, and
Liberty Mutual Insurance Company
175 Berkeley Street (Insert full name and address or legal title of Surety)
Boston, MA 02116
a corporation duly organized under the laws of the State of Alaska as surety, hereinafter called the Surety, are held and firmly bound unto

City of Valdez
P.O. Box 307
Valdez, Alaska 99686

as Obligee, hereinafter called the Obligee, in the sum of

Five percent of bid amount Dollars ($ 5%),

For the payment of which sum well and truly to be made, the said Principal and the Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

Whereas, the Principal has submitted a bid for

Project: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project Number: 23-315-1623/ Contract Number: 2161

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

Signed and sealed this 8th **day or** February **, 2024**

Sturgeon Electric Company, Inc.

(Witness)

(Witness)

ney-in-Fact

Fact

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

Certificate No: 8209155- 285136

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That The Ohio Casualty Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the `Companies.), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Brenda Johnston, Cindy Stellhorn, Cynthia L. Jenkins, Edward L. Mournighan, Elexis B. Richards, Emily N. Daughhetee, Ginger J. Krahn, Kimberly E. Kinkead, Michael H. Bill, Michael J. Marsella, Michael M. Bill, Rebecca A. Virt, Robert Baumgartner, Sheree Hsieh

all of the city of Carmel state of IN each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 19th day of December , 2022 .

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

By: _____
David M. Carey, Assistant Secretary

State of PENNSYLVANIA
County of MONTGOMERY ss

On this 19th day of December , 2022 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute 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 have hereunto subscribed my name and affixed my notarial seal at Plymouth Meeting, Pennsylvania, on the day and year first above written.

Commonwealth of Pennsylvania - Notary Seal
Teresa Pastella, Notary Public
Montgomery County
My commission expires March 28, 2025
Commission number 1126044
Member, Pennsylvania Association of Notaries

By: _____
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

ARTICLE IV ´ OFFICERS: Section 12. Power of Attorney.
Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

ARTICLE XIII ¯ Execution of Contracts: Section 5. Surety Bonds and Undertakings.
Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

Certificate of Designation ¯ The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization ¯ By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 8th day of February , 2024 .

By: _____
Renee C. Llewellyn, Assistant Secretary

Seal No. 4935

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

For bond and/or Power of Attorney (POA) verification inquiries, please call 610-832-8240 or email HOSUR@libertymutual.com.

Special Power of Attorney

KNOW ALL MEN BY THESE PRESENTS that Sturgeon Electric Company, Inc., Sturgeon Electric California, LLC, Great Southwestern Construction, Inc., High Country Line Construction, Inc., and Harlan Electric Company.

had made, continued, and appointed and by these presents does make, constitute and appoint Mike Marsella, Cindy Jenkins, Emily Daughhetee, Brenda Johnston, Elexis Richards and Kimberly Kinkead in their capacities as employees of MJ Insurance as its true and lawful attorneys in fact with full power to execute, seal and deliver on its behalf safety and surety bonds and other documents of similar character issued in the course of its business and to bind the Company thereby as if such writing had been duly executed and acknowledged by its own officers.

IN WITNESS WHEROF, Sturgeon Electric Company, Inc., Sturgeon Electric California, LLC, Great Southwestern Construction, Inc., High Country Line Construction, Inc., and Harlan Electric Company.

has caused its name to be subscribed by Don Eagan and its corporate seal to be affixed and attested by its Corporate Secretary on this July 25, 2023

Attest:

By: William Fry

Corporate Secretary

MYR Group, Inc.

By: Don Eagan

Senior Vice President

County of Adams
State of Colorado

On this 25th day of July, 2023 personally appeared before me, a Notary Public for the State of Colorado, Don Egan of Sturgeon Electric Company, Inc., Sturgeon Electric California, LLC, Great Southwestern Construction, Inc., High Country Line Construction, Inc., and Harlan Electric Company who acknowledged that the foregoing is his free and voluntary act and deed on behalf of said corporation.

Tyler Clark
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID# 20214010135
MY COMMISSION EXPIRES 03/16/2025

Notary Public

My Commission Expires 3/16/25

License #: CONE38954
Effective: 12/2/2022
Expires: 12/31/2024

State of Alaska

Department of Commerce, Community, and Economic Development
Division of Corporations, Business, and Professional Licensing

Regulation of Construction Contractors and Home Inspectors

Licensee: **STURGEON ELECTRIC COMPANY, INC.**

License Type: **General Contractor Without Residential Contractor Endorsement**

Status: **Active**

Doing Business As: **STURGEON ELECTRIC COMPANY, INC.**

Commissioner: Julie Sande

Relationships

Relation Type	License #	License Type	Owners/Entities	Name/DBA
Electrical Administrator Assignee	118333	Electrical Administrator	Elva Lynch	
Electrical Administrator Assignee	EADE667	Electrical Administrator	WILLIAM BERNIER	

Designations

No designations found.

STURGEON ELECTRIC COMPANY, INC.
12150 E 112TH AVE
HENDERSON, CO 80640-9116

Wallet Card

State of Alaska
Department of Commerce, Community, and Economic Development
Division of Corporations, Business, and Professional Licensing
Regulation of Construction Contractors and Home Inspectors

STURGEON ELECTRIC COMPANY, INC.

DBA: STURGEON ELECTRIC COMPANY, INC.

As

General Contractor Without Residential Contractor Endorsement

License	Effective	Expires
CONE38954	12/2/2022	12/31/2024

Alaska Business License # **993000**

Alaska Department of Commerce, Community, and Economic Development

Division of Corporations, Business, and Professional Licensing
PO Box 110806, Juneau, AK 99811-0806

This is to certify that

STURGEON ELECTRIC COMPANY, INC.

12150 E 112TH AVE, HENDERSON, CO 80640

owned by

STURGEON ELECTRIC COMPANY, INC.

is licensed by the department to conduct business for the period

November 2, 2022 to December 31, 2024
for the following line(s) of business:

23 - Construction

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 or of the United States.

This license must be posted in a conspicuous place at the business location.
It is not transferable or assignable.

Julie Sande
Commissioner

City of Valdez
Agreement Page 1 of 2

Project: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project Number: 23-315-1623/ Contract Number: 2161

This agreement is made on the _____ day of March, 2024, by and between the City of Valdez, Alaska, hereinafter called the Owner, acting through its Mayor, and Sturgeon Electric Company, Inc. doing business as a corporation, located in Anchorage, Alaska, hereinafter called the Contractor.

The Contractor agrees to this Contract known as:

Project: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project Number: 23-315-1623/ Contract Number: 2161

Furthermore, the Contractor agrees to accept as full and complete payment for all work to be done in this Contract for the lump sum and per unit prices as set forth in the Bid Form and Addendums in the Contract Documents for this project. The total amount of this Contract shall be: **one million, two hundred sixty-seven thousand, nine hundred fifteen dollars and zero cents ($1,267,915.00).**

The Contractor hereby agrees to commence work on this project within ten (10) working days after the date of the written Notice to Proceed and to complete all work in accordance with the contract documents and addendums by June 1, 2025. Said contract documents are listed in the Table of Contents herein. All documents listed therein are by this reference made a part hereof.

The Contractor further agrees to pay, as liquidated damages, the sum of (five hundred dollars) ($500.00) for each calendar day in excess of the completion date specified in the written Notice to Proceed in which this project remains incomplete.

The Owner agrees to pay the Contractor for the performance of the Contract, subject to additions and deductions, as provided in the City of Valdez Standard Specifications Section 10 Standard General Provisions of this Contract, and to make payments on account thereof as provided in the City of Valdez Standard Specifications Section 10 Standard General Provisions and City of Valdez City Code.

City of Valdez
Agreement Page 2 of 2

Project: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project Number: 23-315-1623/ Contract Number: 2161

IN WITNESS WHEREOF, the parties to this presence have executed this Contract in two (2) counterparts, each of which shall be deemed as original, in the year and day first mentioned above.

Sturgeon Electric Company, Inc.

_____
Signature

_____
Name

_____
Title

_____
Date

_____
Mailing Address

_____
City, State, Zip Code

_____
Federal I.D. or S.S.N.

Corporate Secretary

Attest: _____
Corporate Secretary

City of Valdez, Alaska, Authorized

_____
Sharon Scheidt, Mayor

_____
Date

Attested:

_____
Sheri L. Pierce, MMC, City Clerk

_____
Date

Recommended:

_____
John Douglas, City Manager

_____
Date

_____
Nathan Duval, Capital Facilities Director

_____
Date

Approved as to Form:
Brena, Bell & Walker, P.C.

_____
Jon S. Wakeland

_____
Date

City of Valdez
Corporate Acknowledgement

Project: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project Number: 23-315-1623/ Contract Number: 2161

(To be filled in when Contract is executed in behalf of Corporation)

UNITED STATES OF AMERICA)
)SS.
STATE OF ALASKA)

The foregoing instrument was acknowledged before me this ___ day of _____, 2024.

_____ _____
(Name of Officer) (Title of Officer)

_____
(Name of Corporation)

_____ Corporation, on behalf of said Corporation.
(State of Incorporation)

_____
Notary Public

My Commission Expires: _____

City of Valdez
Labor and Material Payment Bond

Project: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project Number: 23-315-1623/ Contract Number: 2161

Know all men by these presents that:

Sturgeon Electric Company, Inc.
12150 E. 112th Avenue
Henderson, CO 80640

as Principal, hereinafter called Principal, and,

Liberty Mutual Insurance Company
175 Berkeley Street
Boston, MA 02116

as Surety, hereinafter called Surety, are held and firmly bound unto

City of Valdez
P.O. Box 307
Valdez, Alaska 99686

as Obligee, hereinafter called Owner, for the use and benefit of claimants as herein below defined, in the amount of

One million, two hundred sixty-seven thousand, nine hundred fifteen dollars and zero cents ($1,267,915.00),

for the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS,

Principal has by written agreement dated _____, 2024, entered into a contract with Owner for

Project: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project Number: 23-315-1623/ Contract Number: 2161

in accordance with Drawings and Specifications prepared by

AMC Engineers
701 East Tudor Road, Suite 250
Anchorage, Alaska 99503

which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

City of Valdez
Labor and Material Payment Bond

Project: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project Number: 23-315-1623/ Contract Number: 2161

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Principal shall promptly make payment to all claimants as hereinafter defined, for all labor and material used or reasonably required for use in the performance of the Contract, then this obligation shall be void; otherwise it shall remain in full force and effect, subject, however, to the following conditions:

1. A claimant is defined as one having a direct contract with the Principal or with a Subcontractor of the Principal for labor, material, or both, used or reasonably required for use in the performance of the Contract, labor and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment directly applicable to the Contract.

2. The above named Principal and Surety hereby jointly and severally agree with the Owner that every claimant as herein defined, who has not been paid in full before the expirations of a period of ninety (90) days after the date on which the last of such claimant's work or labor was done or performed or materials were furnished by such claimant, may sue on this bond for the use of such claimant, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon. The Owner shall not be liable for the payment of any costs or expenses of any such suit.

3. No suit or action shall be commenced hereunder by any claimant:

a) Unless claimant, other than one having a direct contract with the Principal, shall have given written notice to any two of the following: the Principal, the Owner, or the Surety above named, within ninety (90) days after such claimant did or performed the last of the work or labor, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials are furnished, or for whom the work or labor was done or performed. Such notice shall be served by mailing the same by registered mail or certified mail, postage prepaid, in an envelope addressed to the Principal, Owner or Surety, at any place where an office is regularly maintained for the transaction of business. Or served in any manner in which legal process may be served in the state in which aforesaid project is located, save that such service need not be made by a public officer.

b) After the expiration of one (1) year following the date on which Principal ceased Work on said Contract, it being understood, however, that if any limitation embodied in this bond is prohibited by any law controlling the construction hereof such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.

c) Other than in a state court of competent jurisdiction in and for the county of other political subdivision of the state in which the Project, or any part thereof is situated, or in the United States District Court for the district in which the Project, or any part thereof, is situated, and not elsewhere.

4. The amount of this bond shall be reduced by and to the extent of any payment of payments made in good faith hereunder, inclusive of the payment by Surety or mechanic's liens which may be filed of record against said improvement, whether or not claim for the amount of such lien be presented under and against the bond

Signed and Sealed this _____, day of _____, 2024

_____ _____
(Witness) (Principal) (Seal)

_____
(Title)

_____ _____
(Witness) (Surety) (Seal)

_____
(Title)

City of Valdez
Performance Bond

Project: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project Number: 23-315-1623/ Contract Number: 2161

KNOW ALL MEN BY THESE PRESENTS: that

Sturgeon Electric Company, Inc.
12150 E. 112th Avenue
Henderson, CO 80640

as Principal, hereinafter called Contractor, and,

Liberty Mutual Insurance Company
175 Berkeley Street
Boston, MA 02116

as Surety, hereinafter called Surety, are held and firmly bound unto

City of Valdez
P.O. Box 307
Valdez, AK 99686

as Obligee, hereinafter called Owner, in the amount of

One million, two hundred sixty-seven thousand, nine hundred fifteen dollars and zero cents ($1,267,915.00),

for the payment whereof Contractor and Surety bind themselves, their heirs, executor, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS,

Contractor has by written agreement dated _____, 2024, entered into a contract with Owner for

Project: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project Number: 23-315-1623/ Contract Number: 2161

in accordance with Drawings and Specifications prepared by

AMC Engineers
701 East Tudor Road, Suite 250
Anchorage, Alaska 99503

which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

City of Valdez
Performance Bond

Project: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project Number: 23-315-1623/ Contract Number: 2161

Now, therefore the condition of this obligation is such that, if Contractor shall promptly and faithfully perform said Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

The Surety hereby waives notice of any alteration or extension of time made by the Owner.

Whenever Contractor shall be, and declared by Owner to be in default under the Contract, the Owner having performed Owner's obligations thereunder, the Surety may promptly remedy the default, or shall promptly comply with one of the following:

1. Complete the Contract in accordance with its terms and conditions, or

2. Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, or, if the Owner elects, upon determination by the bidder, arrange for contract between such bidder and Owner, and make available as Work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the contract price," as used in this paragraph, shall mean the total amount payable by Owner to contractor under the Contract and any amendments thereto, less the amount properly paid by Owner to Contractor.

Any suit under this bond must be instituted before the expiration of two (2) years from the date on which final payment under the Contract falls due.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the Owner named herein or the heirs, executors, administrators or successors of the Owner.

Signed and Sealed this _____ day of _____, 2024

_____ _____
(Witness) (Principal) (Seal)

_____
(Title)

_____ _____
(Witness) (Surety) (Seal)

_____
(Title)

City of Valdez
Contractor Certificate of Substantial Completion

Project: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project Number: 23-315-1623/ Contract Number: 2161

CONTRACTOR: Sturgeon Electric Company, Inc.

This is to certify that I, _____, am a duly authorized official of the said CONTRACTOR working in the capacity of_____, and in my official capacity representing said CONTRACTOR do hereby certify as follows:

1. The work of the subject Contract above has been performed, and materials used and installed in accordance with and in conformity to, the Contract Drawings, Contract Specifications, City of Valdez Standard Specifications and Details.

2. The Contract work is now substantially complete in all parts and requirements.

3. I understand that neither the determination by the Engineer--Architect that the work is substantially complete nor the acceptance thereof by the Owner shall operate as a bar to claim against the Contractor under the terms of the guarantee provisions of the Contract Documents.

4. The work to which this Certificate applies has been properly inspected and that work is hereby declared to be substantially complete in accordance with the Contract Documents.

5. The date of Substantial Completion is the date upon which all guarantees and warranties begin.

6. The Owner accepts the Project or specified area as described under "REMARKS," of the Project as substantially complete and will assume full possession of the Project or specified area of the Project at _____(time) on _____day,_____, 2025.

CONTRACTOR	CITY OF VALDEZ, OWNER
_____	_____
(Signature)	Capital Facilities Director
_____	_____
(Title)	Date
_____	
Date	

REMARKS:_____
_____

City of Valdez
Contract Release Page 1 of 2

Project: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project Number: 23-315-1623/ Contract Number: 2161

The undersigned, Sturgeon Electric Company, Inc.
for itself, its successors in interest, assigns trustees, administrators, subcontractors, suppliers, and laborers do hereby release and forever discharge the CITY OF VALDEZ, ALASKA a municipal corporation, from all actions, causes of actions, suits, controversies, claims, damages and demands of every kind and nature, mature or to mature in the future, for and by reason of any matter, thing or claim arising out of the following Contract:

Project: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project Number: 23-315-1623/ Contract Number: 2161

The undersigned also intends hereby to discharge the City of Valdez from all liability for any and all damages or injuries presently undiscovered or unanticipated. The undersigned's intention hereby is to waive any right it may subsequently have to set aside this release under the doctrine of Witt v. Watkins, 579 P.2d 1065 (Alaska 1978).

The undersigned further agrees to defend, indemnify and hold harmless the City of Valdez against any claims, liens, or causes of action arising under or by virtue of this Contract, including, but not limited to, any claim that the undersigned, any successor in interest, assignee, trustee, administrator, subcontractor, supplier or laborer of the undersigned or any other person might make or claim that he could possibly make against the City of Valdez.

The undersigned certifies that he has not assigned any amounts payable under this Contract to anyone.

The undersigned hereby acknowledges receipt of the amount of $_____ as full and final payment in consideration for all services, materials and labors rendered in connection with this Contract.

The undersigned hereby declares that the terms of this RELEASE have been completely read and are fully understood, and said terms are voluntarily accepted for the purpose of making a full and final release of any and all claims, disputed or otherwise, arising under or by virtue of this Contract.

City of Valdez
Contract Release Page 2 of 2

Project: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project Number: 23-315-1623/ Contract Number: 2161

IN WITNESS WHEREOF, I have hereunto set my hand and seal this _____day of _____, 2025.

_____
COMPANY

_____
SIGNATURE

_____
TITLE

STATE OF ALASKA)
)ss.
THIRD JUDICIAL DISTRICT)

THIS IS TO CERTIFY that on this _____ day of _____, 2025, before me, Notary Public in and for the State of Alaska, personally appeared _____of _____, known to me to be its _____and acknowledged to me that he has read this foregoing RELEASE and knew contents thereof to be true and correct to the best of his knowledge and belief, and that he signed the same freely and voluntarily for the uses and purposes therein mentioned, and that he was duly authorized to execute the foregoing document according to the Bylaws or by Resolutions of said corporation.

WITNESS my hand and notarial seal this _____ day of _____, 2025.

_____
Notary Public in and for Alaska
My Commission expires: _____

City of Valdez
Special Provisions

Project: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project Number: 23-315-1623/ Contract Number: 2161

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City of Valdez
Special Provisions

Project: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project Number: 23-315-1623/ Contract Number: 2161

SP 01 General Statement

The Special Provisions set forth conditions and requirements unique to this Project and are supplemental to, and supersede, the City of Valdez "Standard Specifications and Standard Details."

SP 02 Scope of Work

Base Bid

The Scope of Work of the Base Bid of this Contract shall include providing all labor, materials, tools, equipment, transportation, supervision and facilities necessary to:

General project scope includes providing a replacement diesel fired, level 1, emergency power system (EPS) CAT generator in a sound attenuated, heated, full walk-in artic enclosure for the Providence Valdez Medical Center (PVMC). Provide a dry agent fire suppression system within the generator enclosure.

An owner Furnish, contractor installed temporary portable generator will be utilized to function as a temporary level 1 EPS generator for the PVMC while the replacement generator is furnished and installed.

The existing generator will be removed from the maintenance building, its associated maintenance pad removed, and related walls patched/finished where louvers and exhaust stacks penetrate the exterior skin. The existing clinic generator and associated concrete pad will also be removed; related equipment feeder conduit will be intercepted and connected to the new generator.

The existing 208 volt automatic transfer switch (ATS) will be replaced with a new 480 volts ATS to be installed in the maintenance building. The normal feed will be intercepted from existing transformer normal feed.

Provide a Building Automated Panel withing the generator enclosure and replace the existing generator remote annunciator panel with a new panel at the same location.

Electrical scope includes providing the replacement generator, generator enclosure, and other related equipment. Other equipment as indicated on the drawings and conduit, conductors, and connections to provide a complete and functional replacement level 1 EPS generator for PVMC.

The scope of work is more specifically described in the attached drawings and specification titled "Providence Valdez Medical Center Level 1 Replacement Generator."

SP 03 Time of Completion

All work shall be completed in accordance with the Contract Documents by June 1, 2025.

This extended time of completion is due to the long lead time of the generator. This time is subject to change if the lead time of the generator is shorter or longer.

Liquidated damages will be assessed in the sum of Five Hundred dollars ($500) for each calendar day after the completion date during which the Project remains incomplete.

Substantial Completion: Substantial Completion shall be defined as the stage in the progress of the work when the work is sufficiently complete in accordance with the Contract Documents so the Owner (City) can occupy or use the structure or that which is the subject of the contract, for its intended use.

SP 04 Special Site Conditions

The Contractor will be responsible for the disposal of all refuse and debris generated by the project. The City has, on a limited 'first come first served' basis, dumpsters for use free of charge on City projects if available.

Dump fees will be waived. The Contractor will be responsible for hauling demolished materials and construction waste out to the City Baler facility on South Sawmill Drive. The Baler is located approximately 5 miles out of town. Please contact the Baler ahead of time to make arrangements for the disposal of such materials. The Baler's number is 907-835-2356. The project name or contract number will be required on all Baler disposal forms and when calling to reserve or empty dumpsters.

Local building permit fees are waived. The Contractor will be responsible for obtaining any required local building permits before the NTP is issued. The Contractor will need to call the City Planning Department at 907-834-3401.

The staging area will be determined during the pre-construction meeting at the project site by the City's project manager and the PVMC maintenance director.

The Contractor will be responsible for moving furniture and other items necessary to complete the work.

The Contractor is responsible for setting up detours or barricades if their work is in a public area and will interfere with normal traffic flow.

The contractor will be responsible for the clearing of any snow from generator pad until the generator is installed and operational.

SP 05 Hazardous Waste Generation

Every effort to minimize or eliminate the generations of hazardous waste shall be used by the Contractor in the performance of the work of this Contract. Unless there is no substitute, no hazardous material shall be used in the performance of the work of this Contract.

SP 06 Coordination and Schedule

The Contractor shall, within ten (10) working days of the date of the Notice to Proceed, submit to the Engineer a schedule as required in Section 10.5, Control of Work, Article 5.3. The schedule shall be updated every week. An updated schedule shall be submitted with each of the Contractor's Periodic Payment Requests. Failure to provide an updated schedule will be cause to withhold partial payment.

SP 07 Site Preservation, Restoration, Cleanup and Environmental Reporting

The Contractor shall be solely responsible for damage to public or private property caused by construction operations. The Contractor shall take all precautions necessary to control dust. The Contractor shall notify the City of any claims of damage and shall clean and restore any property so damaged at the sole expense of the Contractor. All spills or releases of any hazardous substance shall be reported to the appropriate governmental agency as well as notice to the City. Contractor shall be responsible for all associated cleanup costs and fines.

At all times during the work, keep the premises clean and orderly. Upon completion of the work, repair all damage caused by equipment and leave the Project free of rubbish and excess materials of any kind.

SP 08 Permits

The Contractor shall obtain all licenses and permits that are required to do the work. A Building Permit will be required but there will be no charge.

SP 09 Order of Award of Alternative Bids

Additive Alternate and/or Deductive Alternative Bids will be awarded, if any are awarded, in any order determined to be the most advantageous combination by the owner.

SP 10 Payment

Payments shall be in accordance with Section 10.07, Measurement and Payment of the CVSS. All invoices for payment must be submitted on a City of Valdez *Periodic Payment Request Form.* An electronic copy of this form (Excel Spreadsheet) will be made available for the Contractor's use.

Disbursement of money to a person, firm or corporation will be made only after all the various receivable accounts of the general government and any municipal utility or enterprise have been reviewed for outstanding balances owed, and the disbursement will be reduced by setting off the amount of any delinquent indebtedness due the city from such person, firm or corporation.

All contracts to which the city is a party which will or may involve the disbursement of city funds shall contain the following clause, or its substantial equivalent: "Disbursement of money by the City of Valdez hereunder shall subject to set-off pursuant to the provisions of the Valdez City Code." Such contracts include, but are not limited to, oral contracts, employment contracts, construction contracts, purchasing contracts and contracts of any municipal utility or enterprise, including customer's deposits.

SP 11 References to City of Valdez Standard Specifications (CVSS)

The City of Valdez Standard Specifications & Standard Details, Streets-Drainage-Utilities-Parks, dated April 2003, hereafter referred to as CVSS, are incorporated in and become a part of the Contract Documents for the work, The Standard Specifications are available for purchase from the Engineer's Office of the City of Valdez, P.O. Box 307, Valdez, Alaska 99686. All work under this Contract shall comply with the latest edition and addenda to all applicable codes, ordinances, and standards.

It shall be the responsibility of the Bidder to prepare his bid so all materials and/or different arrangements of connections or fittings shall harmoniously conform with the intent of the Contract Drawings, CVSS, and the Special Provisions.

SP 12 Construction Specifications

The Specifications for construction of the work of this Project are incorporated into the following pages and on the attached drawing titled "Providence Valdez Medical Center Level 1 Replacement Generator." These drawings are by reference included herein.

SP 13 Basis of Design

A. Provide a diesel-generator set of the latest commercial type and design. In a standby capacity, it shall be capable of continuous service at rated output for the duration of any utility power failure. The engine and generator shall be the product of one company. It shall be a new, factory assembled and tested set as manufactured by the Caterpillar Company which is the Basis of Design system shown on the Drawings. The engine and generator set shall have undergone comprehensive prototype testing to ensure acceptable performance at rated load and power factor.

B. Alternative systems: The City of Valdez has an existing maintenance contract for their generators with the Caterpillar Company. No other alternative systems will be considered on this Project.

C. Provide the necessary controls and accessories to the extent that this equipment, in conjunction with the diesel engine generator set, comprises a complete operating package for installation at 150 feet above sea level in an ambient temperature of 80 degrees F. maximum, 18 degrees F. minimum. The generator vendor shall review the Contract Documents to become informed regarding loads served by the system. Equipment provided shall be compatible with loads served under all operational scenarios.

City of Valdez
Modifications and Additions to the Standard Specifications

Project: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project Number: 23-315-1623/ Contract Number: 2161

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City of Valdez
Modifications and Additions to the Standard Specifications

P Project: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project Number: 23-315-1623/ Contract Number: 2161

Division 10 Standard General Provisions

Article 7.5 Progress Payments

Add the following:

Any request for payments for work accomplished within the calendar fiscal year (January 1st to December 31st) must be received by the city no later than January 31st of the following year. Failure to provide a request for payment by Jan. 31st for work accomplished the previous year will delay payment. Failure to provide a request for payment by January 31st for work accomplished the previous year will be subject to a penalty. Penalty may be assessed at a minimum of $1000 and up to 5% of the invoice not to exceed $10,000.

Article 7.7 Final Payments

Add the following:

Any request for final payment for work accomplished within the calendar fiscal year (January 1st to December 31st) must be received by the city no later than January 31st of the following year. Failure to provide a request for final payment by January 31st for work accomplished the previous year will delay payment. Failure to provide a request for payment by January 31st for work accomplished the previous year will be subject to a penalty. Penalty may be assessed at a minimum of $1000 and up to 5% of the invoice not to exceed $10,000.

City of Valdez
Minimum Prevailing Wage Rates

Project: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project Number: 23-315-1623/ Contract Number: 2161

Minimum Prevailing Wage Rates and Title 36 Public Contracts Follows
See attached Links:

http://labor.state.ak.us/lss/pamp600.htm
http://labor.alaska.gov/lss/forms/Pam400.pdf

In accordance with the requirements of AS 36.05.070 and AS 36.05.080, the following provisions are included where applicable:

(1) The Contractor or subcontractors of the Contractor shall pay all employees unconditionally and not less than once a week;

(2) wages may not be less than those stated in the advertised specifications, regardless of the contractual relationship between the Contractor or subcontractors and laborers, mechanics, or field surveyors;

(3) the scale of wages to be paid shall be posted by the Contractor in a prominent and easily accessible place at the site of the work;

(4) Owner shall withhold so much of the accrued payments as is necessary to pay to laborers, mechanics, or field surveyors employed by the Contractor or subcontractors the difference between

(A) the rates of wages required by the contract to be paid laborers, mechanics, or field surveyors on the work; and

(B) the rates of wages in fact received by laborers, mechanics, or field surveyors.

(5) If it is found that a laborer, mechanic, or field surveyor employed by the Contractor or subcontractor has been or is being paid a rate of wages less than the rate of wages required by the contract to be paid, the Owner may, by written notice to the Contractor, terminate the Contractor's right to proceed with the work or the part of the work for which there is a failure to pay the required wages and to prosecute the work to completion by contract or otherwise, and the Contractor and the Contractor's sureties are liable to Owner for excess costs for completing the work.

MINIMUM RATES OF PAY
For Laborers and Mechanics

Effective September 1, 2023 Issue 47

PAMPHLET No. 600

Title 36. Public Contracts
AS 36.05

DEPARTMENT OF LABOR
AND WORKFORCE DEVELOPMENT
Wage and Hour

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THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Labor and Workforce Development

Office of the Commissioner

Post Office Box 111149
Juneau, Alaska 99811
Main: 907.465.2700
fax: 907.465-2784

September 1, 2023

TO ALL CONTRACTING AGENCIES:

At the Alaska Department of Labor and Workforce Development our goal is putting Alaskans to work. This pamphlet is designed to help contractors awarded public construction contracts understand the most significant laws of the State of Alaska pertaining to prevailing wage.

This pamphlet identifies current prevailing wage rates for public construction contracts (any construction projects awarded for the State of Alaska or its political subdivisions, such as local governments and certain non-profit organizations). Because these rates may change in a subsequent determination, please be sure you are using the appropriate rates. The rates published in this edition become effective September 1, 2023.

The prevailing wage rates contained in this pamphlet are applicable to public construction projects with a final bid date of September 11, 2023, or later. As the law now provides, these rates will remain stable during the life of a contract or for 24 calendar months, whichever is shorter. **The 24-month period begins on the date the prime contract is awarded.** Upon expiration of the initial 24-month period, the latest wage rates issued by the department shall become effective for a subsequent 24-month period or until the original contract is completed, whichever occurs first. This process shall be repeated until the original contract is completed.

The term "original contract" means the signed contract that resulted from the original bid and any amendments, including changes of work scope, additions, extensions, change orders, and other instruments agreed to by the parties that have not been subject to subsequent open bid procedures.

If a higher federal rate is required due to partial federal funding or other federal participation, the higher rate must be paid.

For additional copies of this pamphlet go to: http://labor.state.ak.us/lss/pamp600.htm

For questions regarding prevailing wage or employment preference requirements, please contact the nearest Wage and Hour office. These offices are listed on Page x.

Sincerely,

Catherine Muñoz
Acting Commissioner

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Note to Readers: The statutes and administrative regulations listed in this publication were taken from the official codes, as of the effective date of the publication. However, there may be errors or omissions that have not been identified and changes that occurred after the publication was printed. This publication is intended as an informational guide only and is not intended to serve as a precise statement of the statutes and regulations of the State of Alaska. To be certain of current laws and regulations, please refer to the official codes.

EXCERPTS FROM ALASKA LAW

Sec. 36.05.005. Applicability.
This chapter applies only to a public construction contract that exceeds $25,000.

Sec. 36.05.010. Wage rates on public construction.
A contractor or subcontractor who performs work on a public construction contract in the state shall pay not less than the current prevailing rate of wages for work of a similar nature in the region in which the work is done. The current prevailing rate of wages is that contained in the latest determination of prevailing rate of wages issued by the Department of Labor and Workforce Development at least 10 days before the final date for submission of bids for the contract. The rate shall remain in effect for the life of the contract or for 24 calendar months, whichever is shorter. At the end of the initial 24-month period, if new wage determinations have been issued by the department, the latest wage determination shall become effective for the next 24-month period or until the contract is completed, whichever occurs first. This process shall be repeated until the contract is completed.

Sec. 36.05.040. Filing schedule of employees, wages paid, and other information.
All contractors or subcontractors who perform work on a public construction contract for the state or for a political subdivision of the state shall, before the Friday of every second week, file with the Department of Labor and Workforce Development a sworn affidavit for the previous reporting period, setting out in detail the number of persons employed, wages paid, job classification of each employee, hours worked each day and week, and other information on a form provided by the Department of Labor and Workforce Development.

Sec. 36.05.045. Notice of work and completion; withholding of payment.

(a) Before commencing work on a public construction contract, the person entering into the contract with a contracting agency shall designate a primary contractor for purposes of this section. Before work commences, the primary contractor shall file a notice of work with the Department of Labor and Workforce Development. The notice of work must list work to be performed under the public construction contract by each contractor who will perform any portion of work on the contract and the contract price being paid to each contractor. The primary contractor shall pay all filing fees for each contractor performing work on the contract, including a filing fee based on the contract price being paid for work performed by the primary contractor's employees. The filing fee payable shall be the sum of all fees calculated for each contractor. The filing fee shall be one percent of each contractor's contract price. The total filing fee payable by the primary contractor under this subsection may not exceed $5,000. In this subsection, "contractor" means an employer who is using employees to perform work on the public construction contract under the contract or a subcontract.

(b) Upon completion of all work on the public construction contract, the primary contractor shall file with the Department of Labor and Workforce Development a notice of completion together with payment of any additional filing fees owed due to increased contract amounts. Within 30 days after the department's receipt of the primary contractor's notice of completion, the department shall inform the contracting agency of the amount, if any, to be withheld from the final payment.

(c) A contracting agency

(1) may release final payment of a public construction contract to the extent that the agency has received verification from the Department of Labor and Workforce Development that

(A) the primary contractor has complied with (a) and (b) of this section;

(B) the Department of Labor and Workforce Development is not conducting an investigation under this title; and

(C) the Department of Labor and Workforce Development has not issued a notice of a violation of this chapter to the primary contractor or any other contractors working on the public construction contract; and

(2) shall withhold from the final payment an amount sufficient to pay the department's estimate of what may be needed to compensate the employees of any contractors under investigation on this construction contract, and any unpaid filing fees.

(d) The notice and filing fee required under (a) of this section may be filed after work has begun if
   (1) The public construction contract is for work undertaken in immediate response to an emergency; and
   (2) The notice and fees are filed not later than 14 days after the work has begun.

(e) A false statement made on a notice required by this section is punishable under AS 11.56.210.

Sec. 36.05.060. Penalty for violation of this chapter.

A contractor who violates this chapter is guilty of a misdemeanor and upon conviction is punishable by a fine of not less than $100 nor more than $1,000, or by imprisonment for not less than 10 days nor more than 90 days, or by both. Each day a violation exists constitutes a separate offense.

Sec. 36.05.070. Wage rates in specifications and contracts for public works.

(a) The advertised specifications for a public construction contract that requires or involves the employment of mechanics, laborers, or field surveyors must contain a provision stating the minimum wages to be paid various classes of laborers, mechanics, or field surveyors and that the rate of wages shall be adjusted to the wage rate under AS 36.05.010.

(b) Repealed by §17 ch 142 SLA 1972.

(c) A public construction contract under (a) of this section must contain provisions that
   (1) the contractor or subcontractors of the contractor shall pay all employees unconditionally and not less than once a week;
   (2) wages may not be less than those stated in the advertised specifications, regardless of the contractual relationship between the contractor or subcontractors and laborers, mechanics, or field surveyors;
   (3) the scale of wages to be paid shall be posted by the contractor in a prominent and easily accessible place at the site of the work;
   (4) the state or a political subdivision shall withhold so much of the accrued payments as is necessary to pay to laborers, mechanics, or field surveyors employed by the contractor or subcontractors the difference between
      (A) the rates of wages required by the contract to be paid laborers, mechanics, or field surveyors on the work; and
      (B) the rates of wages in fact received by laborers, mechanics, or field surveyors.

Sec. 36.05.080. Failure to pay agreed wages.

Every contract within the scope of AS 36.05.070 shall contain a provision that if it is found that a laborer, mechanic, or field surveyor employed by the contractor or subcontractor has been or is being paid a rate of wages less than the rate of wages required by the contract to be paid, the state or its political subdivision may, by written notice to the contractor, terminate the contractor's right to proceed with the work or the part of the work for which there is a failure to pay the required wages and to prosecute the work to completion by contract or otherwise, and the contractor and the contractor's sureties are liable to the state or its political subdivision for excess costs for completing the work.

Sec. 36.05.090. Payment of wages from withheld payments and listing contractors who violate contracts.

(a) The state disbursing officer in the case of a state public construction contract and the local fiscal officer in the case of a political subdivision public construction contract shall pay directly to laborers, mechanics, or field surveyors from accrued payments withheld under the terms of the contract the wages due laborers, mechanics, or field surveyors under AS 36.05.070.

(b) The state disbursing officer or the local fiscal officer shall distribute to all departments of the state government and to all political subdivisions of the state a list giving the names of persons who have disregarded their obligations to employees. A person appearing on this list and a firm, corporation, partnership, or association in which the person has an interest may not work as a contractor or

subcontractor on a public construction contract for the state or a political subdivision of the state until three years after the date of publication of the list. If the accrued payments withheld under the contract are insufficient to reimburse all the laborers, mechanics, or field surveyors with respect to whom there has been a failure to pay the wages required under AS 36.05.070, the laborers, mechanics, or field surveyors have the right of action or intervention or both against the contractor and the contractor's sureties conferred by law upon persons furnishing labor or materials, and in the proceedings it is not a defense that the laborers, mechanics, or field surveyors accepted or agreed to accept less than the required rate of wages or voluntarily made refunds.

Sec. 36.05.900. Definition.
In this chapter, "contracting agency" means the state or a political subdivision of the state that has entered into a public construction contract with a contractor.

EXCERPTS FROM ALASKA ADMINISTRATIVE CODE

*****Notice:** Regulations relating to board and lodging and per diem went into effect on November 25, 2018. The new regulations are excerpted here*******

8 AAC 30.051. Purpose. The purpose of 8 AAC 30.052 – 8 AAC 30.056 is to ensure that wages paid to laborers, mechanics, and field surveyors do not fall below the prevailing rate of pay.

8 AAC 30.052. Board and lodging; remote sites. (a) A contractor on a public construction project located 65 or more road miles from the international airport closest to the project area in either Fairbanks, Juneau, or Anchorage, or that is inaccessible by road in a two-wheel drive vehicle, shall provide adequate board and lodging to each laborer, mechanic, or field surveyor while the person is employed on the project. If commercial lodging facilities are not available, the contractor shall provide temporary lodging facilities. Lodging facilities must comply with all applicable state and federal laws. For a highway project, the location of the project is measured from the midpoint of the project.

(b) A contractor is not required to provide board and lodging:

(1) to a laborer, mechanic, or field surveyor who is a domiciled resident of the project area; or

(2) on a laborer, mechanic, or field surveyor's scheduled days off, when the person can reasonably travel between the project and the person's permanent residence; for the purposes of this paragraph, "scheduled day off" means a day in which a person does not perform work on-site, is not required to remain at or near the job location for the benefit of the contractor, and is informed of the day off at least seven days before the day off.

(c) Upon a contractor's written request, the commissioner may waive the requirements of (a) of this section where:

(1) the project is inaccessible by road in a two-wheel drive vehicle, but the laborer, mechanic, or field surveyor can reasonably travel between the project and the person's permanent residence within one hour; or

(2) a laborer, mechanic, or field surveyor is not a domiciled resident of the project area, but has established permanent residence, with the intent to remain indefinitely, within 65 road miles of the project, or for a highway project, the mid-point of the project.

8 AAC 30.054. Per diem instead of board and lodging. (a) A contractor may pay a laborer, mechanic, or field surveyor per diem instead of providing board and lodging, when the following conditions are met:

(1) the department determines that per diem instead of board and lodging is an established practice for the work classification; the department shall publish and periodically revise its determinations in the pamphlet *Laborers and Mechanics Minimum Rates of Pay*;

(2) the contractor pays each laborer, mechanic, or field surveyor the appropriate per diem rate as published and periodically revised in the pamphlet *Laborers and Mechanics Minimum Rates of Pay*; and

(3) the contractor pays the per diem to each laborer, mechanic, or field surveyor on the same day that wages are paid.

(b) A contractor may not pay per diem instead of board and lodging on a highway project located

(1) west of Livengood on the Elliot Highway, AK-2;

(2) on the Dalton Highway, AK-11;

(3) north of milepost 20 on the Taylor Highway, AK-5;

(4) east of Chicken on the Top of the World Highway; or

(5) south of Tetlin Junction to the Alaska-Canada border on the Alaska Highway, AK-2.

8 AAC 30.056. Alternative arrangement. Upon a contractor's written request, the commissioner may approve an alternative board and lodging or per diem arrangement, provided

(1) the arrangement does not reduce the laborer, mechanic, or field surveyor's wages below the prevailing wage rate; and

(2) the laborer, mechanic, or field surveyor voluntarily enters into and signs the written arrangement; a labor organization representing laborers, mechanics, or field surveyors may enter into the written agreement on their behalf.

8 AAC 30.900. General definitions (selected excerpts only):

In this chapter and in AS 36

(22) "domiciled resident" means a person living within 65 road miles of a public construction project, or in the case of a highway project, the mid-point of the project, for at least 12 consecutive months prior to the award of the public construction project;

(23) "employed on the project" means the time period from the date the laborer, mechanic, or field surveyor first reports on-site to the project through the final date the person reports on-site to the project.

ADDITIONAL INFORMATION

PER DIEM

Notice: New regulations relating to board and lodging and per diem went into effect on November 25, 2018. The regulations provide a comprehensive set of requirements for the provision of board and lodging or per diem for workers on remote projects. Please refer to Alaska Administrative Code 8 AAC Chapter 30 and read the chapter carefully.

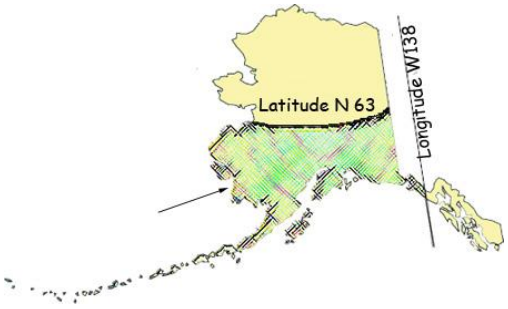
The Alaska Department of Labor and Workforce Development has determined that per diem is an established work practice for certain work classifications. These classifications are indicated throughout the Pamphlet by an asterisk (*) under the classification title. If all of the conditions of 8 AAC 30.054 are met, an employer may pay workers in these classifications per diem instead of providing board and lodging on a remote project.

Per Diem Rate: As of May 1st, 2019, the minimum per diem rate is $100.00 per day, or part thereof, the worker is employed on the project. In the event that a contractor provides lodging facilities, but no meals, the department will accept a payment of $48 per day for meals to meet the per diem requirements.

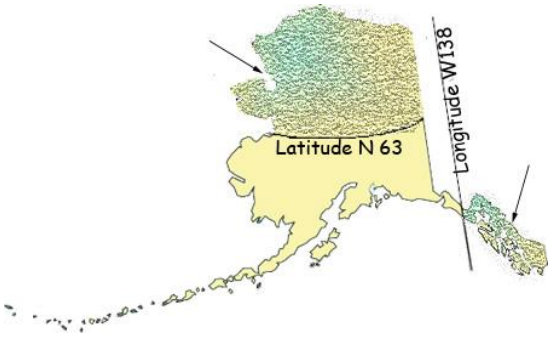
LABORER CLASSIFICATION CLARIFICATION

The laborer rates categorized in class code S1201-S1206 apply in one area of Alaska; the area that is south of N63 latitude and west of W138 Longitude. The laborer rates categorized in class code N1201-N1206 apply in two areas of Alaska; the Alaska areas north of N63 latitude and east of W138 longitude. The following graphic representations should assist with clarifying the applicable wage rate categories:

S1201-
S1206



N1201-
N1206



APPRENTICE RATES

Apprentice rates at less than the minimum prevailing rates may be paid to apprentices according to an apprentice program which has been registered and approved by the Commissioner of the Alaska Department of Labor and Workforce Development in writing or according to a bona fide apprenticeship program registered with the U.S. Department of Labor, Office of Apprenticeship Training. **Any employee listed on a payroll at an apprentice wage rate who is not registered as above shall be paid the journeyman prevailing minimum wage in that work classification.** Wage rates are based on prevailing crew makeup practices in Alaska and apply to work performed regardless of either the quality of the work performed by the employee or the titles or classifications which may be assigned to individual employees.

FRINGE BENEFIT PLANS

Contractors/subcontractors may compensate fringe benefits to their employees in any one of three methods. The fringe benefits may be paid into a union trust fund, into an approved benefit plan, or paid directly on the paycheck as gross wages.

Where fringe benefits are paid into approved plans, funds, or programs including union trust funds, the payments must be contributed at least monthly. If contractors submit their own payroll forms and are paying fringe benefits into approved plans, funds, or programs, the employer's certification must include, in addition to those requirements of 8 AAC 30.020(c), a statement that fringe benefit payments have been or will be paid at least monthly. Contractors who pay fringe benefits to a plan must ensure the plan is one approved by the Internal Revenue Service and that the plan meets the requirements of 8 AAC 30.025 (eff. 3/2/08) in order for payments to be credited toward the prevailing wage obligation.

SPECIAL PREVAILING WAGE RATE DETERMINATION

Special prevailing wage rate determinations may be requested for special projects or a special worker classification if the work to be performed does not conform to traditional public construction for which a prevailing wage rate has been established under 8 AAC 30.050(a) of this section. Requests for special wage rate determinations must be in writing and filed with the Commissioner at least 30 days before the award of the contract. An applicant for a special wage rate determination shall have the responsibility to support the necessity for the special rate. An application for a special wage rate determination filed under this section must contain:

(1) a specification of the contract or project on which the special rates will apply and a description of the work to be performed;
(2) a brief narrative explaining why special wage rates are necessary;
(3) the job class or classes involved;
(4) the special wage rates the applicant is requesting, including survey or other relevant wage data to support the requested rates;
(5) the approximate number of employees who would be affected; and
(6) any other information which might be helpful in determining if special wage rates are appropriate.

Requests made pursuant to the above should be addressed to:

Director
Alaska Department of Labor and Workforce Development
Labor Standards and Safety Division
Wage and Hour
P.O. Box 111149
Juneau, AK 99811-1149
-or-
Email: statewide.wagehour@alaska.gov

EMPLOYMENT PREFERENCE INFORMATION

In October 2019, the Alaska Attorney General issued a formal opinion stating that the Alaska Statutes 36.10.150 of the State's 90% Employment Preference law, also known as the Alaska Resident Hire law, violates both the U.S. and Alaska Constitutions. As a result, the state has stopped all enforcement activity.
A copy of the Attorney General opinion is found here:

http://law.alaska.gov/pdf/opinions/opinions_2019/19-005_AK-hire.pdf

Alaska Department of Labor and Workforce Development
Labor Standards and Safety Division
Wage and Hour
Web site: http://labor.state.ak.us/lss/pamp600.htm

Anchorage	Juneau	Fairbanks
1251 Muldoon Road, Suite 113 Anchorage, Alaska 99504-2098 Phone: (907) 269-4900 Email: statewide.wagehour@alaska.gov	PO Box 111149 Juneau, Alaska 99811 Phone: (907) 465-4842 Email: statewide.wagehour@alaska.gov	Regional State Office Building 675 7th Ave., Station J-1 Fairbanks, Alaska 99701-4593 Phone: (907) 451-2886 Email: statewide.wagehour@alaska.gov

LABOR STANDARDS AND SAFETY NOTICE REQUESTS

If you would like to receive Wage and Hour or Mechanical Inspection **regulation notices** or **publications information**, they are available via electronic mail, by signing up in the GovDelivery System, https://public.govdelivery.com/accounts/AKDOL/subscriber/new and selecting topics *LSS – Wage and Hour – Forms and Publications*, *LSS – Mechanical Inspection Regulations*, or *LSS – Wage and Hour Regulations*.

Publications are also available online at http://labor.alaska.gov/lss/home.htm

DEBARMENT LIST

AS 36.05.090(b) states that "the state disbursing officer or the local fiscal officer shall distribute to all departments of the state government and to all political subdivisions of the state a list giving the names of persons who have disregarded their obligations to employees."

A person appearing on the following debarment list and a firm, corporation, partnership, or association in which the person has an interest may not work as a contractor or subcontractor on a public construction contract for the state or a political subdivision of the state for three years from the date of debarment.

Company Name	Debarment Expires

No companies are currently debarred.

Laborers' & Mechanics' Minimum Rates of Pay

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
Boilermakers	*See per diem note on last page							
						VAC	**SAF**	
A0101	Boilermaker (journeyman)	48.15	8.57	18.40	2.15	4.25	0.34	81.86
Bricklayers & Blocklayers	*See per diem note on last page							
						L&M		
A0201	Blocklayer	42.01	9.00	10.20	0.62	0.20		62.03
	Bricklayer Marble or Stone Mason Refractory Worker (Firebrick, Plastic, Castable, and Gunite Refractory Applications) Terrazzo Worker Tile Setter							
						L&M		
A0202	Tuck Pointer Caulker	42.01	9.00	10.20	0.62	0.20		62.03
	Cleaner (PCC)							
						L&M		
A0203	Marble & Tile Finisher	35.84	9.00	10.20	0.62	0.20		55.86
	Terrazzo Finisher							
						L&M		
A0204	Torginal Applicator	35.84	9.00	10.20	0.62	0.20		55.86
Carpenters, Region I (North of 63 latitude)	*See per diem note on last page							
						L&M	**SAF**	
N0301	Carpenter (journeyman)	44.39	10.35	15.82	1.75	0.20	0.20	72.71
	Lather/Drywall/Acoustical							
Carpenters, Region II (South of N63 latitude)	*See per diem note on last page							
						L&M	**SAF**	
S0301	Carpenter (journeyman)	44.39	10.35	16.36	1.75	0.20	0.20	73.25
	Lather/Drywall/Acoustical							
Cement Masons	*See per diem note on last page							

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
Cement Masons							
	*See per diem note on last page						
						L&M	
A0401	Group I, including:	44.43	8.80	11.80	1.53	0.10	66.66
	Application of Sealing Compound						
	Application of Underlayment						
	Building, General						
	Cement Finisher						
	Cement Mason (journeyman)						
	Concrete						
	Concrete Paving						
	Concrete Polishing						
	Concrete Repair						
	Curb & Gutter, Sidewalk						
	Curing of All Concrete						
	General Concrete Pour Tender						
	Grouting & Caulking of Tilt-Up Panels						
	Grouting of All Plates						
	Patching Concrete						
	Screed Pin Setter						
	Screeder or Rodder						
	Spackling/Skim Coating						
						L&M	
A0402	Group II, including:	44.43	8.80	11.80	1.53	0.10	66.66
	Form Setter						
						L&M	
A0403	Group III, including:	44.43	8.80	11.80	1.53	0.10	66.66
	Concrete Saw Cutter Operator (All Control Joints and Self-powered)						
	Curb & Gutter Machine						
	Floor Grinder						
	Pneumatic Power Tools						
	Power Chipping & Bushing						
	Sand Blasting Architectural Finish						
	Screed & Rodding Machine Operator						
	Troweling Machine Operator (all concrete surfaces)						
						L&M	
A0404	Group IV, including:	44.43	8.80	11.80	1.53	0.10	66.66
	Acoustical or Imitation Acoustical Finish						
	Application of All Composition Mastic						
	Application of All Epoxy Material						
	Application of All Plastic Material						
	Finish Colored Concrete						
	Gunite Nozzleman						
	Hand Powered Grinder						

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
Cement Masons							
	*See per diem note on last page						
A0404	Group IV, including:	44.43	8.80	11.80	1.53	L&M 0.10	66.66
	Preparing, scratching and browsing of all ceilings and walls, finished with terrazo or tile						
	Tunnel Worker						
A0405	Group V, including:	44.43	8.80	11.80	1.53	L&M 0.10	66.66
	Casting and finishing						
	EIFS Systems						
	Finishing of all interior and exterior plastering						
	Fireproofing (Pryocrete, Cafco, Albi-Clad, sprayed fiberglass)						
	Gypsum, Portland Cement						
	Kindred material and products						
	Operation and control of all types of plastering machines, including power tools and floats, used by the industry						
	Overcoating and maintenance of interior/exterior plaster surfaces						
	Plasterer						
	Veneer plastering process (Rapid Plaster, U.S.G. "Imperial Systems", and Pabcoat Systems")						
	Venetian plaster and color-integrated Italian/Middle-Eastern line plaster						
Culinary Workers							
A0501	Baker/Cook	29.95	7.53	8.83		LEG	46.31
A0503	General Helper	25.92	7.53	8.83		LEG	42.28
	Housekeeper						
	Janitor						
	Kitchen Helper						
A0504	Head Cook	29.95	7.53	8.83		LEG	46.31
A0505	Head Housekeeper	26.20	7.53	8.83		LEG	42.56
	Head Kitchen Help						
Dredgemen							
	*See per diem note on last page						
A0601	Assistant Engineer	46.91	11.40	14.75	1.00	L&M 0.10	0.05 74.21
	Craneman						

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
Dredgemen								
	*See per diem note on last page							
A0601	Assistant Engineer	46.91	11.40	14.75	1.00	**L&M** 0.10	0.05	74.21
	Electrical Generator Operator (primary pump/power barge/dredge) Engineer Welder							
A0602	Assistant Mate (deckhand)	45.65	11.40	14.75	1.00	**L&M** 0.10	0.05	72.95
A0603	Fireman	46.13	11.40	14.75	1.00	**L&M** 0.10	0.05	73.43
A0605	Leverman Clamshell	49.64	11.40	14.75	1.00	**L&M** 0.10	0.05	76.94
A0606	Leverman Hydraulic	47.74	11.40	14.75	1.00	**L&M** 0.10	0.05	75.04
A0607	Mate & Boatman	46.91	11.40	14.75	1.00	**L&M** 0.10	0.05	74.21
A0608	Oiler (dredge)	46.13	11.40	14.75	1.00	**L&M** 0.10	0.05	73.43
Electricians								
	*See per diem note on last page							
A0701	Inside Cable Splicer	46.44	14.40	14.22	0.95	**L&M** 0.25	**LEG** 0.15	76.41
A0702	Inside Journeyman Wireman, including:	46.44	14.40	14.22	0.95	**L&M** 0.25	**LEG** 0.15	76.41
	Technicians (including use of drones in electrical construction)							
A0703	Power Cable Splicer	65.19	14.40	19.15	0.95	**L&M** 0.25	**LEG** 0.15	100.09
A0704	Tele Com Cable Splicer	52.53	14.40	17.98	0.95	**L&M** 0.25	**LEG** 0.15	86.26
A0705	Power Journeyman Lineman, including:	63.44	14.40	19.09	0.95	**L&M** 0.25	**LEG** 0.15	98.28
	Power Equipment Operator Technician (including use of drones in electrical construction)							
A0706	Tele Com Journeyman Lineman, including:	50.78	14.40	17.92	0.95	**L&M** 0.25	**LEG** 0.15	84.45
	Technician (including use of drones in telecommunications construction) Tele Com Equipment Operator							

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
Electricians								
	*See per diem note on last page							
						L&M	**LEG**	
A0707	Straight Line Installer - Repairman	50.78	14.40	17.92	0.95	0.25	0.15	84.45
						L&M	**LEG**	
A0708	Powderman	61.44	14.40	19.03	0.95	0.25	0.15	96.22
						L&M	**LEG**	
A0710	Material Handler	28.07	14.02	5.84	0.15	0.15	0.15	48.38
						L&M	**LEG**	
A0712	Tree Trimmer Groundman	31.78	14.40	14.30	0.15	0.15	0.15	60.93
						L&M	**LEG**	
A0713	Journeyman Tree Trimmer	40.71	14.40	14.57	0.15	0.15	0.15	70.13
						L&M	**LEG**	
A0714	Vegetation Control Sprayer	44.26	14.40	14.68	0.15	0.15	0.15	73.79
						L&M	**LEG**	
A0715	Inside Journeyman Communications CO/PBX	46.44	14.40	14.22	0.95	0.25	0.15	76.41
Elevator Workers								
	*See per diem note on last page							
						L&M	**VAC**	
A0802	Elevator Constructor	46.08	16.07	20.56	0.70	1.00	5.11	89.52
						L&M	**VAC**	
A0803	Elevator Constructor Mechanic	65.83	16.07	20.56	0.70	1.00	7.30	111.46
Heat & Frost Insulators/Asbestos Workers								
	*See per diem note on last page							
						IAF	**LML**	
A0902	Asbestos Abatement-Mechanical Systems	41.35	9.24	11.12	1.50	0.14	0.05	63.40
						IAF	**LML**	
A0903	Asbestos Abatement/General Demolition All Systems	41.35	9.24	11.12	1.50	0.14	0.05	63.40
						IAF	**LML**	
A0904	Insulator, Group II	41.35	9.24	11.12	1.50	0.14	0.05	63.40
						IAF	**LML**	
A0905	Fire Stop	41.35	9.24	11.12	1.50	0.14	0.05	63.40
IronWorkers								
	*See per diem note on last page							
						L&M	**IAF**	
A1101	Ironworkers, including:	42.99	10.16	26.45	0.77	0.20	0.24	80.81

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Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
IronWorkers								
	*See per diem note on last page							
						L&M	**IAF**	
A1101	Ironworkers, including:	42.99	10.16	26.45	0.77	0.20	0.24	80.81
	Bender Operators							
	Bridge & Structural							
	Hangar Doors							
	Hollow Metal Doors							
	Industrial Doors							
	Machinery Mover							
	Ornamental							
	Reinforcing							
	Rigger							
	Sheeter							
	Signalman							
	Stage Rigger							
	Toxic Haz-Mat Work							
	Welder							
						L&M	**IAF**	
A1102	Helicopter	43.99	10.16	26.45	0.77	0.20	0.24	81.81
	Helicopter (used for rigging and setting)							
	Tower (energy producing windmill type towers to include nacelle and blades)							
						L&M	**IAF**	
A1103	Fence/Barrier Installer	39.49	10.16	26.45	0.77	0.20	0.24	77.31
						L&M	**IAF**	
A1104	Guard Rail Layout Man	40.23	10.16	26.45	0.77	0.20	0.24	78.05
						L&M	**IAF**	
A1105	Guard Rail Installer	40.49	10.16	26.45	0.77	0.20	0.24	78.31
Laborers (The Alaska areas north of N63 latitude and east of W138 longitude)								
	*See per diem note on last page							
						L&M	**LEG**	
N1201	Group I, including:	36.00	9.55	21.16	1.65	0.30	0.20	68.86
	Asphalt Worker (shovelman, plant crew)							
	Brush Cutter							
	Camp Maintenance Laborer							
	Carpenter Tender or Helper							
	Choke Setter, Hook Tender, Rigger, Signalman							
	Concrete Labor (curb & gutter, chute handler, curing, grouting, screeding)							
	Crusher Plant Laborer							
	Demolition Laborer							

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
						L&M	LEG	

Laborers (The Alaska areas north of N63 latitude and east of W138 longitude)

*See per diem note on last page

N1201	Group I, including:	36.00	9.55	21.16	1.65	0.30	0.20	68.86

Ditch Digger
Dumpman
Environmental Laborer (hazard/toxic waste, oil spill)
Fence Installer
Fire Watch Laborer
Flagman
Form Stripper
General Laborer
Guardrail Laborer, Bridge Rail Installer
Hydro Seeder Nozzleman
Laborer, Building
Landscaper or Planter
Laying of Mortarless Decorative Block (retaining walls, flowered decorative block 4 feet or less - highway or landscape work)
Material Handler
Pneumatic or Power Tools
Portable or Chemical Toilet Serviceman
Pump Man or Mixer Man
Railroad Track Laborer
Sandblast, Pot Tender
Saw Tender
Slurry Work
Steam Cleaner Operator
Steam Point or Water Jet Operator
Storm Water Pollution Protection Plan Worker (SWPPP Worker - erosion and sediment control Laborer)
Tank Cleaning
Utiliwalk & Utilidor Laborer
Watchman (construction projects)
Window Cleaner

N1202	Group II, including:	37.00	9.55	21.16	1.65	0.30	0.20	69.86

Burning & Cutting Torch
Cement or Lime Dumper or Handler (sack or bulk)
Certified Erosion Sediment Control Lead (CESCL Laborer)
Choker Splicer
Chucktender (wagon, air-track & hydraulic drills)
Concrete Laborer (power buggy, concrete saws, pumpcrete nozzleman, vibratorman)
Culvert Pipe Laborer
Cured Inplace Pipelayer

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
						L&M	LEG	
Laborers (The Alaska areas north of N63 latitude and east of W138 longitude) *See per diem note on last page								
N1202	Group II, including:	37.00	9.55	21.16	1.65	0.30	0.20	69.86
	Environmental Laborer (asbestos, marine work)							
	Floor Preparation, Core Drilling							
	Foam Gun or Foam Machine Operator							
	Green Cutter (dam work)							
	Gunite Operator							
	Hod Carrier							
	Jackhammer/Chipping Gun or Pavement Breaker							
	Laser Instrument Operator							
	Laying of Mortarless Decorative Block (retaining walls, flowered decorative block over 4 feet - highway or landscape work)							
	Mason Tender & Mud Mixer (sewer work)							
	Pilot Car							
	Pipelayer Helper							
	Plasterer, Bricklayer & Cement Finisher Tender							
	Powderman Helper							
	Power Saw Operator							
	Railroad Switch Layout Laborer							
	Sandblaster							
	Scaffold Building & Erecting							
	Sewer Caulker							
	Sewer Plant Maintenance Man							
	Thermal Plastic Applicator							
	Timber Faller, Chainsaw Operator, Filer							
	Timberman							
						L&M	LEG	
N1203	Group III, including:	37.90	9.55	21.16	1.65	0.30	0.20	70.76
	Bit Grinder							
	Camera/Tool/Video Operator							
	Guardrail Machine Operator							
	High Rigger & Tree Topper							
	High Scaler							
	Multiplate							
	Plastic Welding							
	Slurry Seal Squeegee Man							
	Traffic Control Supervisor							
	Welding Certified (in connection with laborer's work)							
						L&M	LEG	
N1204	Group IIIA	41.78	9.55	21.16	1.65	0.30	0.20	74.64
	Asphalt Raker, Asphalt Belly Dump Lay Down							
	Drill Doctor (in the field)							

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
						L&M	LEG	
Laborers (The Alaska areas north of N63 latitude and east of W138 longitude) *See per diem note on last page								
N1204	Group IIIA	41.78	9.55	21.16	1.65	0.30	0.20	74.64
	Driller (including, but not limited to wagon drills, air-track drills, hydraulic drills) Pioneer Drilling & Drilling Off Tugger (all type drills) Pipelayers Powderman (Employee Possessor) Storm Water Pollution Protection Plan Specialist (SWPPP Specialist) Traffic Control Supervisor, DOT Qualified							
						L&M	LEG	
N1205	Group IV	25.57	9.55	21.16	1.65	0.30	0.20	58.43
	Final Building Cleanup Permanent Yard Worker							
						L&M	LEG	
N1206	Group IIIB	47.36	5.50	21.16	1.65	0.30	0.20	76.17
	Driller (including, but not limited to wagon drills, air-track drills, hydraulic drills)(over 5,000 hours) Federal Powderman (Responsible Person in Charge) Grade Checking (setting or transferring of grade marks, line and grade, GPS, drones) Pioneer Drilling & Drilling Off Tugger (all type drills)(over 5,000 hours) Stake Hopper							
Laborers (The area that is south of N63 latitude and west of W138 longitude) *See per diem note on last page								
						L&M	LEG	
S1201	Group I, including:	36.00	9.55	21.16	1.65	0.30	0.20	68.86
	Asphalt Worker (shovelman, plant crew) Brush Cutter Camp Maintenance Laborer Carpenter Tender or Helper Choke Setter, Hook Tender, Rigger, Signalman Concrete Labor (curb & gutter, chute handler, curing, grouting, screeding) Crusher Plant Laborer Demolition Laborer Ditch Digger Dumpman Environmental Laborer (hazard/toxic waste, oil spill) Fence Installer Fire Watch Laborer Flagman							

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
						L&M	LEG	

Laborers (The area that is south of N63 latitude and west of W138 longitude)
*See per diem note on last page

S1201	Group I, including:	36.00	9.55	21.16	1.65	0.30	0.20	68.86

Form Stripper
General Laborer
Guardrail Laborer, Bridge Rail Installer
Hydro Seeder Nozzleman
Laborer, Building
Landscaper or Planter
Laying of Mortarless Decorative Block (retaining walls, flowered decorative block 4 feet or less - highway or landscape work)
Material Handler
Pneumatic or Power Tools
Portable or Chemical Toilet Serviceman
Pump Man or Mixer Man
Railroad Track Laborer
Sandblast, Pot Tender
Saw Tender
Slurry Work
Steam Cleaner Operator
Steam Point or Water Jet Operator
Storm Water Pollution Protection Plan Worker (SWPPP Worker - erosion and sediment control Laborer)
Tank Cleaning
Utiliwalk & Utilidor Laborer
Watchman (construction projects)
Window Cleaner

						L&M	LEG	
S1202	Group II, including:	37.00	9.55	21.16	1.65	0.30	0.20	69.86

Burning & Cutting Torch
Cement or Lime Dumper or Handler (sack or bulk)
Certified Erosion Sediment Control Lead (CESCL Laborer)
Choker Splicer
Chucktender (wagon, air-track & hydraulic drills)
Concrete Laborer (power buggy, concrete saws, pumpcrete nozzleman, vibratorman)
Culvert Pipe Laborer
Cured Inplace Pipelayer
Environmental Laborer (asbestos, marine work)
Floor Preparation, Core Drilling
Foam Gun or Foam Machine Operator
Green Cutter (dam work)
Gunite Operator
Hod Carrier

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
						L&M	LEG	

Laborers (The area that is south of N63 latitude and west of W138 longitude)

*See per diem note on last page

S1202	Group II, including:	37.00	9.55	21.16	1.65	0.30	0.20	69.86

Jackhammer/Chipping Gun or Pavement Breaker
Laser Instrument Operator
Laying of Mortarless Decorative Block (retaining walls, flowered decorative block over 4 feet - highway or landscape work)
Mason Tender & Mud Mixer (sewer work)
Pilot Car
Pipelayer Helper
Plasterer, Bricklayer & Cement Finisher Tender
Powderman Helper
Power Saw Operator
Railroad Switch Layout Laborer
Sandblaster
Scaffold Building & Erecting
Sewer Caulker
Sewer Plant Maintenance Man
Thermal Plastic Applicator
Timber Faller, Chainsaw Operator, Filer
Timberman

						L&M	LEG	
S1203	Group III, including:	37.90	9.55	21.16	1.65	0.30	0.20	70.76

Bit Grinder
Camera/Tool/Video Operator
Guardrail Machine Operator
High Rigger & Tree Topper
High Scaler
Multiplate
Plastic Welding
Slurry Seal Squeegee Man
Traffic Control Supervisor
Welding Certified (in connection with laborer's work)

						L&M	LEG	
S1204	Group IIIA	41.78	9.55	21.16	1.65	0.30	0.20	74.64

Asphalt Raker, Asphalt Belly Dump Lay Down
Drill Doctor (in the field)
Driller (including, but not limited to wagon drills, air-track drills, hydraulic drills)
Pioneer Drilling & Drilling Off Tugger (all type drills)
Pipelayers
Powderman (Employee Possessor)
Storm Water Pollution Protection Plan Specialist (SWPPP Specialist)

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
Laborers (The area that is south of N63 latitude and west of W138 longitude) *See per diem note on last page								
						L&M	**LEG**	
S1204	Group IIIA	41.78	9.55	21.16	1.65	0.30	0.20	74.64
	Traffic Control Supervisor, DOT Qualified							
						L&M	**LEG**	
S1205	Group IV	25.57	9.55	21.16	1.65	0.30	0.20	58.43
	Final Building Cleanup Permanent Yard Worker							
						L&M	**LEG**	
S1206	Group IIIB	47.36	5.50	21.16	1.65	0.30	0.20	76.17
	Driller (including, but not limited to wagon drills, air-track drills, hydraulic drills)(over 5,000 hours) Federal Powderman (Responsible Person in Charge) Grade Checking (setting or transferring of grade marks, line and grade, GPS, drones) Pioneer Drilling & Drilling Off Tugger (all type drills)(over 5,000 hours) Stake Hopper							
Millwrights *See per diem note on last page								
						L&M		
A1251	Millwright (journeyman)	51.38	10.35	12.87	1.10	0.40	0.05	76.15
						L&M		
A1252	Millwright Welder	52.38	10.35	12.87	1.10	0.40	0.05	77.15
Painters, Region I (North of N63 latitude) *See per diem note on last page								
						L&M		
N1301	Group I, including:	37.83	9.77	15.10	1.08	0.07		63.85
	Brush General Painter Hand Taping Hazardous Material Handler Lead-Based Paint Abatement Roll							
						L&M		
N1302	Group II, including:	38.35	9.77	15.10	1.08	0.07		64.37
	Bridge Painter Epoxy Applicator General Drywall Finisher Hand/Spray Texturing Industrial Coatings Specialist							

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Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
Painters, Region I (North of N63 latitude) *See per diem note on last page							
						L&M	
N1302	Group II, including:	38.35	9.77	15.10	1.08	0.07	64.37
	Machine/Automatic Taping Pot Tender Sandblasting Specialty Painter Spray Structural Steel Painter Wallpaper/Vinyl Hanger						
N1304	Group IV, including:	42.24	9.77	18.21	1.05	0.05	71.32
	Glazier Storefront/Automatic Door Mechanic						
N1305	Group V, including:	39.86	9.77	5.00	1.10	0.10	55.83
	Carpet Installer Floor Coverer Heat Weld/Cove Base Linoleum/Soft Tile Installer						
N1306	Group VI, including:	70.00	10.79	5.00	1.10	0.10	86.99
	Traffic Control Striper						
Painters, Region II (South of N63 latitude) *See per diem note on last page							
						L&M	
S1301	Group I, including :	34.47	9.77	16.45	1.08	0.07	61.84
	Brush General Painter Hand Taping Hazardous Material Handler Lead-Based Paint Abatement Roll Spray						
						L&M	
S1302	Group II, including :	35.72	9.77	16.45	1.08	0.07	63.09
	General Drywall Finisher Hand/Spray Texturing Machine/Automatic Taping Wallpaper/Vinyl Hanger						

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
Painters, Region II (South of N63 latitude) *See per diem note on last page							
						L&M	
S1303	Group III, including :	35.72	9.77	16.45	1.08	0.07	63.09
	Bridge Painter Epoxy Applicator Industrial Coatings Specialist Pot Tender Sandblasting Specialty Painter Structural Steel Painter						
						L&M	
S1304	Group IV, including:	42.45	9.77	17.25	1.08	0.07	70.62
	Glazier Storefront/Automatic Door Mechanic						
						L&M	
S1305	Group V, including:	39.86	9.77	5.00	1.10	0.10	55.83
	Carpet Installer Floor Coverer Heat Weld/Cove Base Linoleum/Soft Tile Installer						
S1306	Group VI, including:	70.00	10.79	5.00	1.10	0.10	86.99
	Traffic Control Striper						
Piledrivers *See per diem note on last page							
						L&M	**IAF**
A1401	Piledriver	44.39	10.35	15.82	1.75	0.20	0.20 72.71
	Assistant Dive Tender Carpenter/Piledriver Rigger Sheet Stabber Skiff Operator						
						L&M	**IAF**
A1402	Piledriver-Welder/Toxic Worker	45.39	10.35	15.82	1.75	0.20	0.20 73.71
						L&M	**IAF**
A1403	Remotely Operated Vehicle Pilot/Technician	48.70	10.35	15.82	1.75	0.20	0.20 77.02
	Single Atmosphere Suit, Bell or Submersible Pilot						
						L&M	**IAF**
A1404	Diver (working) **See note on last page	88.50	10.35	15.82	1.75	0.20	0.20 116.82

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
Piledrivers								
	*See per diem note on last page							
						L&M	**IAF**	
A1405	Diver (standby) **See note on last page	48.70	10.35	15.82	1.75	0.20	0.20	77.02
						L&M	**IAF**	
A1406	Dive Tender **See note on last page	47.70	10.35	15.82	1.75	0.20	0.20	76.02
						L&M	**IAF**	
A1407	Welder (American Welding Society, Certified Welding Inspector)	49.95	10.35	15.82	1.75	0.20	0.20	78.27
Plumbers, Region I (North of N63 latitude)								
	*See per diem note on last page							
						L&M	**S&L**	
N1501	Journeyman Pipefitter	46.86	12.00	18.20	1.75	1.20		80.01
	Plumber							
	Welder							
Plumbers, Region II (South of N63 latitude)								
	*See per diem note on last page							
						L&M		
S1501	Journeyman Pipefitter	41.00	12.38	15.27	1.55	0.20		70.40
	Plumber							
	Welder							
Plumbers, Region IIA (1st Judicial District)								
	*See per diem note on last page							
						L&M		
X1501	Journeyman Pipefitter	43.50	14.17	11.75	2.95	0.24		72.61
	Plumber							
	Welder							
Power Equipment Operators								
	*See per diem note on last page							
						L&M		
A1601	Group I, including:	47.74	11.40	14.75	1.00	0.10	0.05	75.04
	Asphalt Roller: Breakdown, Intermediate, and Finish							
	Back Filler							
	Barrier Machine (Zipper)							
	Beltcrete with Power Pack & similar conveyors							
	Bending Machine							
	Boat Coxswain							
	Bulldozer							
	Cableways, Highlines & Cablecars							

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
	Power Equipment Operators *See per diem note on last page							
						L&M		
A1601	Group I, including:	47.74	11.40	14.75	1.00	0.10	0.05	75.04
	Cleaning Machine							
	Coating Machine							
	Concrete Hydro Blaster							
	Cranes (45 tons & under or 150 feet of boom & under (including jib & attachments))							
	(a) Hydralifts or Transporters, (all track or truck type)							
	(b) Derricks							
	(c) Overhead							
	Crushers							
	Deck Winches, Double Drum							
	Ditching or Trenching Machine (16 inch or over)							
	Drag Scraper, Yarder, and similar types							
	Drilling Machines, Core, Cable, Rotary and Exploration							
	Finishing Machine Operator, Concrete Paving, Laser Screed, Sidewalk, Curb & Gutter Machine							
	Grade Checker and/or Line and Grade including Drone							
	Helicopters							
	Hover Craft, Flex Craft, Loadmaster, Air Cushion, All-Terrain Vehicle, Rollagon, Bargecable, Nodwell, & Snow Cat							
	Hydro Ax, Feller Buncher & similar							
	Hydro Excavation (Vac-Truck and Similar)							
	Loaders (2 1/2 yards through 5 yards, including all attachments):							
	(a) Forklifts (with telescopic boom & swing attachment)							
	(b) Front End & Overhead, (2-1/2 yards through 5 yards)							
	(c) Loaders, (with forks or pipe clamp)							
	(d) Loaders, (elevating belt type, Euclid & similar types)							
	Material Transfer Vehicle (Elevating Grader, Pickup Machine, and similar types)							
	Mechanic, Welder, Bodyman, Electrical, Camp & Maintenance Engineer							
	Micro Tunneling Machine							
	Mixers: Mobile type with hoist combination							
	Motor Patrol Grader							
	Mucking Machine: Mole, Tunnel Drill, Horizontal/Directional Drill Operator and/or Shield							
	Off-Road Hauler (including Articulating and Haul Trucks)							
	Operator on Dredges							
	Piledriver Engineer, L.B. Foster, Puller or similar paving breaker							
	Plant Operator (Asphalt & Concrete)							
	Power Plant, Turbine Operator 200 k.w & over (power plants or combination of power units over 300 k.w.)							
	Remote Controlled Equipment							
	Scraper (through 40 yards)							

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
Power Equipment Operators *See per diem note on last page								
						L&M		
A1601	Group I, including:	47.74	11.40	14.75	1.00	0.10	0.05	75.04
	Service Oiler/Service Engineer Shot Blast Machine Shovels, Backhoes, Excavators with all attachments, and Gradealls (3 yards & under) Sideboom (under 45 tons) Sub Grader (Gurries & similar types) Tack Tractor Truck Mounted Concrete Pump, Conveyor/Tele-belt, & Creter Wate Kote Machine							
						L&M		
A1602	Group IA, including:	49.64	11.40	14.75	1.00	0.10	0.05	76.94
	Camera/Tool/Video Operator (Slipline) Certified Welder, Electrical Mechanic, Camp Maintenance Engineer, Mechanic (over 10,000 hours) Cranes (over 45 tons or 150 feet including jib & attachments) (a) Clamshells & Draglines (over 3 yards) (b) Tower Cranes Licensed Water/Waste Water Treatment Operator Loaders (over 5 yards) Motor Patrol Grader, Dozer, Grade Tractor (finish: when finishing to final grade and/or to hubs, or for asphalt) Power Plants (1000 k.w. & over) Profiler, Reclaimer, and Roto-Mill Quad Scrapers (over 40 yards) Screed Shovels, Backhoes, Excavators with all attachments (over 3 yards) Sidebooms (over 45 tons) Slip Form Paver, C.M.I. & similar types Topside (Asphalt Paver, Slurry machine, Spreaders, and similar types)							
						L&M		
A1603	Group II, including:	46.91	11.40	14.75	1.00	0.10	0.05	74.21
	Boiler - Fireman Cement Hogs & Concrete Pump Operator Conveyors (except those listed in Group I) Hoists on Steel Erection, Towermobiles & Air Tuggers Horizontal/Directional Drill Locator Locomotives, Rod & Geared Engines Mixers Screening, Washing Plant							

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
Power Equipment Operators *See per diem note on last page								
						L&M		
A1603	Group II, including:	46.91	11.40	14.75	1.00	0.10	0.05	74.21
	Sideboom (cradling rock drill, regardless of size) Skidder Trenching Machines (under 16 inches) Water/Waste Water Treatment Operator							
						L&M		
A1604	Group III, including:	46.13	11.40	14.75	1.00	0.10	0.05	73.43
	"A" Frame Trucks, Deck Winches Bombardier (tack or tow rig) Boring Machine Brooms, Power (sweeper, elevator, vacuum, or similar) Bump Cutter Compressor Farm Tractor Forklift, Industrial Type Gin Truck or Winch Truck (with poles when used for hoisting) Hoists, Air Tuggers, Elevators Loaders: (a) Elevating-Athey, Barber Greene & similar types (b) Forklifts or Lumber Carrier (on construction job sites) (c) Forklifts, (with tower) (d) Overhead & Front End, (under 2-l/2 yards) Locomotives: Dinkey (air, steam, gas & electric) Speeders Mechanics, Light Duty Oil, Blower Distribution Posthole Digger, Mechanical Pot Fireman (power agitated) Power Plant, Turbine Operator, (under 200 k.w.) Pumps, Water Roller (other than Asphalt) Saws, Concrete Skid Hustler Skid Steer (with all attachments) Stake Hopper Straightening Machine Tow Tractor							
						L&M		
A1605	Group IV, including:	39.42	11.40	14.75	1.00	0.10	0.05	66.72
	Crane Assistant Engineer/Rig Oiler Drill Helper Parts & Equipment Coordinator							

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Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
Power Equipment Operators								
	*See per diem note on last page							
						L&M		
A1605	Group IV, including:	39.42	11.40	14.75	1.00	0.10	0.05	66.72
	Spotter							
	Steam Cleaner							
	Swamper (on trenching machines or shovel type equipment)							
Roofers								
	*See per diem note on last page							
						L&M		
A1701	Roofer & Waterproofer	47.62	13.75	3.91	0.81	0.10	0.06	66.25
						L&M		
A1702	Roofer Material Handler	34.23	13.75	3.91	0.81	0.10	0.06	52.86
Sheet Metal Workers, Region I (North of N63 latitude)								
	*See per diem note on last page							
						L&M		
N1801	Sheet Metal Journeyman	51.93	12.55	15.86	1.80	0.12		82.26
	Air Balancing and duct cleaning of HVAC systems							
	Brazing, soldering or welding of metals							
	Demolition of sheet metal HVAC systems							
	Fabrication and installation of exterior wall sheathing, siding, metal roofing, flashing, decking and architectural sheet metal work							
	Fabrication and installation of heating, ventilation and air conditioning ducts and equipment							
	Fabrication and installation of louvers and hoods							
	Fabrication and installation of sheet metal lagging							
	Fabrication and installation of stainless steel commercial or industrial food service equipment							
	HVAC-R Service Mechanic, servicing and maintaining HVAC-R Systems							
	Manufacture, fabrication assembly, installation and alteration of all ferrous and nonferrous metal work							
	Metal lavatory partitions							
	Preparation of drawings taken from architectural and engineering plans required for fabrication and erection of sheet metal work							
	Sheet Metal shelving							
	Sheet Metal venting, chimneys and breaching							
	Skylight installation							
Sheet Metal Workers, Region II (South of N63 latitude)								
	*See per diem note on last page							

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Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
Sheet Metal Workers, Region II (South of N63 latitude) *See per diem note on last page							
S1801	Sheet Metal Journeyman	47.05	12.55	14.90	2.01	L&M 0.43	76.94
	Air Balancing and duct cleaning of HVAC systems Brazing, soldering or welding of metals Demolition of sheet metal HVAC systems Fabrication and installation of exterior wall sheathing, siding, metal roofing, flashing, decking and architectural sheet metal work Fabrication and installation of heating, ventilation and air conditioning ducts and equipment Fabrication and installation of louvers and hoods Fabrication and installation of sheet metal lagging Fabrication and installation of stainless steel commercial or industrial food service equipment HVAC-R Service Mechanic, servicing and maintaining HVAC-R Systems Manufacture, fabrication assembly, installation and alteration of all ferrous and nonferrous metal work Metal lavatory partitions Preparation of drawings taken from architectural and engineering plans required for fabrication and erection of sheet metal work Sheet Metal shelving Sheet Metal venting, chimneys and breaching Skylight installation						
Sprinkler Fitters *See per diem note on last page							
A1901	Sprinkler Fitter	54.01	11.45	18.25	0.52	L&M 0.25	84.48
Surveyors *See per diem note on last page							
A2001	Chief of Parties	54.50	12.48	13.64	1.20	L&M 0.10	81.92
A2002	Party Chief	50.69	12.48	13.64	1.20	L&M 0.10	78.11
A2003	Line & Grade Technician/Office Technician/GPS, Drones	47.94	12.48	13.64	1.20	L&M 0.10	75.36
A2004	Associate Party Chief (including Instrument Person & Head Chain Person)/Stake Hop/Grademan	45.69	12.48	13.64	1.20	L&M 0.10	73.11

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Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
Surveyors							
	*See per diem note on last page						
						L&M	
A2006	Chain Person (for crews with more than 2 people)	41.09	12.48	13.64	1.20	0.10	68.51
Truck Drivers							
	*See per diem note on last page						
						L&M	
A2101	Group I, including:	46.84	12.48	13.64	1.20	0.10	74.26
	Air/Sea Traffic Controllers						
	Ambulance/Fire Truck Driver (EMT certified)						
	Boat Coxswain						
	Captains & Pilots (air & water)						
	Deltas, Commanders, Rollagons, & similar equipment (when pulling sleds, trailers or similar equipment)						
	Dump Trucks (including articulating end dumps, rockbuggy, side dump, belly dump, & trucks with pups) over 40 yards up to & including 60 yards						
	Fueler						
	Helicopter Transporter						
	Liquid Vac Truck/Super Vac Truck						
	Material Coordinator or Purchasing Agent						
	Oil Distributor Truck						
	Ready-mix (over 12 yards up to & including 15 yards) (over 15 yards to be negotiated)						
	Semi with Double Box Mixer						
	Tireman, Medium Duty (Truck Tires up to 1200-24")						
	Water Wagon (250 Bbls and above)						
						L&M	
A2102	Group 1A including:	48.19	12.48	13.64	1.20	0.10	75.61
	Dump Trucks (including rockbuggy, side dump, belly dump & trucks with pups) over 60 yards up to & including 100 yards (over 100 yards to be negotiated)						
	Jeeps (driver under load)						
	Lowboys, including tractor attached trailers & jeeps, up to & including 12 axles (over 12 axles or 150 tons to be negotiated)						
	Tireman Heavy Duty (earthmover tires, i.e., loader, scraper, haul truck)						
						L&M	
A2103	Group II, including:	45.51	12.48	13.64	1.20	0.10	72.93
	All Deltas, Commanders, Rollagons, & similar equipment						
	Batch Trucks (8 yards & up)						
	Batch Trucks (up to & including 7 yards)						
	Boom Truck/Knuckle Truck (over 5 tons)						
	Cacasco Truck/Heat Stress Truck						
	Construction and Material Safety Technician						

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
Truck Drivers *See per diem note on last page							
						L&M	
A2103	Group II, including:	45.51	12.48	13.64	1.20	0.10	72.93
	Dump Trucks (including articulating end dump, rockbuggy, side dump, belly dump, & trucks with pups) over 20 yards up to & including 40 yards						
	Gin Pole Truck, Winch Truck, Wrecker (truck mounted "A" frame manufactured rating over 5 tons)						
	Mechanics						
	Partsman						
	Ready-mix (up to & including 12 yards)						
	Stringing Truck						
	Turn-O-Wagon or DW-10 (not self loading)						
						L&M	
A2104	Group III, including:	44.64	12.48	13.64	1.20	0.10	72.06
	Boom Truck/Knuckle Truck (up to & including 5 tons)						
	Dump Trucks (including articulating end dump, rockbuggy, side dump, belly dump, & trucks with pups) over 10 yards up to & including 20 yards						
	Expeditor (electrical & pipefitting materials)						
	Gin Pole Truck, Winch Truck, Wrecker (truck mounted "A" frame manufactured rating 5 tons & under)						
	Greaser - Shop						
	Semi or Truck & Trailer						
	Thermal Plastic Layout Technician						
	Traffic Control Technician						
	Trucks/Jeeps (push or pull)						
						L&M	
A2105	Group IV, including:	44.02	12.48	13.64	1.20	0.10	71.44
	Air Cushion or similar type vehicle						
	All Terrain Vehicle						
	Buggymobile						
	Bull Lift & Fork Lift, Fork Lift with Power Boom & Swing Attachment (over 5 tons)						
	Bus Operator (over 30 passengers)						
	Cement Spreader, Dry						
	Combination Truck-Fuel & Grease						
	Compactor (when pulled by rubber tired equipment)						
	Dump Trucks (including rockbuggy, side dump, belly dump, & trucks with pups) up to & including 10 yards						
	Dumpster						
	Expeditor (general)						
	Fire Truck/Ambulance Driver						
	Flat Beds, Dual Rear Axle						
	Foam Distributor Truck Dual Axle						
	Front End Loader with Fork						

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
Truck Drivers							
	*See per diem note on last page						
						L&M	
A2105	Group IV, including:	44.02	12.48	13.64	1.20	0.10	71.44
	Grease Truck						
	Hydro Seeder, Dual Axle						
	Hyster Operators (handling bulk aggregate)						
	Loadmaster (air & water operations)						
	Lumber Carrier						
	Ready-mix, (up to & including 7 yards)						
	Rigger (air/water/oilfield)						
	Tireman, Light Duty						
	Track Truck Equipment						
	Truck Vacuum Sweeper						
	Warehouseperson						
	Water Truck (Below 250 Bbls)						
	Water Truck (straight)						
	Water Wagon, Semi						
						L&M	
A2106	Group V, including:	43.22	12.48	13.64	1.20	0.10	70.64
	Buffer Truck						
	Bull Lifts & Fork Lifts, Fork Lifts with Power Boom & Swing Attachments (up to & including 5 tons)						
	Bus Operator (up to 30 passengers)						
	Farm Type Rubber Tired Tractor (when material handling or pulling wagons on a construction project)						
	Flat Beds, Single Rear Axle						
	Foam Distributor Truck Single Axle						
	Fuel Handler (station/bulk attendant)						
	Gear/Supply Truck						
	Gravel Spreader Box Operator on Truck						
	Hydro Seeder, Single Axle						
	Pickups (pilot cars & all light-duty vehicles)						
	Rigger						
	Swamper						
	Tack Truck (welders/gear)						
	Team Drivers (horses, mules, & similar equipment)						
Tunnel Workers, Laborers (The Alaska areas north of N63 latitude and east of W138 longitude)							
	*See per diem note on last page						
						L&M	**LEG**
N2201	Group I, including:	39.60	9.55	21.16	1.65	0.30	0.20	72.46
	Brakeman						
	Mucker						

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Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
	Tunnel Workers, Laborers (The Alaska areas north of N63 latitude and east of W138 longitude) *See per diem note on last page							
						L&M	**LEG**	
N2201	Group I, including:	39.60	9.55	21.16	1.65	0.30	0.20	72.46
	Nipper Storm Water Pollution Protection Plan Worker (SWPPP Worker - erosion and sediment control Laborer) Topman & Bull Gang Tunnel Track Laborer							
						L&M	**LEG**	
N2202	Group II, including:	40.70	9.55	21.16	1.65	0.30	0.20	73.56
	Burning & Cutting Torch Certified Erosion Sediment Control Lead (CESCL Laborer) Concrete Laborer Floor Preparation, Core Drilling Jackhammer/Chipping Gun or Pavement Breaker Laser Instrument Operator Nozzlemen, Pumpcrete or Shotcrete Pipelayer Helper							
						L&M	**LEG**	
N2203	Group III, including:	41.69	9.55	21.16	1.65	0.30	0.20	74.55
	Miner Retimberman							
						L&M	**LEG**	
N2204	Group IIIA, including:	45.96	9.55	21.16	1.65	0.30	0.20	78.82
	Asphalt Raker, Asphalt Belly Dump Lay Down Drill Doctor (in the field) Driller (including, but not limited to wagon drills, air-track drills, hydraulic drills) Pioneer Drilling & Drilling Off Tugger (all type drills) Pipelayer Powderman (Employee Possessor) Storm Water Pollution Protection Plan Specialist (SWPPP Specialist) Traffic Control Supervisor, DOT Qualified							
						L&M	**LEG**	
N2206	Group IIIB, including:	52.10	5.50	21.16	1.65	0.30	0.20	80.91
	Driller (including, but not limited to wagon drills, air-track drills, hydraulic drills)(over 5,000 hours) Federal Powderman (Responsible Person in Charge) Grade Checking (setting or transferring of grade marks, line and grade, GPS, drones) Pioneer Drilling & Drilling Off Tugger (all type drills)(over 5,000 hours) Stake Hopper							

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
	Tunnel Workers, Laborers (The area that is south of N63 latitude and west of W138 longitude) *See per diem note on last page							
						L&M	**LEG**	
S2201	Group I, including:	39.60	9.55	21.16	1.65	0.30	0.20	72.46
	Brakeman Mucker Nipper Storm Water Pollution Protection Plan Worker (SWPPP Worker - erosion and sediment control Laborer) Topman & Bull Gang Tunnel Track Laborer							
						L&M	**LEG**	
S2202	Group II, including:	40.70	9.55	21.16	1.65	0.30	0.20	73.56
	Burning & Cutting Torch Certified Erosion Sediment Control Lead (CESCL Laborer) Concrete Laborer Floor Preparation, Core Drilling Jackhammer/Chipping Gun or Pavement Breaker Laser Instrument Operator Nozzlemen, Pumpcrete or Shotcrete Pipelayer Helper							
						L&M	**LEG**	
S2203	Group III, including:	41.69	9.55	21.16	1.65	0.30	0.20	74.55
	Miner Retimberman							
						L&M	**LEG**	
S2204	Group IIIA, including:	45.96	9.55	21.16	1.65	0.30	0.20	78.82
	Asphalt Raker, Asphalt Belly Dump Lay Down Drill Doctor (in the field) Driller (including, but not limited to wagon drills, air-track drills, hydraulic drills) Pioneer Drilling & Drilling Off Tugger (all type drills) Pipelayer Powderman (Employee Possessor) Storm Water Pollution Protection Plan Specialist (SWPPP Specialist) Traffic Control Supervisor, DOT Qualified							
						L&M	**LEG**	
S2206	Group IIIB, including:	52.10	5.50	21.16	1.65	0.30	0.20	80.91
	Driller (including, but not limited to wagon drills, air-track drills, hydraulic drills)(over 5,000 hours) Federal Powderman (Responsible Person in Charge) Grade Checking (setting or transferring of grade marks, line and grade, GPS, drones) Pioneer Drilling & Drilling Off Tugger (all type drills)(over 5,000 hours)							

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
Tunnel Workers, Laborers (The area that is south of N63 latitude and west of W138 longitude) *See per diem note on last page								
						L&M	LEG	
S2206	Group IIIB, including:	52.10	5.50	21.16	1.65	0.30	0.20	80.91
	Stake Hopper							
Tunnel Workers, Power Equipment Operators *See per diem note on last page								
						L&M		
A2207	Group I	52.51	11.40	14.75	1.00	0.10	0.05	79.81
						L&M		
A2208	Group IA	54.60	11.40	14.75	1.00	0.10	0.05	81.90
						L&M		
A2209	Group II	51.60	11.40	14.75	1.00	0.10	0.05	78.90
						L&M		
A2210	Group III	50.74	11.40	14.75	1.00	0.10	0.05	78.04
						L&M		
A2211	Group IV	43.36	11.40	14.75	1.00	0.10	0.05	70.66

*** Per diem is an established practice for this classification. This means that per diem is an allowable alternative to board and lodging if all criteria are met. See 8 AAC 30.051-08 AAC 30.056, and the per diem information on page vii of this Pamphlet.**

**** Work in combination of classifications: Employees working in any combination of classifications within the diving crew (working diver, standby diver, and tender) in a shift are paid in the classification with the highest rate for a minimum of 8 hours per shift.**

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Shipyard Rates Addendum

This Addendum was developed to address the specialized industry of shipbuilding/repair in Alaska, as it relates to public works. For the purposes of providing rates for shipyard work the Department is adopting Shipyard rates from the state of Washington (King County). These rates only apply to work done in shipbuilding/repair in Alaska, under a public contract. This addendum will be updated two times a year to coincide with the corresponding Issue of *Laborers and Mechanics MINIMUM RATES OF PAY.*

Class Code		BHR H&W PEN TRN Other Benefits THR
Shipyard Workers *See total hourly(THR) note below		
A2300	Ship Building/Repair Boilermaker	50.35
A2305	Ship Building/Repair Carpenter	50.95
A2310	Ship Building/Repair Crane Operator	45.06
A2315	Ship Building/Repair Electrician	50.42
A2320	Ship Building/Repair Heat & Frost Insulator	84.84
A2325	Ship Building/Repair Laborer	50.95
A2330	Ship Building/Repair Mechanist	50.95
A2335	Ship Building/Repair Operating Engineer	45.06
A2340	Ship Building/Repair Painter	50.95
A2345	Ship Building/Repair Pipefitter	50.95
A2350	Ship Building/Repair Rigger	50.35
A2355	Ship Building/Repair Sheet Metal	50.35
A2360	Ship Building/Repair Shipwright	50.95
A2365	Ship Building/Repair Warehouse	45.06

***The THR includes the base hourly rate (BHR) and fringe benefits. Employers must pay a BHR and fringe benefit package that adds up to the THR. Fringe benefits included in the THR can be paid to employees in three ways; paid into a union trust fund, into an approved benefit plan, or paid directly on the paycheck as gross wage**s.

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Title 36
Public Contracts

Wage and Hour Administration Pamphlet 400

Statutes
Regulations

January 2021

Alaska Department of Labor
and Workforce Development
Labor Standards and Safety Division

Jobs

ALASKA DEPARTMENT OF LABOR
& WORKFORCE DEVELOPMENT

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If you would like to receive Wage and Hour Administration **regulation notices** or **publications information**, they are available via electronic mail, by signing up in the GovDelivery System, https://public.govdelivery.com/accounts/AKDOL/subscriber/new and selecting topics *LSS – Wage and Hour – Forms and Publications* or *LSS – Wage and Hour Regulations*.

Publications are also available online at http://labor.alaska.gov/lss/home.htm

The Alaska Department of Labor and Workforce Development is focused on putting Alaskans to work. An important part of that mission is to ensure that working conditions and wage payment practices are legal. This publication, *Pamphlet 400, Title 36, Public Contracts*, is designed to assist employers and employees by providing the applicable laws and regulations.

This pamphlet is set out in two sections. The first section contains the Alaska Statutes (pages 1-9), and the second section contains the Alaska Administrative Code or regulations (pages 10-23). The index of topics on page 24 should provide assistance in locating all of the places a particular topic is referenced.

When reviewing the subjects contained in this pamphlet, keep in mind that the statutes carry the greater weight. The regulations have been established to further clarify and interpret language used in the statutes.

Many wage and hour issues are complex. Please take advantage of the Wage and Hour Administration's cost-free counseling services to answer your questions regarding this pamphlet and Alaska's labor laws. You may call or come in to the nearest Wage and Hour Administration office, Monday through Friday, during regular business hours and a wage and hour investigator will be happy to assist you. Addresses and phone numbers for these offices are listed on the first page of this pamphlet.

For additional copies of this pamphlet, contact the nearest Wage and Hour Administration office in Anchorage, Juneau, or Fairbanks, or you may download and print this pamphlet from our internet site at: http://labor.alaska.gov/lss/forms/Pam400.pdf

TITLE 36. Public Contracts

Wage and Hour Administration

Pamphlet 400 - Statutes and Regulations

January 2021

State of Alaska

Alaska Department of Labor and Workforce Development

Labor Standards and Safety Division

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Disclaimer:

Note to Readers: The statutes and administrative regulations listed in this publication were taken from the official codes, as of the effective date of the publication. However, there may be errors or omissions that have not been identified and changes that occurred after the publication was printed. **This publication is intended as an informational guide only and is not intended to serve as a precise statement of the statutes and regulations of the State of Alaska. To be certain of the current laws and regulations, please refer to the official codes.**

ALASKA STATUTES
TITLE 36. PUBLIC CONTRACTS

CHAPTER 05. WAGES AND HOURS OF LABOR.

Section:

05. Applicability
10. Wage rates on public construction
20. Basis for determining wage
30. Authority
35. Notification of contract awards
40. Filing schedule of employees, wages paid, and other information
45. Notice of work and completion; withholding of payment
60. Penalty for violation of this chapter
70. Wage rates in specifications and contacts for public works
80. Failure to pay agreed wages
90. Payment of wages from withheld payments and listing contractors who violate contracts
100. Effect of AS 36.05.070-36.05.110 on other laws
110. Contracts entered into without advertising

This chapter was modeled after the federal Davis-Bacon Act. 40 U.S.C. § 276a et seq. *Fowler v. City of Anchorage*, Sup. Ct. Op. No. 1699 (File No. 3586), 583 p.2d 817 (1978).

Sec. 36.05.005. Applicability.
This chapter applies only to a public construction contract that exceeds $25,000.
(§ 1 ch 28 SLA 2011)

Sec. 36.05.010. Wage rates on public construction.
A contractor or subcontractor who performs work on a public construction contract in the state shall pay not less than the current prevailing rate of wages for work of a similar nature in the region in which the work is done. The current prevailing rate of wages is that contained in the latest determination of prevailing rate of wages issued by the Department of Labor and Workforce Development at least 10 days before the final date for submission of bids for the contract. The rate shall remain in effect for the life of the contract or for 24 calendar months, whichever is shorter. At the end of the initial 24-month period, if new wage determinations have been issued by the department, the latest wage determination shall become effective for the next 24-month period or until the contract is completed whichever occurs first. This process shall be repeated until the contract is completed.
(§ 14-2-1 ACLA 1949; am § 1 ch 142 SLA 1972; am § 1 ch 89 SLA 1976; am § 1 ch 69 SLA 1993; am § 1 ch 28 SLA 2011)

Sec. 36.05.020. Basis for determining wage.
A subcontract that is performed on public construction may be reduced to a basis of day labor for the purpose of determining whether or not the subcontractor or contractors have paid at not less than the prevailing scale of wage.
(§ 14-2-2 ACLA 1949)

Sec. 36.05.030. Authority; investigations; hearings; regulations; enforcement.
(a) The Department of Labor and Workforce Development has the authority to determine the prevailing wage, and whether or not this chapter is being violated. The department may when necessary for the enforcement of this chapter
(1) conduct investigations and hold hearings concerning wages;
(2) compel the attendance of witnesses and the production of books, papers and documents;
(3) adopt regulations.
(b) If a person violates this chapter the attorney general shall, when requested by the Department of Labor and Workforce Development, enforce these provisions.
(§ 14-2-3 ACLA 1949; am § 2 ch 142 SLA 1972)

Sec. 36.05.035. Notification of contract awards.
Upon awarding a public construction contract, the state or a political subdivision of the state shall
(1) immediately notify the commissioner of labor and workforce development of the amount of the contract, the effective date of the contract, the identity of the contractor and all subcontractors, the site or sites of construction and provide a project description; and
(2) verify that the bonding requirements of AS 36.25 have been met and that the requirements of AS 08.18 have been met.
(§ 3 ch 142 SLA 1972)

Sec. 36.05.040. Filing schedule of employees, wages paid, and other information.
All contractors or subcontractors who perform work on a public construction contract for the state or for a political subdivision of the state shall, before the Friday of every second week, file with the Department of Labor and Workforce Development a sworn affidavit for the previous reporting period, setting out in detail the number of persons employed, wages paid, job classification of each employee, hours worked each day and week, and other information on a form provided by the Department of Labor and Workforce Development.
(§ 14-2-4 ACLA 1949; am § 4 ch 142 SLA 1972; am § 1 ch 111 SLA 2003)

Sec. 36.05.045. Notice of work and completion; withholding of payment.

(a) Before commencing work on a public construction contract, the person entering into the contract with a contracting agency shall designate a primary contractor for purposes of this section. Before work commences, the primary contractor shall file a notice of work with the Department of Labor and Workforce Development. The notice of work must list work to be performed under the public construction contract by each contractor who will perform any portion of work on the contract and the contract price being paid to each contractor. The primary contractor shall pay all filing fees for each contractor performing work on the contract, including a filing fee based on the contract price being paid for work performed by the primary contractor's employees. The filing fee payable shall be the sum of all fees calculated for each contractor. The filing fee shall be one percent of each contractor's contract price. The total filing fee payable by the primary contractor under this subsection may not exceed $5,000. In this subsection, "contractor" means an employer who is using employees to perform work on the public construction contract under the contract or a subcontract.

(b) Upon completion of all work on the public construction contract, the primary contractor shall file with the Department of Labor and Workforce Development a notice of completion together with payment of any additional filing fees owed due to increased contract amounts. Within 30 days after the department's receipt of the primary contractor's notice of completion, the department shall inform the contracting agency of the amount, if any, to be withheld from the final payment.

(c) A contracting agency

(1) may release final payment on a public construction contract to the extent that the agency has received verification from the Department of Labor and Workforce Development that

(A) the primary contractor has complied with (a) and (b) of this section;

(B) the Department of Labor and Workforce Development is not conducting an investigation under this title; and

(C) the Department of Labor and Workforce Development has not issued a notice of a violation of this chapter to the primary contractor or any other contractors working on the public construction contract; and

(2) shall withhold from the final payment an amount sufficient to pay the department's estimate of what may be needed to compensate the employees of any contractors under investigation on this construction contract, and any unpaid filing fees.

(d) The notice and filing fee required under (a) of this section may be filed after work has begun if

(1) the public construction contract is for work undertaken in immediate response to an emergency; and

(2) the notice and fees are filed not later than 14 days after the work has begun.

(e) A false statement made on a notice required by this section is punishable under AS 11.56.210.

(§ 2 ch 111 SLA 2003; am § 1 ch 28 SLA 2011)

Sec. 36.05.050. Hours to constitute day's work. *[Repealed by § 1 ch 3 SLA 1973.]*

Sec. 36.05.060. Penalty for violation of this chapter.

A contractor who violates this chapter is guilty of a misdemeanor, and upon conviction is punishable by a fine of not less than $100 nor more than $1,000, or by imprisonment for not less than 10 days nor more than 90 days, or by both. Each day a violation exists constitutes a separate offense.

(§ 14-2-6 ACLA 1949; am § 6 ch 142 SLA 1972)

Sec. 36.05.070. Wage rates in specifications and contracts for public works.

(a) The advertised specifications for a public construction contract that requires or involves the employment of mechanics, laborers, or field surveyors must contain a provision stating the minimum wages to be paid various classes of laborers, mechanics, or field surveyors and that the rate of wages shall be adjusted to the wage rate under AS 36.05.010.

(b) *Repealed by § 17 ch 142 SLA 1972.*

(c) A public construction contract under (a) of this section must contain provisions that

(1) the contractor or subcontractors of the contractor shall pay all employees unconditionally and not less than once a week;

(2) wages may not be less than those stated in the advertised specifications, regardless of the contractual relationship between the contractor or subcontractors and laborers, mechanics, or field surveyors;

(3) the scale of wages to be paid shall be posted by the contractor in a prominent and easily accessible place at the site of the work;

(4) the state or a political subdivision shall withhold so much of the accrued payments as is necessary to pay to laborers, mechanics, or field surveyors employed by the contractor or subcontractors the difference between

(A) the rates of wages required by the contract to be paid laborers, mechanics, or field surveyors on the work; and

(B) the rates of wages in fact received by laborers, mechanics or field surveyors.

(§ 1 ch 52 SLA 1959; am §§ 7, 8, 17 ch 142 SLA 1972; am § 2 ch 89 SLA 1976; am § 1 ch 28 SLA 2011)

Sec. 36.05.080. Failure to pay agreed wages.

Every contract within the scope of AS 36.05.070 shall contain a provision that if it is found that a laborer, mechanic, or field surveyor employed by the contractor or subcontractor has been or is being paid a rate of wages less than the rate of wages required by the contract to be paid, the state or its political subdivision may, by written notice to the contractor, terminate the contractor's right to

proceed with the work or the part of the work for which there is a failure to pay the required wages and to prosecute the work to completion by contract or otherwise, and the contractor and the contractor's sureties are liable to the state or its political subdivision for excess costs for completing the work.
(§2 Ch 52 SLA 1959)

Sec. 36.05.090. Payment of wages from withheld payments and listing contractors who violate contracts.

(a) The state disbursing officer in the case of a state public construction contract and the local fiscal officer in the case of a political subdivision public construction contract shall pay directly to laborers, mechanics, or field surveyors from accrued payments withheld under the terms of the contract the wages due laborers, mechanics, or field surveyors under AS 36.05.070.

(b) The state disbursing officer or the local fiscal officer shall distribute to all departments of the state government and to all political subdivisions of the state a list giving the names of persons who have disregarded their obligations to employees. A person appearing on this list and a firm, corporation, partnership or association in which the person has an interest may not work as a contractor or subcontractor on a public construction contract for the state or a political subdivision of the state until three years after the date of publication of the list. If the accrued payments withheld under the contract are insufficient to reimburse all the laborers, mechanics, or field surveyors with respect to whom there has been a failure to pay the wages required under AS 36.05.070, the laborers, the mechanics or field surveyors have the right of action or intervention or both against the contractor and the contractor's sureties conferred by law upon persons furnishing labor or materials, and in the proceedings it is not a defense that the laborers, mechanics or field surveyors accepted or agreed to accept less than the required rate of wages or voluntarily made refunds.
(§ 3 ch 52 SLA 1959; am § 9 ch 142 SLA 1972; am § 1 ch 28 SLA 2011)

Sec. 36.05.100. Effect of AS 36.05.070 - 36.05.110 on other laws.
AS 36.05.070 - 36.05.110 do not supersede or impair authority granted by state law to provide for the establishment of specific wage rates.
(§ 4 ch 52 SLA 1959; am § 10 ch 142 SLA 1972)

Sec. 36.05.110. Contracts entered into without advertising.
The fact that a public construction contract authorized by law is entered into upon a cost-plus-a-fixed-fee basis or otherwise, without advertising for proposals, does not make AS 36.05.070 - 36.05.110 inapplicable if those sections are otherwise applicable to the contract.
(§ 5 ch 52 SLA 1959; am § 1 ch 28 SLA 2011)

Sec. 36.05.120. Regulations governing contractors.
[Repealed by § 17 ch 142 SLA 1972.]

ARTICLE 2. GENERAL PROVISIONS

Section:
900. Definition

Sec. 36.05.900. Definition.
In this chapter, “contracting agency” means the state or a political subdivision of the state that has entered into a public construction contract with a contractor.
(§ 3 ch 111 SLA 2003)

CHAPTER 10. EMPLOYMENT PREFERENCE

Section:
05. Legislative Findings
07. State policy
20. Apprentices
30. Reduction of work force
40. Application to contracts involving federal funds
70. Unavailability of preferred workers
75. Duties of commissioner of Labor and Workforce Development
76. Duties of state or political subdivision
80. Chapter incorporated in contracts
90. Publication of list of violators
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120. Investigations and hearings 900. Effect of judicial decisions
125. Enforcement
130. Resident hire report
140. Eligibility for preference
150. Determination of zone of underemployment
160. Preference for residents of economically distressed zones (Deleted)
170. Preference for economically disadvantaged minority residents (Deleted)
175. Preference for economically disadvantaged female (Deleted)
180. Projects subject to preference
190. Reporting provisions
200. Criminal penalties
210. Civil penalties
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990. Definitions

Sec. 36.10.005. Legislative findings.

(a) The legislature finds that

(1) because of its unique climate and its distance from the contiguous states, the state has historically suffered from unique social, seasonal, geographic, and economic conditions that result in an unstable economy;

(2) the unstable economy is a hardship on the residents of the state and is aggravated by the large numbers of seasonal and transient nonresident workers;

(3) the rate of unemployment among residents of the state is one of the highest in the nation;

(4) the state has one of the highest ratios of nonresident to resident workers in the nation;

(5) the state has a compelling interest in reducing the level of unemployment among its residents;

(6) the construction industry in the state accounts for a substantial percentage of the available employment;

(7) construction workers receive a greater percentage of all unemployment benefits paid by the state than is typical of other states;

(8) historically, the rate of unemployment in the construction industry in the state is higher than the rate of unemployment in other industries in the state;

(9) it is appropriate for the state to consider the welfare of its residents when it funds construction activity;

(10) it is in the public interest for the state to allocate public funds for capital projects in order to reduce unemployment among its resident construction workers;

(11) the influx of nonresident construction workers contributes to or causes the high unemployment rate among resident construction workers because nonresident workers compete with residents for the limited number of available construction jobs;

(12) nonresident workers displace a substantial number of qualified, available, and unemployed Alaska workers on jobs on state funded public works projects;

(13) the state has a special interest in seeing that the benefits of state construction spending accrue to its residents;

(14) the natural resources of land owned by the state belong to the citizens of the state;

(15) Alaskans have chosen to use the majority of the royalties derived from the state's natural resources to fund state government;

(16) the vast majority of the state's revenue is derived from natural resource income rather than from other forms of taxation;

(17) because the state has no personal income tax or sales tax, nonresident workers use services provided by the state but do not contribute fairly to the costs of those services; and

(18) Alaskans, more than the residents of other states, suffer economically when nonresidents displace qualified residents since resident workers contribute local taxes as well as their share of the royalties from natural resources.

(b) The legislature further finds that

(1) the state and its political subdivisions, when acting as a market participant in funding public works projects, should give Alaska residents an employment preference to promote a more stable economy;

(2) the state and its political subdivisions have a duty of loyalty to their citizens and should fulfill this duty by giving residents preference for employment on public works projects they fund;

(3) there is a legitimate and compelling governmental interest and that the public health and welfare will suffer if state residents are not afforded employment preference in state funded construction related work.

(c) The legislature finds that the following factors are reasonable but not exclusive indicators of the ratio of nonresident to resident employees in the state:

(1) the ratio of applicants for unemployment insurance who list out-of-state residences to applicants who list residences in the state;

(2) the ratio of employees who are subject to unemployment insurance coverage and who did not apply for or were denied a permanent fund dividend to employees who were found eligible for a dividend.

(d) The legislature finds that

(1) the number of state residents who are unable to find work is considerably higher than is reflected by unemployment rates based on nationally accepted measures;

(2) many rural state residents who wish to work do not seek employment as frequently as necessary to meet federal definitions of unemployment because of continuing lack of employment opportunities in rural areas of the state.

(§ 1 ch 69 SLA 1985; am § 2 ch 33 SLA 1986)

Sec. 36.10.006. Statement of purpose.
[Repealed § 16 ch 20 SLA 2002.]

Sec. 36.10.007. State policy.
It is the policy of this state that, to fulfill the duty of loyalty owed to its citizens and to remedy social or economic problems, the state will grant an employment preference to residents when the state is acting as a market participant.
(§ 1 ch 69 SLA 1985)

Sec. 36.10.010. Employment preference.
[Repealed § 11 ch 33 SLA 1986.]

Sec. 36.10.020. Apprentices.
Apprentices must be properly registered apprentices in their particular craft.
(§ 1c ch 177 SLA 1960)

Sec. 36.10.030. Reduction of work force.
When a work force is reduced, resident workers, except supervisory personnel, shall be terminated last.
(§ 1d ch 177 SLA 1960)

Sec. 36.10.040. Application to contracts involving federal funds.
In a contract involving expenditure of federal aid funds, this chapter may not be enforced in a manner that conflicts with federal statutes giving preference to veterans or prohibiting other preferences or discriminations among United States citizens.
(§ 2 ch 177 SLA 1960)

Sec. 36.10.050. Employment of aliens.
[Repealed by § 17 ch 142 SLA 1972.]

Sec. 36.10.060. Employment of prisoners.
[Repealed by § 6 ch 53 SLA 1982.]

Sec. 36.10.070. Unavailability of preferred workers.

(a) An employer subject to hiring requirements under this chapter may request the Department of Labor and Workforce Development to assist in locating qualified, eligible employees. After receiving a request for assistance, the department shall refer qualified, eligible, available residents to the employer to fill the employer's hiring needs. The employer shall cooperate with the department.

(b) If the department is unable to refer a sufficient number of qualified, eligible, available residents able to perform the work, the commissioner of labor may approve the hiring of residents who are not eligible for preference and nonresidents for the balance of the request.

(§ 5 ch 177 SLA 1960; am § 2 ch 208 SLA 1972; am § 3 ch 33 SLA 1986)

Sec. 36.10.075. Regulations.

(a) The commissioner of labor and workforce development shall adopt regulations necessary to carry out the provisions of this chapter including but not limited to the method, time and content of reporting by employers covered by this chapter and reporting provisions permitting on-going supervision by the Department of Labor and Workforce Development on all public works projects covered by this chapter.

(b) The commissioner of labor and workforce development shall adopt regulations to encourage and require the hiring of residents to the maximum extent permitted by law.

(§ 3 ch 208 SLA 1972; am § 4 ch 33 SLA 1986)

Sec. 36.10.076. Notifications by state or political subdivision.

An agency or political subdivision of the state covered by the provisions of this chapter shall notify the Department of Labor and Workforce Development periodically regarding planned public works. Notification shall be in the form and manner prescribed by the Department of Labor and Workforce Development.

(§ 3 ch 208 SLA 1972)

Sec. 36.10.080. Chapter incorporated in contracts.

The provisions of this chapter are considered to be a part of every public works contract.

(§ 6 ch 177 SLA 1960; am § 16 ch 9 SLA 2014)

Sec. 36.10.090. Publication of list of violators.

(a) The commissioner of labor and workforce development shall distribute to all departments and agencies of the state government and to all political subdivisions of the state a list of the names of persons or firms convicted of a violation of this chapter. A person appearing on the list or a firm, corporation, partnership or association in which the person has an interest may not work as a contractor or subcontractor on a public construction contract for the state or a political subdivision until after three years from the date of publication of the list.

(b) A local government or school district covered by the provisions of this chapter that is found to be in violation of these provisions may be required to forfeit all or part of the state aid made available for the project in which the violation occurs and in addition may be denied up to 12 months of state community assistance or public school funding. A state department or agency head found to be in violation of this chapter may be required to forfeit the position of the department or agency head.

(c) A person or governmental entity covered by the provisions of (b) of this section who is not satisfied by a decision of the Department of Labor and Workforce Development may, as the final administrative process, appeal the decision to a committee consisting of the commissioners of transportation and public facilities, labor, and workforce development, and administration.

The commissioner of transportation and public facilities is the chairman of the committee. A quorum for conducting business is three members and any decision made must be supported by a majority of the committee members. The committee may, upon a showing of hardship, waive all or any part of the penalty provisions of this chapter.

(§ 7 ch 177 SLA 1960; am § 12 ch 142 SLA 1972; am § 4 ch 208 SLA 1972; am E.O. No. 39, § 11 (1977); am § 35 ch 83 SLA 1998; am § 13 ch 44 SLA 2016)

Sec. 36.10.100. Retainage and Penalty.

(a) A contractor who violates a provision of this chapter shall have deducted from amounts due to the contractor under the contract the prevailing wages that should have been paid to a displaced resident, and these amounts shall be retained by the contracting agency.

(b) A contractor or the agent of a contractor who violates a provision of this chapter is guilty of a misdemeanor, and upon conviction is punishable by a fine of not more than $500, or by imprisonment for not more than 90 days, or by both. (§ 8 ch 177 SLA 1960)

Sec. 36.10.110. Definitions.

[Repealed by § 17 ch 142 SLA 1972.]

Sec. 36.10.120. Investigations and hearings.

The Department of Labor and Workforce Development may, when necessary to enforce this chapter,

(1) conduct investigations and hold hearings relating to employment preference;

(2) compel the attendance of witnesses and the production of books, papers and documents;

(§ 13 ch 142 SLA 1972; am § 46 ch 53 SLA 1973)

Sec. 36.10.125. Enforcement.

(a) The attorney general shall, when requested by the Department of Labor and Workforce Development, enforce the provisions of this chapter. The attorney general may obtain a court order prohibiting a contractor or subcontractor violating this chapter from continuing to work on existing public construction contracts of the state or a political subdivision of the state. The state or political subdivision of the state may prosecute the work to

completion by contract or otherwise, and the contractor or subcontractor and the sureties of the contractor or subcontractor are liable for excess costs for completing the work.

(b) A private person is entitled to bring an action in the superior court to enforce the provisions of this chapter if that private person first gives at least 20 days notice to the commissioner of labor and workforce development. The notice must set out

(1) the intent of the private person to bring an action under this subsection;

(2) the specific violation complained of; and

(3) the name of the person accused of the violation.

(c) In an action brought under (b) of this section, the court may, in its discretion, order denial of state community assistance, revenue sharing, or public school funding, forfeiture of office or position, or injunctive or other relief. If the court finds for the plaintiff in an action brought under (b) of this section, it may award the plaintiff an amount equal to the actual costs and attorney fees incurred by the plaintiff.

(§ 13 ch 142 SLA 1972; am § 1 ch 183 SLA 1976; am § 36 ch 83 SLA 1998; am § 14 ch 44 SLA 2016)

Sec. 36.10.130. Resident hire report.

The attorney general and the commissioner of labor and workforce development shall report annually to the governor on the status of employment in the state, the effect of nonresident employment on the employment of residents in the state, and methods to increase resident hire. The report shall be submitted by January 31 of each year, and the governor shall notify the legislature that the report is available.

(§ 5 ch 33 SLA 1986; am § 55 ch 21 SLA 1995)

Sec. 36.10.140. Eligibility for preference; approval of job-training programs.

(a) A person is eligible for an employment preference under this chapter if the person certifies eligibility as required by the Department of Labor and Workforce Development, is a resident, and

(1) is receiving unemployment benefits under AS 23.20 or would be eligible to receive benefits but has exhausted them;

(2) is not working and has registered to find work with a public or private employment agency or a local hiring hall;

(3) is underemployed or marginally employed as defined by the department; or

(4) has completed a job-training program approved by the department and is either not employed or is engaged in employment that does not use the skills acquired in the job-training program.

(b) In approving job-training programs under (a) of this section, the department shall use information and findings from other state and federal agencies as much as possible.

(c) An employer subject to a resident hiring requirement under this chapter shall certify that persons employed as residents under the preference were eligible for the preference at the time of hiring.

(d) A labor organization that dispatches members for work on a public works project under a collective bargaining agreement shall certify that persons dispatched as residents to meet a preference were eligible for the preference at the time of dispatch.

(e) An employer or labor organization may request assistance from the Department of Labor and Workforce Development in verifying the eligibility of an applicant for a hiring preference under this chapter.

(§ 5 ch 33 SLA 1986)

Sec. 36.10.150. Determination of zone of underemployment.

(a) Immediately following a determination by the commissioner of labor and workforce development that a zone of underemployment exists, and for the next two fiscal years after the determination, qualified residents of the zone who are eligible under AS 36.10.140 shall be given preference in hiring for work on each project under AS 36.10.180 that is wholly or partially sited within the zone. The preference applies on a craft-by-craft or occupational basis.

(b) The commissioner of labor and workforce development shall determine the amount of work that must be performed under this section by qualified residents who are eligible for an employment preference under AS 36.10.140. In making this determination, the commissioner shall consider the nature of the work, the classification of workers, availability of eligible residents, and the willingness of eligible residents to perform the work.

(c) The commissioner shall determine that a zone of underemployment exists if the commissioner finds that

(1) the rate of unemployment within the zone is substantially higher than the national rate of unemployment;

(2) a substantial number of residents in the zone have experience or training in occupations that would be employed on a public works project;

(3) the lack of employment opportunities in the zone has substantially contributed to serious social or economic problems in the zone; and

(4) employment of workers who are not residents is a peculiar source of the unemployment of residents of the zone. (§ 5 ch 33 SLA 1986)

Sec. 36.10.180. Projects subject to preference.

(a) The preferences established in AS 36.10.150 - 36.10.175 apply to work performed

(1) under a contract for construction, repair, preliminary surveys, engineering studies, consulting, maintenance work, or any other retention of services necessary to complete a given project that is let by the state or any agency of the state, a department, office, state board, commission, public corporation, or other organizational unit of or created under the executive, legislative or judicial branch of state government,

including the University of Alaska and the Alaska Railroad Corporation, or by a political subdivision of the state including a regional school board with respect to an educational facility under AS 14.11.020;

(2) on a public works project under a grant to a municipality under AS 37.05.315 or AS 37.06.010;

(3) on a public works project under a grant to a named recipient under AS 37.05.316;

(4) on a public works project under a grant to an unincorporated community under AS 37.05.317 or AS 37.06.020; and

(5) on any other public works project or construction project that is funded in whole or in part by state money.

(b) If the governor has declared an area to be an area impacted by an economic disaster under AS 44.33.285, then the preference for residents of the area established under AS 44.33.285 - 44.33.310 supersedes the preference under AS 36.10.150 - 36.10.175 for contracts awarded by the state.

(c) The commissioner shall define the boundaries of a zone within which a preference applies.
(§ 5 ch 33 SLA 1986; am § 2 ch 80 SLA 1993)

Sec. 36.10.190. Reporting provisions.
An employer obligated to meet resident hire requirements under this chapter shall comply with the reporting provisions that the commissioner of labor and workforce development determines are reasonably necessary to carry out this chapter. Except for statistical data, all information regarding specific employees is confidential and may not be released by the Department of Labor and Workforce Development. However, confidential employee information may be shared between departments for purposes of this chapter.
(§ 5 ch 33 SLA 1986)

Sec. 36.10.200. Criminal penalties.

(a) A person who makes a false sworn statement in connection with a certification of eligibility for an employment preference under this chapter is subject to criminal prosecution for perjury as provided in AS 11.56.200.

(b) A person who makes an unsworn falsification, with the intent to mislead a public servant in the performance of a duty, in connection with a certification of eligibility for an employment preference under this chapter, is subject to criminal prosecution as provided in AS 11.56.210.
(§ 5 ch 33 SLA 1986)

Sec. 36.10.210. Civil penalties.

(a) In addition to any criminal penalties imposed, after a hearing the department may impose a civil penalty on a person who, in connection with certification of eligibility for an employment preference under this chapter,

(1) made a false sworn statement; or

(2) made an unsworn falsification with intent to mislead a public servant in the performance of a duty.

(b) The amount of the civil penalty under (a) of this section for a person who falsely certifies that the person is eligible for an employment preference under this chapter is not more than $400 for each false certification.

(c) The amount of the civil penalty under (a) of this section for an employer who falsely certifies that employees are residents eligible for a preference under this chapter is not more than $2,000 for each of the first five false certifications. The penalty for the sixth false certification made by an employer and for each false certification thereafter is at least $2,000 and not more than $4,000.
(§ 5 ch 33 SLA 1986)

Sec. 36.10.900. Severability.
If a provision of this chapter, or the application of a provision to a person or circumstance, is held invalid, the remainder of this chapter and the application to other persons or circumstances shall not be affected by the holding. The remainder shall be enforced to the greatest extent constitutionally permissible under the constitutions of the United States and the State of Alaska.
(§ 5 ch 33 SLA 1986)

Sec. 36.10.990. Definitions.
In this chapter

(1) "qualified" means possesses the requisite education, training, skills, or experience to perform the work;

(2) "zone" includes a census area in the state, an economic region of the state, and the state as a whole.
(§ 5 ch 33 SLA 1986)

CHAPTER 15. ALASKA PRODUCT PREFERENCES.

ARTICLE 1. FOREST PRODUCTS PREFERENCE

Section:

10. Use of local forest products required in projects financed by public money
20. Insertion of clause in calls for bids and in contracts

Sec. 36.15.010. Use of local forest products required in projects financed by public money.
In a project financed by state money in which the use of timber, lumber, and manufactured lumber products is required, only timber, lumber and manufactured lumber projects originating in this state from local forests shall be used wherever practicable. (§ 14-3-1 ACLA 1949)

Sec. 36.15.020. Insertion of clause in calls for bids and in contracts.
A clause containing the substance of AS 36.15.010 shall be inserted in all calls for bids and in all contracts awarded. (§ 14-3-2 ACLA 1949)

CHAPTER 25. CONTRACTORS' BONDS.

Section:

10. Bonds of contractors for public buildings or works
20. Rights of persons furnishing labor or material
25. Optional municipal exemption

Sec. 36.25.010. Bonds of contractors for public buildings or works.

(a) Except as provided in AS 44.33.300, before a contract exceeding $100,000 for the construction, alteration, or repair of a public building or public work of the state or a political subdivision of the state is awarded to a general or specialty contractor, the contractor shall furnish to the state or a political subdivision of the state the following bonds, which become binding upon the award of the contract to that contractor:

(1) a performance bond with a corporate surety qualified to do business in the state, or at least two individual sureties who shall each justify in a sum equal to the amount of the bond; the amount of the performance bond shall be equivalent to the amount of the payment bond;

(2) a payment bond with a corporate surety qualified to do business in the state, or at least two individual sureties who shall each justify in a sum equal to the amount of the bond for the protection of all persons who supply labor and material in the prosecution of the work provided for in the contract; when the total amount payable by the terms of the contract is not more than $1,000,000, the payment bond shall be in a sum of one-half the total amount payable by the terms of the contract; when the total amount payable by the terms of the contract is more than $1,000,000 and not more than $5,000,000, the payment bond shall be in a sum of 40 percent of the total amount payable by the terms of the contract; when the total amount payable by the terms of the contract is more than $5,000,000, the payment bond shall be in sum of $2,500,000.

(b) This section does not limit the authority of the contracting officer to require a performance bond or other security in addition to those, or in cases other than the cases specified in (a) of this section.

(c) When no payment bond has been furnished, the contracting department may not approve final payments to the contractor until the contractor files a written certification that all persons who supplied labor or material in the prosecution of the work provided for in the contract have been paid.

(§ 1 ch 49 SLA 1953; am § 1 ch 77 SLA 1964; am § 14 ch 142 SLA 1972; am §§ 1, 2 ch 180 SLA 1976; am § 8 ch 277 SLA 1976; am 34 ch 108 SLA 1982)

Sec. 36.25.020. Rights of persons furnishing labor or material.

(a) A person who furnishes labor or material in the prosecution of the work provided for in the contract for which a payment bond is furnished under AS 36.25.010 and who is not paid in full before the expiration of 90 days after the last day on which the labor is performed or material is furnished for which the claim is made, may sue on the payment bond for the amount unpaid at the time of the suit.

(b) However, a person having direct contractual relationships with a subcontractor but no contractual relationship express or implied with the contractor furnishing the payment bond has a right of action on the payment bond upon giving written notice to the contractor within 90 days from the last date on which the person performed labor or furnished material for which the claim is made. The notice must state with substantial accuracy the amount claimed and the name of the person to whom the material was furnished or for whom the labor was performed. The notice shall be served by mailing it by registered mail, postage prepaid, in an envelope addressed to the contractor at any place where the contractor maintains an office or conducts business, or the contractor's residence, or in any manner in which a peace officer is authorized to serve summons.

(c) A suit brought under this section shall be brought in the name of the state or the political subdivision of the state for the use of the person suing in the court with jurisdiction. A suit under this section is subject to AS 08.18.151. A suit may not be started after the expiration of one year after the date of final settlement of the contract. The state or political subdivision of the state is not liable for costs or expenses of the suit.

(§ 2 ch 49 SLA 1953; am § 15 ch 142 SLA 1972 am §58 ch 14 SLA 1987)

Sec. 36.25.025. Optional municipal exemption.

A municipality, by ordinance adopted by its governing body, may exempt contractors from compliance with the provisions as AS 36.25.010(a) if the estimated cost of the project does not exceed $400,000, and

(1) the contractor is, and for two years immediately preceding the award of the contract has been, a licensed contractor having its principal office in the state;

(2) the contractor certifies that it has not defaulted on a contract awarded to the contractor during the period of three years preceding the award of a contract for which a bid is submitted;

(3) the contractor submits a financial statement, prepared within a period of nine months preceding the submission of a bid for the contract and certified by a public accountant or a certified public accountant licensed under AS 08.04, demonstrating that the contractor has a net worth of not less than 20 percent of the amount of the contract for which a bid is submitted; and

(4) the total amount of all contracts that the contractor anticipates performing during the term of performance of the contract for which a bid is submitted does not exceed the net worth of the contractor reported in the certified financial statement prepared and submitted under (3) of this section by more than seven times.

(§ 1 ch 81 SLA 1978)

CHAPTER 95. GENERAL PROVISIONS

Section:
10. Definitions

Sec. 36.95.010. Definitions.
In this title, unless the context requires otherwise,

(1) "contractor" means the contractor including subcontractors performing work necessary to facilitate public construction;

(2) "laborer, mechanic, or field surveyor" means a person who engages in work which is basically physical or unskilled in nature; or who engages in work, requiring the use of tools or machines, which basically consists of the shaping and working of materials into some type of structure, machine or other object; or who engages in outdoor tasks related to the operation of findings and delineating contour, dimensions, position, topography, as of any part of the earth's surface, by preparation of measured plan or description of any area or other portion of country or of road or line through any area or other portion of country;

(3) "public construction" or "public works" means the on-site field surveying, erection, rehabilitation, alteration, extension or repair, including painting or redecorating of buildings, highways or other improvements to real property under contract for the state, a political subdivision of the state, or a regional school board;

(4) "resident" means a person who establishes residency under AS 01.10.055;

(5) "retainage" means money withheld from a contractor until completion of a contract or satisfaction of other contingency as evidenced by approval of the applicable pay estimate;

(6) "state or a political subdivision of the state" means any state department, state agency, state university, borough, city, village, school district or other state subdivision;

(7) "wages" includes fringe benefits.

(§ 16 ch 142 SLA 1972; am § 3 ch 89 SLA 1976; am § 16 ch 147 SLA 1978; am § 2 ch 85 SLA 1982; am § 92 ch 6 SLA 1984; am §§ 6, 11 ch 33 SLA 1986)

ALASKA ADMINISTRATIVE CODE
TITLE 8. LABOR

PART 2. RESIDENT EMPLOYMENT

CHAPTER 30. PUBLIC CONTRACTS.

Article:

1. Wages and Hours (8 AAC 30.010 – 8 AAC 30.040)
2. Wage Scale (8 AAC 30.050)
3. Employment Preference (8 AAC 30.060 – 8 AAC 30.088)
4. Investigations and Hearings (8 AAC 30.090 – 8 AAC 30.110)
5. Debarment (8 AAC 30.200 – 8 AAC 30.240)
6. General Provisions (8 AAC 30.900 – 8 AAC 30.920)

ARTICLE 1. WAGES AND HOURS.

Section:

10. Notification of contract awards
20. Certified payroll
25. Fringe benefit contributions
27. Notice of violation requiring withholding
30. Notification of withholding accrued payments
40. Notification of termination of contract

8 AAC 30.010. Notification of Contract Awards.

(a) Within 20 days of awarding a public contract, the state or political subdivision of the state shall notify the commissioner in writing that the contract has been awarded. The writing shall conform to the requirements of AS 36.05.035.

(b) Verification of contractors bonding requirements shall be by certified statement furnished to the commissioner by the state or political subdivision of the state which awarded the contract.

(Eff. 7/8/73, Register 47)

Authority: AS 36.05.030 AS 36.05.035

8 AAC 30.020. Certified Payroll.

(a) Before Friday of every second week, each contractor, subcontractor, or owner/operator who performs work on a public construction contract for the state or political subdivision of the state shall file with the department a certified payroll (Form 07-6058) that covers the preceding reporting period.

(b) The certified payroll shall be submitted to the department's regional office in the judicial district in which the work is performed:

1st Judicial District - Department of Labor and Workforce Development, Juneau
3rd Judicial District - Department of Labor and Workforce Development, Anchorage
2nd and 4th Judicial Districts - Department of Labor and Workforce Development, Fairbanks

(c) Instead of submitting Form 07-6058, a contractor may submit the contractor's payroll form. However, the payroll form must contain the same information and statement of compliance required by Form 07-6058.

(d) Owner/operators who perform duties as laborers, mechanics, or field surveyors while working as contractors or subcontractors on a public work project shall be included on their certified payrolls in the same manner as any other laborer, mechanic or field surveyor. However, an owner/operator who performs duties as a laborer, mechanic, field surveyor is not required to pay themselves each reporting period, but shall report hours worked and actual payments received under the terms of the contract and the period covered by each payment. After deducting operating expenses, the actual payment received by an owner/operator performing duties as a laborer, mechanic, or field surveyor must meet or exceed the minimum prevailing rate of pay in the applicable classification for each hour worked on a public construction project.

(e) If a contractor is under contract to provide trucks on a public construction project and leases a truck to an individual truck driver or dispatches an owner/operator working on that same project, the contractor shall pay no less than the prevailing wage for each hour worked each certified payroll reporting period to that driver.

(Eff. 7/8/73, Register 47; am 7/30/82, Register 83; am 8/9/01; Register 159; am 3/2/2008, Register 185)

Authority: AS 36.05.030 AS 36.05.040
AS 36.10.075

Editor's Note:

As of Register 151 (October 1999), the regulations attorney made technical revisions under AS 44.62.125 (b)(6) to reflect the name change of the Department of Labor to the Department of Labor and Workforce Development made by ch. 58, SLA 1999 and the corresponding title change of the commissioner of labor.

Form 07-6058 (payroll form) required in 8 AAC 30.020 may be obtained from the Department of Labor and Workforce Development, Wage and Hour Administration, 1251 Muldoon Road, Suite 113, Anchorage, AK 99504; telephone: (907) 269-4900. The form is also available on the department's website at:
http://labor.alaska.gov/lss/lssforms.htm

8 AAC 30.025. Fringe Benefit Contributions.

(a) Employers must remit contributions to union trusts, approved private pension plans, or other approved fringe benefit plans by the 15th of the month following the accrual of the contribution. If the plan itself has a more stringent remittance deadline, the plan deadline shall prevail. A copy of the actual deposit or other satisfactory proof shall be provided the department upon request.

(b) A private pension plan or other fringe benefit plan as referenced in (a) of this section must meet the following conditions in order to be approved as an offset against the prevailing wage rate requirement for fringe benefits:

(1) plan contributions must be

(A) irrevocable;

(B) deposited on a regular basis, not less than monthly, to a trustee or third-party administrator;

(C) free of administrative expense charges to employees, except reasonable and customary administrative fees charged to the plan as a whole, subject to approval of the plan trustee;

(D) non-discretionary;

(E) factored across all work performed by an employee in public construction and non-public construction with the exception of an automatic vesting 401(k) plan;

(2) plan contributions may not be made on behalf of employees who are not eligible to participate in the plan;

(3) except for an automatic vesting 401(k) plan, plan contributions must not be funded solely through hours worked on public construction projects.

(c) Except for an automatic vesting 401(k) plan which allows the actual hourly amount contributed to the plan during the public construction project to be directly credited against fringe benefit payment requirements, to establish an hourly rate for credit against prevailing wage requirements, the amount paid by the employer for the benefit shall be divided by the hours worked by the employee under the plan during the interval under which payments are due to the plan administrator. To allow for seasonal variations, the plan costs may be calculated on an annual basis.

(d) If the hourly rate established under (c) of this section does not meet the prevailing fringe benefit rate, the remainder must be paid to the employee.

(e) If a pension plan meets the requirements under 29 U.S.C. 1001 – 1461 (Employee Retirement Income Security Act of 1974) and includes a minimum vesting requirement, any forfeited amounts must remain in the trust, subject to the authority of the trustee and may not revert to the employer.

(f) The department may disallow an employer from taking credit for fringe benefit contributions as an offset to prevailing wage requirements if the provisions of this section are not met. Upon request, the employer shall provide the following to the department:

(1) a copy of the plan;

(2) a copy of the plan adoption agreement;

(3) the name, address, and telephone number of the plan broker;

(4) the name, address, and telephone number of the plan administrator;

(5) the United States Internal Revenue Service approval letter;

(6) the calculations of the hourly cost equivalent for the plan.

(g) An apprentice shall receive 100 percent of the prevailing fringe benefit rate established in the applicable *Laborers' and Mechanics' Minimum Rates of Pay*, unless a bona fide fringe benefit plan is specified in the applicable Standards of Apprenticeship approved by the United States Department of Labor, Office of Apprenticeship.

(h) In this section, "automatic vesting 401(k) plan," means a 401(k) plan maintained in compliance with 29 U.S.C. 1001 – 1461 (Employee Retirement Income Security Act of 1974) that allows for immediate vesting in the plan to ensure that the employee will not be subject to any forfeiture of amounts contributed to the plan since it has no vesting requirements.

(Eff. 1/2/91, Register 116; am 3/2/2008, Register 185; am 8/12/2018, Register 227)

Authority: AS 23.05.060 AS 36.05.030
AS 36.05.070

8 AAC 30.027. Notice of violation requiring withholding.

When the department determines, under the authority of AS 36.05.030, that a violation has occurred, it shall notify the contracting agency as to the nature and estimated amount of the violation so that the contracting agency can fulfill its obligation to withhold funds under AS 36.05.070 (4). (Eff. 1/2/91, Register 116)

Authority: AS 23.05.060 AS 36.05.030
AS 36.05.070

8 AAC 30.030. Notification of withholding accrued payments.

(a) If the state or a political subdivision of the state withholds accrued payments under those provisions of its contracts required by AS 36.05.070(c)(4), the state or political subdivision shall notify the commissioner within three working days.

(b) Notification shall be in writing and contain the following information:

(1) name of state agency or political subdivision of the state that awarded the contract;

(2) name of state agency or political subdivision of the state that is withholding accrued payments;

(3) contractor's name and address;

(4) address of construction site;

(5) job classification being underpaid;

(6) wage rate required by contract; and

(7) wage rate actually being paid.

(Eff. 7/8/73, Register 47)

Authority: AS 36.05.030 AS 36.05.070

8 AAC 30.040. Notification of Termination of Contract.

(a) If the state or a political subdivision of the state terminates a contract under those provisions of its contract required under AS 36.05.080, the state or political subdivision of the state shall notify the department within three working days.

(b) Notification shall be in writing and contain the following information:

(1) name of state agency or political subdivision of the state that awarded the contract;

(2) name of state agency or political subdivision of the state that is terminating the contract;

(3) contractor's name and address;

(4) address of construction site;

(5) job classification being underpaid;

(6) wage rate required by contract;

(7) wage rate actually being paid; and

(8) proposed action to be taken to complete construction.

(Eff. 7/8/73, Register 47)

Authority AS 36.05.030 AS 36.05.080

ARTICLE 2. WAGE SCALE.

Section:

50. Wage Scale

8 AAC 30.050. Wage Scale.

(a) The department will determine the prevailing wage rate to be paid laborers, mechanics, and field surveyors. The department will publish this determination in the pamphlet *Laborers' and Mechanics' Minimum Rates of Pay*. The department will periodically revise the prevailing wage rates, on a regional basis, to correspond with the prevailing wage rate for similar work.

(b) The prevailing wage will be determined on a regional basis for two geographic regions of the state, north of North 63 degrees latitude and south of North 63 degrees latitude. A region may be subdivided into zones if the commissioner determines that the prevailing wage rate has local variations within the region. In determining the prevailing wage rate for a region or zone, the department will consider the prevailing wage that represents majority penetration for each work classification. If there is no majority penetration the department may set the prevailing wage rate in the following manner:

(1) If less than a majority of the persons employed at a particular skill level in a particular job class receive the same wage, the prevailing wage rate will be determined by taking the arithmetic mean (average) of the wages in the survey for the job class being considered.

(2) Prior to calculating the arithmetic mean, the survey will be adjusted by eliminating five percent of the extreme wage rates.

(3) For example, in a survey consisting of 75 different pay rates the rates will be arrayed in order of size. Five percent at both ends of the scale, the four highest and four lowest, will be eliminated. The remaining 67 rates will be the final survey from which the arithmetic mean will be determined to be the prevailing rate of pay.

(4) In determining the prevailing wage rate for a region or zone, the department will consider the prevailing union wage, local practice, and any other standard considered by the department to be appropriate.

(c) Special prevailing wage rate determinations may be requested for special projects or special worker classifications, if the work to be performed does not conform to traditional public construction for which a prevailing wage rate has been established under (a) of this section. Requests for special wage rate determinations must be in writing and filed with the commissioner at least 30 days before the award of the contract. An applicant for a special wage rate determination shall have the responsibility to support the necessity for the special rate. An application for a special wage rate determination filed under this section must contain

(1) a specification of the contract or project on which the special rates will apply and a description of the work to be performed;

(2) a brief narrative explaining why special wage rates are necessary;

(3) the job class or classes involved;

(4) the special wage rates the applicant is requesting, including survey or other relevant wage data to support the requested rates;

(5) the approximate number of employees who will be affected; and

(6) any other information which might be helpful in determining if special wage rates are appropriate.

(d) The prevailing wage rate established in (a) of this section shall be considered the minimum wage rate that shall be paid to various classes of laborers, mechanics, and field surveyors.

(e) This section shall be made part of every contract that falls within the scope of AS 36.05.010 and 36.05.070(a).

(Eff. 7/8/73, Register 47; am 7/30/82, Register 83; am 8/9/2001, Register 159; am 3/2/2008, Register 185; am 11/25/2018, Register 228)

Authority: AS 36.05.010 AS 36.05.030
AS 36.05.070

Editor's note:

The pamphlet titled *Laborers' and Mechanics' Minimum Rates of Pay* may be obtained from the Department of Labor and Workforce Development, 1251 Muldoon Road, Suite 113, Anchorage, AK 99504; telephone: (907) 269-4900. The pamphlet is also available on the department's website at: http://labor.alaska.gov/lss/lssforms.htm.

8 AAC 30.051. Purpose.

The purpose of 8 AAC 30.052 – 8 AAC 30.056 is to ensure that wages paid to laborers, mechanics, and field surveyors do not fall below the prevailing rate of pay.

8 AAC 30.052. Board and lodging; remote sites.

(a) A contractor on a public construction project located 65 or more road miles from the international airport closest to the project area in either Fairbanks, Juneau, or Anchorage, or that is inaccessible by road in a two-wheel drive vehicle, shall provide adequate board and lodging to each laborer, mechanic, or field surveyor while the person is employed on the project. If commercial lodging facilities are not available, the contractor shall provide temporary lodging facilities. Lodging facilities must comply with all applicable state and federal laws. For a highway project, the location of the project is measured from the midpoint of the project.

(b) A contractor is not required to provide board and lodging:

(1) to a laborer, mechanic, or field surveyor who is a domiciled resident of the project area; or

(2) on a laborer, mechanic, or field surveyor's scheduled days off, when the person can reasonable travel between the project and the person's permanent residence; for the purposes of this paragraph, "scheduled day off" means a day in which a person does not perform work on-site, is not required to remain at or near the job location for the benefit of the contractor, and is informed of the day off at least seven days before the day off.

(c) Upon a contractor's written request, the commissioner may waive the requirements of (a) of this section where:

(1) the project is inaccessible by road in a two-wheel drive vehicle, but the laborer, mechanic, or field surveyor can reasonable travel between the project and the person's permanent residence within one hour; or

(2) a laborer, mechanic, or field surveyor is not a domiciled resident of the project area, but has established permanent residence, with the intent to remain indefinitely, within 65 road miles of the project, or for a highway project, the mid-point of the project.

(Eff. 11/25/2018, Register 228)

Authority: AS 23.05.060 AS 36.05.030
AS 36.10.075 AS 36.05.010

8 AAC 30.054. Per diem instead of board and lodging.

(a) A contractor may pay a laborer, mechanic, or field surveyor per diem instead of providing board and lodging, when the following conditions are met

(1) the department determines that per diem instead of board and lodging is an established practice for the work classification; the department shall publish and periodically revise its determinations in the pamphlet *Laborers' and Mechanics' Minimum Rates of Pay*;

(2) the contractor pays each laborer, mechanic, or field surveyor the appropriate per diem rate as published and periodically revised in the pamphlet *Laborers' and Mechanics' Minimum Rates of Pay*; and

(3) the contractor pays the per diem to each laborer, mechanic, or field surveyor on the same day that wages are paid.

(b) A contractor may not pay per diem instead of board and lodging on a highway project located

(1) west of Livengood on the Elliot Highway, AK-2;

(2) on the Dalton Highway, AK-11;

(3) north of milepost 20 on the Taylor Highway, AK-5;

(4) each of Chicken on the Top of the World Highway; or

(5) south of Tetlin Junction to the Alaska-Canada border on the Alaska Highway, AK-2.

(Eff. 11/25/2018, Register 228)

Authority: AS 23.05.060 AS 36.05.030
AS 36.05.010 AS 36.10.075

8 AAC 30.056. Alternative arrangement.

Upon a contractor's written request, the commissioner may approve an alternative board and lodging or per diem arrangement, provided

(1) the arrangement does not reduce the laborer, mechanic, or field surveyor's wages below the prevailing wage rate; and

(2) the laborer, mechanic, or field surveyor voluntarily enters into and signs the written arrangement; a labor organization representing laborers, mechanics, or field surveyors may enter into the written agreement on their behalf.

(Eff. 11/25/2018, Register 228)

Authority: AS 23.05.060 AS 36.05.010
AS 36.05.030 AS 36.10.075

ARTICLE 3. Employment Preference.

Section:

60. *(Repealed)*
61. Contracting agency report requirements
62. Employer reporting requirements
64. Hiring preference for residents of zone of underemployment
65. *(Repealed)*
66. *(Repealed)*
67. *(Repealed)*
68. Determination that lack of employment opportunities has substantially contributed to serious social or economic problems
70. *(Repealed)*
71. *(Repealed)*
72. Determining residency
73. Determination of resident hiring preferences
78. Resident hiring preferences in overlapping or multiple zones
80. *(Repealed)*
81. Compliance with preference requirements
82. Department determination of eligibility for preference
84. Appeals of eligibility determinations
86. Approval of job training programs

8 AAC 30.060. Resident Hiring.
[Repealed 9/27/87]

8 AAC 30.061. Contracting agency reporting requirements.

(a) Within 20 days after awarding a contract or grant covered by AS 36.10.180, a state agency or political subdivision of the state shall file with the department a notice containing

(1) the name and address of the state agency or political subdivision awarding the contract or grant;

(2) the name of the head of the state agency or political subdivision awarding the contract or grant;

(3) the date of the contract or grant award;

(4) the total amount of the contract or grant;

(5) the location of the project; and

(6) the name and address of each contractor and subcontractor performing work on the project.

(b) A state agency or political subdivision of the state shall report immediately to the department any changes or additions regarding the notice required in (a) of this section which involve either

(1) a change in the identity of a contractor or subcontractor performing work on the project; or

(2) a change in the total amount of the contract if the change exceeds $10,000.

(Eff. 9/27/87, Register 103)
Authority: AS 36.10.075 AS 36.10.076

8 AAC 30.062. Employer reporting requirements.

(a) Upon request by the department, an employer required to file a quarterly report of employment and wages under AS 23.20.105 - 23.20.535 shall include in its quarterly report the following information for each employee:

(1) either the occupational title or the four-digit standard occupational classification code for the last position held by the employee; and

(2) the two-digit geographic area code of the employee's primary work location.

(b) The department will provide each employer required to submit information under (a) of this section with a list of occupational codes and titles applicable to its industry and a map showing the boundaries and code for each geographic area of the state.

(Eff. 9/27/87, Register 103)
Authority: AS 36.10.075 AS 36.10.190

8 AAC 30.064. Hiring preference for residents of zone of underemployment.

(a) For purposes of AS 36.10.150, the commissioner will determine that an area is a zone of underemployment if

(1) the rate of unemployment within the area is at least 10 percent greater than the average national unemployment rate for the most recent 12-month period for which unemployment insurance figures are available, or a longer period determined appropriate by the commissioner to take into account unemployment trends exceeding a one-year period; for example, if the national unemployment rate is seven percent, the rate of unemployment in the area must be at least 7.7 percent for the area to be a zone of underemployment;

(2) at least 10 percent of the jobs in a particular craft or occupation that would be used on a particular public-funded project could be filled by residents of the area who are trained or experienced in that craft or occupation; a determination under this paragraph will be based on data for the quarter of highest employment for the most recent calendar year for which data is available;

(3) the lack of employment opportunities has substantially contributed to serious social or economic problems in the area, as determined under 8 AAC 30.068; and

(4) the employment of nonresidents is a peculiar source of unemployment for residents of the area, as determined under 8 AAC 30.069.

(b) For a public-funded project, the percentage of positions which must be reserved under AS 36.10.150 for eligible residents, in a craft or occupation subject to a hiring preference, is the percentage that would result in a determination under (a) of this section that the area was not a zone of underemployment. The department will compute the percentage for an occupation or craft and announce it after the determination under (a) of this section is made.

(Eff. 9/27/87, Register 103; am 6/8/11, Register 198)
Authority AS 36.10.075 AS 36.10.150

8 AAC 30.065. Hiring Preference for Residents of Economically Distressed Zone.
[Repealed 8/9/2001]

8 AAC 30.066. Hiring Preference for Economically Disadvantaged Minority Residents.
[Repealed 8/9/2001]

8 AAC 30.067. Hiring Preference for Economically Disadvantaged Female Residents.
[Repealed 8/9/2001]

8 AAC 30.068. Determination that lack of employment opportunities has substantially contributed to serious social or economic problems.

For purposes of AS 36.10.150 - 36.10.175 and this chapter, the lack of employment opportunities has substantially contributed to serious social or economic problems if changes in indicators of social and economic problems are linked to changes in the number of people who want to work and are unable to obtain work. The commissioner will use correlation analysis, testimony, professional studies, or other evidence to establish the relationship between unemployment and social or economic problems.

(Eff. 9/27/87, Register 103)
Authority: AS 36.10.075 AS 36.10.160
AS 36.10.175 AS 36.10.150
AS 36.10.170

8 AAC 30.069. Determination of peculiar source of unemployment.

For purposes of AS 36.10.150 - 36.10.175, and 8 AAC 30.064, the commissioner will determine that employment of nonresidents is a peculiar source of unemployment if more than 10 percent of the residents of an area who are trained or experienced in a craft or

occupation are unemployed and more than 10 percent of the total number of workers employed in that area in that craft or occupation are not residents of the area.
(Eff. 9/27/87, Register 103; am 08/9/01; Register 159)
Authority: AS 36.10.075 AS 36.10.160
AS 36.10.175 AS 36.10.150
AS 36.10.170

8 AAC 30.070. Annual Report by Agency or Political Subdivision of the State.
[Repealed 9/27/87.]

8 AAC 30.071. Determination of Past Economic Discrimination.
[Repealed.]
(Eff. 9/27/87, Register 103; repealed 08/9/01; Register 159)

8 AAC 30.072. Determining residency.
The department will consider the following information in determining whether a person is a resident:

(1) where the person, the person's spouse, and the person's dependent children maintain their principal place of abode;

(2) where the person's dependent children are enrolled in school;

(3) the person's address on driver's licenses;

(4) the person's address on motor vehicle registrations;

(5) where the person's bank, credit union, or other financial accounts are maintained;

(6) the person's address on hunting, fishing, trapping, or other licenses;

(7) where the person is registered to vote;

(8) the person's address as shown on Department of Revenue permanent fund dividend records; and

(9) any other relevant facts.

(Eff. 9/27/87, Register 103)
Authority: AS 36.10.075 AS 36.10.14
AS 36.95.010(4)

8 AAC 30.073. Determination of resident hiring preferences.

(a) The commissioner will, at least biennially, determine whether an area is a zone of preference under AS 36.10 and this chapter if enough data is available to make that determination.

(b) The commissioner will include, in the annual resident hire report required under AS 36.10.130, all resident preference determinations made during the previous calendar year.

(c) When an area has been determined to be a resident hiring zone of preference, the department will notify all contractors of record who are or will be performing work on public-funded projects in the zone, and will notify all state agencies and political subdivisions that have public-funded projects in the zone.

(d) Upon notification under (c) of this section, the resident hiring preference requirements are effective immediately and apply to all public-funded projects in the zone.
(Eff. 9/27/87, Register 103; am 3/2/2008, Register 185)
Authority: AS 36.10.075

8 AAC 30.078. Resident hiring preferences in overlapping or multiple zones.

(a) If two areas are determined to be zones of preference under AS 36.10 and this chapter for the same resident hiring preference, and one of the zones is located entirely within the other, the preference requirements will apply to the larger zone.

(b) As provided in AS 36.10.150 - 36.10.175, if a public-funded project is located in more than one zone, the entire project is subject to the resident hiring preferences in effect in those zones.
(Eff. 9/27/87, Register 103)
Authority: AS 36.10.075

8 AAC 30.080.
[Repealed 12/4/76]

8 AAC 30.081. Compliance with preference requirements.

(a) To comply with AS 36.10.150 - 36.10.175, an employer subject to a resident hiring reference shall meet the relevant resident hire percentage, prescribed under this chapter, for each separate workweek. If an area has been determined to be a zone of preference for more than one type of resident hiring preference, the requirements of each preference apply. An employer may count the hire of an eligible resident toward satisfaction of each preference for which the resident qualifies.

(b) An employer subject to a resident hiring preference shall certify that each person hired as a resident under the preference was eligible for the preference at the time of hiring. The employer's certification must be provided on the weekly certified payroll form filed with the department (Form 07-6058); must include the name and residence address of each employee on the project, including supervisory employees; and must include a statement of compliance with all resident hiring preferences in effect.

(c) A labor organization that dispatches members for work on a public-funded project subject to a resident hiring preference shall certify to the employer at the time of dispatch that each person dispatched as a resident to meet a preference was eligible for the preference at the time of dispatch. The labor organization's certification must be in writing and must include the name and residence address of each person dispatched to the project.

(d) An employer subject to a resident hiring preference who is unable to find enough eligible residents may request from the department a waiver to hire an ineligible person for a specific job. The waiver request must be submitted to the department at least seven calendar days before the waiver is required to be considered for approval. Within three working days, the

department shall determine whether the contractor's proposed minimum qualifications for the position covered by the waiver request are acceptable. The employer must place an advertisement using at least one public form of statewide advertising, such as a newspaper with statewide circulation, and must request that the Alaska Employment Service post a statewide facilitated recruitment job order through the Alaska Job Center Network. The advertisement and the job order must run for at least three calendar days, and both must

(1) state that the purpose of the request is to satisfy employment preference requirements of this state under AS 36.10 and that applicants must be residents of this state;

(2) list the job title and minimum qualifications as accepted by the department;

(3) identify the rate of pay including fringe benefits and other compensation, such as travel or room and board;

(4) identify the job location, expected duration of the job, and the number of expected daily and weekly work hours; and

(5) specify that all job seekers apply through the Alaska Job Center Network.

(e) An employer subject to a resident hiring preference who is unable to find enough eligible residents from either private sources or from the applicants referred by the state employment center under (d) of this section may request from the department a waiver to hire an ineligible person for a specific job. A request for a waiver under this subsection must contain

(1) a description of the job for which a waiver is requested, to include the wages, benefits, expected start date, work schedule, and job duration;

(2) the required qualifications for the job for which a waiver is requested;

(3) the qualifications of the person for whom the waiver is requested;

(4) the name and residence address of the person for whom the waiver is requested;

(5) a description of the employer's efforts to obtain an eligible resident from private sources for the job for which a waiver is requested;

(6) a copy of the recruitment report from the Alaska Job Center Network containing the following information and documentation;

(A) a copy of the job order, a listing of all applicants from the job order and other private recruitment efforts, and the listing of the applicants referred to the employer;

(B) the recruitment result report to show the number of individuals interviewed, hired or not hired;

(C) and, a statement from the Alaska Job Center Network that the employer did or did not comply with the recruitment requirements;

(7) the name and location of the project for which the waiver is requested; and

(8) an explanation of why each applicant referred was not hired.

(f) The department will grant a waiver to employ an ineligible person if the employer establishes, to the department's satisfaction, that there are no qualified eligible residents for a specific job. A waiver granted by the department expires six months from the approval date, at the completion of the specific job for which the ineligible person was hired, or at the time the ineligible person terminates, whichever occurs first. The department will either grant or deny the waiver within 20 working days after receiving the request for a waiver and the supporting evidence required under (e) of this section.

(g) A waiver granted under this section will be determined invalid unless the same benefits provided to the ineligible nonresident, such as housing and transportation to the work site, are also offered and provided to eligible resident applicants.

(Eff. 9/27/87, Register 103; am 3/2/2008, Register 185)

Authority: AS 36.10.070 AS 36.10.140 AS 36.180
AS 36.10.190 AS 36.10.075

8 AAC 30.082. Department determination of eligibility for preference.

(a) Following a determination under this chapter that an area is a zone of preference, the department's assistance may be requested in determining a person's eligibility for a resident hiring preference in a craft or occupation on a public-funded project. Application for an eligibility determination must be made on a form available from the division or from any state employment center. An applicant may mail or deliver the completed application to the division or to any state employment center.

(b) A person will be determined to be eligible for a resident hiring preference if the person establishes, to the department's satisfaction, that he or she meets the eligibility criteria in AS 36.10.140 and 36.10.150 - 36.10.175. An applicant will be notified of the department's determination.

(c) The department will, in its discretion, request that an applicant provide additional information to the department. The additional information will be made a part of the application, and will, in the department's discretion, be used in determining the applicant's eligibility.

(d) If a person is determined under this section to be ineligible, a new application may be submitted if there are new or previously undisclosed facts bearing upon eligibility. The applicant shall note that the application is not an initial application and shall set out the new or previously undisclosed facts.

(e) An employer may rely on the department's determination of eligibility under this section in meeting the requirements of AS 36.10.140(c) and 36.10.150 - 36.10.175.

(Eff. 9/27/87, Register 103)

Authority: AS 36.10.070 AS 36.10.075
AS 36.10.140

8 AAC 30.084. Appeals of eligibility determinations.

(a) A determination by the department under 8 AAC 30.082 that a person is not eligible for a resident hiring preference is final unless the applicant, or the applicant's representative, files a written appeal with the department within 20 days after receipt of the determination.

(b) An appeal must contain the name and mailing address of the applicant, the reasons for the appeal, and any arguments or information in support of the appeal.

(c) The department will, in its discretion, consider any relevant evidence in deciding an appeal even if the evidence is not admissible under Alaska rules of evidence. The department will, in its discretion, request additional information from the applicant. The applicant must respond in writing to a request for additional information within 10 days after receipt of the request. The department will, in its discretion, grant an extension of time to an applicant for good cause shown.

(d) Any notices or other documents in connection with an appeal will be mailed to the last address furnished by the applicant.

(e) The department will issue a written decision on the appeal within 30 days after receipt of the appeal or within 30 days after the submission of additional information requested under (c) of this section. The decision will include findings of fact and conclusions of law, and will be served on all parties to the appeal. The decision under this subsection is the final decision of the department.

(Eff. 9/27/87, Register 103)
Authority: AS 36.10.075 AS 36.10.140

8 AAC 30.086. Approval of job training programs.

(a) For the purposes of AS 36.10.140(a)(4), the following types of job training programs are approved:

(1) a program approved by the Alaska Commission on Postsecondary Education, or by an equivalent agency in another state if the program is located in another state; or

(2) a program approved by the United States Department of Labor, Office of Apprenticeship.

(b) For the purposes of AS 36.10.140(a)(4), the following types of training programs will, in the department's discretion, be approved:

(1) a program sponsored or conducted by an employer or union; or

(2) a program approved under the Workforce Innovation and Opportunity Act (WIOA) 2014, Pub. L. No 113-138).

(Eff. 9/27/87, Register 103; am 8/12/2018, Register 227)
Authority: AS 36.10.140

8 AAC 30.088. Computations regarding hiring preference requirements.

Computing the number of workers or positions for resident employment preference under AS 36.10 and this chapter might result in a number that contains a fraction. In such cases, the fraction is to be dropped. For example, a result of 4.8 workers should be shown as 4 workers.

(Eff. 9/27/87, Register 103)
Authority: AS 36.10.075

ARTICLE 4. INVESTIGATIONS AND HEARINGS.

Section:

90. Investigations, Conference, and Persuasion
100. Hearings
110. Decisions

8 AAC 30.090. Investigations, conference, and persuasion.

(a) The division will investigate potential violations of AS 36 (Public Contracts), on its own motion or on the complaint of any person.

(b) If, after preliminary investigation, the division finds that probably cause exists to believe that a violation of AS 36.05 or AS 36.10 has occurred, the division will provide the respondent believed to have violated AS 36.05 or AS 36.10 a copy of the complaint or a description of the alleged violation by personal service or certified mail to the last known address of the respondent and to the respondent's registered agent, if any. If respondent is a subcontractor, the division will also provide the prime contractor with a copy of the complaint or a description of the alleged violation by personal service or certified mail to the prime contractor's registered agent.

(c) The division will attempt to eliminate the alleged violation through conference and persuasion by providing the respondent and prime contractor an opportunity for an information conference to discuss the matter and attempt to eliminate the alleged violations.

(d) If an alleged violation is not rectified by the informal conference, or if the respondent or prime contractor fails to attend the conference without good cause, the division will notify the respondent and the prime contractor in writing of the failure of the informal conference. The division will include in its notification a summary of the division's investigative findings.

(e) The respondent or the prime contractor may request a hearing by sending the division a written request postmarked not later than 30 days of the date of the division's notification of the failure of the informal conference under (d) of this section. The hearing request must identify any investigative findings in dispute and the basis for the dispute, including any affirmative defenses. Upon receipt of a request for a hearing, the division will refer the case for hearing. Hearings under this section will be conducted in accordance with 8 AAC 30.100.

(f) If no timely request for hearing is received, the division's investigative findings will be final.

(Eff. 12/4/76, Register 60; am 7/30/82, Register 83; am 1/2/91, Register 116; am 8/9/01, Register 159; am 3/2/2008, Register 185; am 8/12/2018, Register 227)
Authority: AS 23.05.060 AS 36.10.075
AS 36.10.120 AS 36.05.030

8 AAC 30.100. Hearings.

(a) Both respondent and complainant may be represented by counsel. If counsel for a party notifies the division, in writing, that counsel is appearing in the matter on behalf of the party, service of notices, memoranda, recommendations, or other papers will be considered sufficient if made on counsel.

(b) The division will give notice to the respondent and to the complainant, if any, of the time and place of the hearing on an alleged violation of AS 36.05 or AS 36.10 by certified mail, or by personal service at least 15 days before the hearing. Mailing to the last known address or the address listed with the division of occupational licensing for construction contractors shall be considered valid service. The notice will contain a copy of the complaint and a description of the alleged violation which will be considered at the hearing.

(c) The location of the hearing will be designated by the division with due regard for the convenience of all persons involved. All hearings are public.

(d) The director will appoint a wage and hour investigator or contract with an attorney licensed in this state to serve as hearing officer, to preside over the hearing, and to make findings of fact and conclusions of law to be used as a basis for the director's decision. An investigator who has investigated the alleged violations or taken part in the informal conference under 8 AAC 30.090 will not be appointed hearing officer.

(e) The hearing officer has full authority to control the procedure of the hearing and to rule on all motions and objections.

(f) The hearing officer may admit any relevant evidence, regardless of the existence of any common law or statutory or court rule which might make improper the admission of such evidence over objection in civil actions, if it is the sort of evidence on which responsible persons are accustomed to rely in the conduct of serious affairs. Hearsay evidence may be used for the purpose of supplementing or explaining any direct evidence but will not be sufficient in itself to support a finding unless it would be admissible over objection in civil actions.

(g) Oral evidence must be given under oath or affirmation. A record of the proceedings will be kept.

(h) The hearing officer, respondent, and complainant may

(1) call and examine witnesses;

(2) cross-examine opposing witnesses on any matter relevant to the issue at hand even though that matter was not covered in direct examination; and

(3) introduce exhibits.

(i) If the respondent or complainant does not testify in that person’s own behalf, that person may be called and examined as if under cross-examination.

(j) The hearing officer may, for good cause shown, continue a hearing from day to day or recess it to a later date or to a different place by announcement at the hearing or by notice.

(Eff. 12/4/76, Register 60; am 1/2/91, Register 116; am 8/9/01; Register 159)

Authority: AS 23.05.060 AS 36.10.075
AS 36.10.120 AS 36.05.030

8 AAC 30.110. Decisions.

(a) The hearing officer will prepare a written recommendation to the director containing findings of fact and conclusions of law. A copy of the recommendations will be mailed or otherwise delivered to the respondent and to the complainant, if any. The director will act upon the hearing officer's recommendation and render a final decision within 30 days.

(b) Upon making a decision, the director will serve it upon the respondent and complainant, if any, by personal service or certified mail, return receipt requested. If the director determines that the respondent has violated AS 36.05 or AS 36.10, the decision may contain such cease and desist orders and other orders and relief, including a recommendation that the respondent be placed on a list of violators who are barred from performing public contracts as provided under AS 36.05.090 and AS 36.10.090, as the director considers appropriate to correct the unlawful conduct. If, after the director's decision finding the respondent in violation of AS 36.05 or AS 36.10 is served on the respondent, the director determines that the respondent has not ceased or has failed to correct the unlawful conduct, the director will refer the matter to the attorney general for enforcement.

(Eff. 12/4/76, Register 60; am 8/9/01, Register 159)

Authority: AS 23.05.060 AS 36.10.075
AS 36.10.125 AS 36.05.030
AS 36.10.120

ARTICLE 5. DEBARMENT.

Section:

200. Review and Recommendations
210. Hearings
220. Decisions
230. Appeals
240. Request for Removal

8 AAC 30.200. Review and Recommendations.

(a) Contractors or subcontractors who have disregarded their obligations to employees as defined in 8 AAC 30.900 may be subject to debarment for three years.

(b) Debarment will be considered in those cases in which a contractor or subcontractor has committed willful, aggravated or repeated violations of the provisions of AS 36.05.

(c) The standards to be considered in determining if the contractor's or subcontractor's violations merit recommendation for debarment are

(1) falsification or concealment of records;

(2) refusal to pay prevailing wages;

(3) failure to pay prevailing wages;

(4) extent and seriousness of the violations; or

(5) three or more violations on the same or separate contracts within a five-year period.

(d) A prime contractor may be considered for debarment in cases where the violations are committed by its subcontractors. Criteria considered in determining whether a prime should be debarred are:

(1) a history of subcontractors violating under that prime;

(2) failure of the prime contractor to notify its subcontractors of the requirements of AS 36.05; and

(3) informing subcontractors how not to comply, or assisting a subcontractor in not complying with AS 36.05.

(e) At the completion of an enforcement action against a contractor or subcontractor for a violation of AS 36.05, the investigator will review the file to determine if a recommendation for debarment is warranted in accordance with (c) or (d) of this section. If it is determined that a recommendation for debarment is proper, the investigator will forward the recommendation citing specific statutes through his or her supervisor to the director. The director will review the recommendation of the investigator and determine if the case will be referred for hearing.

(f) When, as a result of an investigation conducted by the department, the director finds reasonable cause to believe that a contractor or subcontractor has committed willful or aggravated violations of AS 36.05 which constitute a disregard of its obligations to employees under that chapter, the director shall notify by personal service or certified mail to the last known address, the contractor or subcontractor and its responsible officers, of the finding. The director shall afford the contractor or subcontractor and any other parties notified an opportunity for a hearing as to whether debarment action should be taken under AS 36.05.090. The director will furnish to those notified a summary of the investigative findings. If the contractor or subcontractor or any other parties notified request a hearing, the request must be made by letter postmarked within 30 days of the date of the letter from the director. The request must set forth any findings which are in dispute and the reasons therefore, including any affirmative defenses to be raised. Upon receipt of a request for a hearing, the director shall refer the case for hearing to determine the facts in dispute.

(g) Hearings under this section shall be conducted in accordance with 8 AAC 30.210. If no hearing is requested within 30 days of the date of the director's letter, the director's findings shall be final.

(Eff. 1/2/91, Register 116)

Authority: AS 23.05.060 AS 36.05.030
AS 36.05.090

8 AAC 30.210. Hearings.

(a) The respondent may be represented by counsel. If counsel for a party notifies the division, in writing, that counsel is appearing in the matter on behalf of the party, service of notices, memoranda, recommendations, or other papers will be considered sufficient if made on counsel.

(b) The division will give notice to the respondent of the time and place of the hearing on an alleged violation of AS 36.05 by certified mail or by personal service at least 15 days before the hearing. The notice will contain a summary of investigative findings that will be considered at the hearing. Service on the address a contractor or subcontractor has provided to the division of occupational licensing for the purpose of obtaining a contractor's license, or the last known address furnished by the contractor or subcontractor, shall be considered valid service.

(c) The location of the hearing will be designated by the division with due regard for the convenience of all persons involved. All hearings are public.

(d) The director will appoint a wage and hour investigator or contract with an attorney licensed in this state to serve as hearing officer to preside over the hearing and to make findings of fact and conclusions of law to be used as a basis for the director's decision. An investigator who has investigated the alleged violations or taken part in the informal conference under 8 AAC 30.090 will not be appointed hearing officer.

(e) The hearing officer has full authority to control the procedure of the hearing and to rule on all motions and objections.

(f) The hearing officer may admit any relevant evidence, regardless of the existence of any common law or statutory or court rule that might make improper the admission of such evidence over objection in civil actions, if the evidence is the sort of evidence on which responsible persons are accustomed to rely in the conduct of serious affairs. Hearsay evidence may be used for the purpose of supplementing or explaining any direct evidence but is not sufficient in itself to support a finding unless the hearsay evidence would be admissible over objection in civil actions. The hearing officer may issue subpoenas at the request of either party or on the hearing officer’s own motion.

(g) Oral evidence must be given under oath or affirmation. A record of the proceedings will be kept.

(h) The hearing officer, respondent, and complainant may

(1) call and examine witnesses;

(2) cross-examine opposing witnesses on any matter relevant to the issue at hand even though that matter was not covered in direct examination; and

(3) introduce exhibits.

(i) If the respondent does not testify in the respondent’s own behalf, that person may be called and examined as if under cross-examination.

(j) The hearing officer may, for good cause shown, continue a hearing from day to day or recess it to a later date or to a different place by announcement at the hearing or by notice.

(k) The department has the burden of proving that the alleged violations have occurred. The standard of proof required is by a preponderance of the evidence.

(Eff. 1/2/91, Register 116; am 8/9/01, Register 159)
Authority: AS 23.05.060 AS 36.05.030
AS 36.05.090

8 AAC 30.220. Decisions.

(a) Within 90 days of concluding a hearing, the hearing officer will prepare a written recommendation to the director containing findings of fact and conclusions of law. A copy of the recommendations will be mailed or otherwise delivered to the respondent and to the complainant, if any. The director may accept the recommendations, in part or in whole, or may remand the matter for further hearing. The director must act upon the hearing officer's recommendation and render a decision within 30 days.

(b) Upon making a decision, the director will serve it upon the respondent by personal service or certified mail. If the director determines that the respondent has disregarded its obligations to employees under AS 36.05, the decision will order that the respondent be placed on a list of violators who are barred from performing public contracts as provided under AS 36.05.090.

(c) In the absence of or in addition to action of a state disbursing officer or local fiscal officer, the department will distribute a list reflecting the names of debarred contractors and the effective period of the debarment.
(Eff. 1/2/91, Register 116; am 3/2/2008, Register 185)
Authority: AS 23.05.060 AS 36.05.030
AS 36.05.090

8 AAC 30.230. Appeals.

The director's decision is final. Appeals must be filed in superior court in accordance with Alaska court Rules of Appellate Procedure.
(Eff. 1/2/91, Register 116)
Authority: AS 23.05.060 AS 36.05.030
AS 36.05.090

8 AAC 30.240. Request for Removal.

Any person or firm debarred under AS 36.05.090 and 8 AAC 30.220 may, in writing, request removal from the debarment list after six months from the date the debarment took effect. All requests should be directed to the director of labor standards and safety and must contain a full explanation of the reasons why such person or firm should be removed from the debarred list. In cases where the contractor or subcontractor failed to make full restitution of wages and fringe benefit contributions to all underpaid employees, a request for removal will not be considered until all underpayments, including appropriate interest, are made. In other cases, the director will examine the facts and circumstances surrounding the violative practices which caused the debarment and issue a decision as to whether or not the person or firm has demonstrated a current responsibility to comply with AS 36.05 and therefore should be removed from the ineligible list.
(Eff. 1/2/91, Register 116)
Authority: AS 23.05.060 AS 36.05.030
AS 36.05.090

ARTICLE 6. GENERAL PROVISIONS.

Section:

900. General Definitions
910. Definition of "On-Site."
920. Definition of "Economic Region."

8 AAC 30.900. General Definitions.

In this chapter and in AS 36

(1) "commissioner" means the commissioner of labor and workforce development;

(2) "crafts" and "occupations" mean the occupations identified in the *Standard Occupational Classification Manual* (2018 edition);

(3) "debar" or "debarment" means being placed on a list of persons who are barred from performing public contracts under AS 36.05.090;

(4) "department" means the Alaska Department of Labor and Workforce Development;

(5) "director" means the director of the labor standards and safety division of the department;

(6) "disregarded their obligations to employees" (or a grammatical variant) as used in AS 36.05.090 and this chapter includes any of the following:

(A) failure or refusal to pay basic prevailing wages;

(B) failure or refusal to pay fringe benefits into the appropriate union trust, approved private pension plan, or other approved fringe benefit plan within applicable time limits;

(C) failure to pay at least once a week;

(D) failure to pay unconditionally; or

(E) failure to report wage payments to employees accurately and timely as required by AS 36.05.040;

(7) "division" means the labor standards and safety division of the department;

(8) "eligible resident" means a person who meets the requirements of AS 36.10.140(a) and AS 01.10.055 and who, under 8 AAC 30.072, would be determined to be a resident of an area that has been determined by the department under this chapter to be a resident hiring zone of preference;

(9) "hire" and its derivatives mean engaging an individual to work on a public-funded project, and includes the transfer of an existing employee from one location to another or from one craft or occupation to another;

(10) "interest" as used in AS 36.05.090 means more than five percent investment in a partnership or association, more than ten percent share in stock in a corporation, or holding any elected or appointed office in the business entity;

(11) "majority penetration" means that the majority of qualified laborers, mechanics, and field surveyors working at a particular skill level in a particular job class, as indicated by response to a department survey, receive a particular wage;

(12) "marginally employed" means that a person is employed for fewer than 30 hours a week and the person wishes to work 30 hours or more a week;

(13) "owner/operator" as used in 8 AAC 30.020(d) means those independent contractors who by virtue of the duties they perform, or the manner in which they perform them, cannot be considered employees of the person or entity who has contracted for their services; in this paragraph, “independent contractor” means a person who

(A) has an express contract to perform the services;

(B) is free from direction and control over the means and manner of providing services, subject only to the right of the individual for whom, or entity for which, the services are provided to specify the desired results, completion schedule, or range of work hours, or to monitor the work for compliance with contract plans and specifications, or federal, state, or municipal law;

(C) incurs most of the expenses for tools, labor, and other operational costs necessary to perform the services;

(D) has the opportunity for profit and loss as a result of the services performed for the other individual or entity; and

(E) is free to hire and fire employees to help perform the services for the contracted work;

(14) [repealed 8/9/2001;]

(15) "person" and "persons" as used in AS 36.05.090 means a person as that term is defined in AS 01.10.060 (8);

(16) "prevailing wage rate" means the total of the basic hourly rate, health and welfare, pension, legal service, apprentice training payments and other fringe benefits which inure to the benefit of the worker, as published by the department;

(17) "public-funded project" means a project described in AS 36.10.180 and AS 36.95.010 (3);

(18) "qualified" means having the education, training and experience necessary to perform the duties and satisfy the terms and conditions which are usual for the industry or profession or having the status specified in AS 36.95.010 (4);

(19) "state agency" means a state agency described in AS 36.10.180 (a)(1);

(20) "state employment centers" means those offices maintained by the department whose functions are to aid the unemployed in finding employment;

(21) "underemployed" means employed in a job that requires less skill or training than a job for which the employee is trained and qualified.

(22) “domiciled resident” means a person living within 65 road miles of a public construction project, or in the case of a highway project, the mid-point of the project, for at least 12 consecutive months prior to the award of the public construction project;

(23) “employed on the project” means the time period from the date the laborer, mechanic, or field surveyor first reports on-site to the project through the final date the person reports on-site to the project.

(Eff. 7/8/73, Register 47; am 12/4/76, Register 60; am 7/30/82, Register 83; am 9/27/87, Register 103; am 1/2/91, Register 116; am 8/9/01, Register 159; am 8/12/2018, Register 227; am 11/25/2018, Register 228; am 1/10/2021, Register 273)

Authority: AS 23.05.060 AS 36.10.075
AS 36.95.010 AS 36.05.030
AS 36.10.140

Editor's note:

Copies of the Standard Occupational Classification Manual adopted by reference in 8 AAC 30.900(2) are available for review at the Anchorage, Fairbanks, and Juneau offices of the department.

As of Register 151 (October 1999), the regulations attorney made technical revisions under AS 44.62.125 (b)(6) to reflect the name change of the Department of Labor to the Department of Labor and Workforce Development made by ch. 58, SLA 1999 and the corresponding title change of the commissioner of labor.

8 AAC 30.910. Definition of "on-site."

(a) In AS 36.95.010(3), "on-site" means at the physical place where the construction called for in a contract will remain when work on it has been completed and at other property used by the contractor or subcontractor in the construction which can reasonably be said to be included in the site because of proximity. The scope of “on-site”

(1) has the following exceptions:

(A) for a truck driver employee or truck driver owner/operator working for a contractor or subcontractor on the project, “on-site” encompasses all round-trip truck driving activity associated with delivering or hauling away materials, equipment, or supplies for the purposes of completing a public construction contract;

(B) for a truck driver employee or truck driver owner/operator who is working for a contractor or subcontractor on the project, and who, for the purposes of completing a public construction contract, hauls materials, equipment, or supplies away from a public construction project footprint, but does not return to the public construction project, “on-site” encompasses the haul-away activities until the truck is offloaded;

(C) a truck driver performing delivery as an employee of a bona fide material supplier or common carrier is not “on-site” when delivering materials from a location that is not “on-site,” including that material supplier’s home yard or warehouse, if that location is not dedicated exclusively or nearly so to performance of one or more public construction projects;

(2) is extensive for larger projects, including airports, dams and roads, and includes the whole area in which the contract construction activity will take place; work areas separate from the physical footprint of the construction activity, including fabrication plants, mobile factories, batch plants, borrow pits, rock quarries, job headquarters, tool yards, and similar work areas, are “on-

site" if they are in close proximity and are dedicated exclusively or nearly so to performance of one or more public construction projects during the period of contract construction activity;

(3) for smaller projects, normally includes no more than the building itself and its grounds and other land or structures that are "down the block" or "across the street" that the contractor or subcontractor uses in performance of a particular public construction project.

(b) Laborers, mechanics, or field surveyors who perform duties within the limits of "on-site" are subject to the department's wage decision for all hours spent working "on-site." Workers who, under this subsection, are subject to the department's wage decision include

(1) flaggers;

(2) barricade suppliers who set up or move barricades or other traffic control devices;

(3) employees of bona fide material suppliers or common carriers who perform work "on-site," other than mere delivery, including drivers or delivery workers assisting in specific placement of asphalt or concrete during construction operations, stocking materials in rooms or on floors, or otherwise performing work in construction;

(4) workers who perform mobilization or demobilization activities;

(5) workers contracted or employed by material or equipment suppliers who erect, clean, repair, construct, or perform operational checks, other than contractually obligated warranty work, on equipment or material located "on-site"; and

(6) laborers, mechanics, or field surveyors who are engaged by a person or business that is hired or contracted by a prime construction contractor or subcontractor to provide services that are integral and necessary to the construction project; workers who are subject to this paragraph

(A) shall be considered to be "on-site" in the performance of those duties that the contractor or subcontractor was required to perform;

(B) include a trucking firm other than a common carrier whose services are engaged by a construction contractor or subcontractor on a public works job to pick up materials from a supplier's delivery point and transport them to the job site.

(c) Not included in "on-site" are permanent home offices, branch plants, fabrication plants, tool yards, and other establishments of a contractor or subcontractor whose locations and continuance are governed by its general business operations. This is so even though mechanics, laborers, and field surveyors working at these establishments may repair or maintain machinery used in contract performance or make doors, windows, frames, or forms called for by the contract while continuing normal commercial work. Regardless of the activities performed at these establishments, the department's wage decision does not apply, because they are not "on-site." However, if mechanics, laborers, or field surveyors are required to go to a place that is "on-site" to perform activities on the contract, the department's wage decision is applicable for the actual time so spent, not including travel.

(d) For purposes of this section, a location or work area, or the existence or continuing operation of an enterprise, is dedicated exclusively or nearly so to one or more public construction projects if

(1) the location, work area, or enterprise is established in conjunction with one or more public construction projects; and

(2) during the year before a public construction project and during the life of a public construction project, less than 10 percent of documented sales or other uses are attributed to non-public construction projects.

(e) For purposes of this section, a site is in proximity to a public construction project if it is nearby the public construction project footprint and used on a regular and recurring basis to complete the public construction contract. The department will determine whether a site is in proximity to a public construction project on a project-by-project basis, taking into account

(1) the type of project;

(2) whether the use of a nearby site is required for completion of the project;

(3) whether the area of contract operations is developed or undeveloped; and

(4) the geographical lay of the land.

(f) In this section,

(1) "bona fide material supplier"

(A) means a commercial enterprise that holds itself out to the public as offering to supply sand, gravel, ready-mixed concrete, hot asphalt, or other construction materials to multiple clients for both public and private jobs; does not include a commercial enterprise whose existence or continuing operation is dedicated exclusively or nearly so to one or more public construction projects;

(2) "common carrier"

(A) means a commercial enterprise that holds itself out to the public as offering to transport freight or passengers and delivers multiple types of materials to multiple clients for both public and private jobs on a recurrent basis over established routes; in this subparagraph, "freight"

(i) means materials, supplies, and equipment, other than materials described in (ii) of this subparagraph;

(ii) does not include dirt, sand, gravel, rock, or other naturally occurring earth materials;

(B) does not include a commercial enterprise whose existence or continuing operation is dedicated exclusively or nearly so to one or more public construction projects.

(Eff. 7/30/82, Register 83; am 1/2/91, Register 116; am 8/9/2001, Register 159; am 3/24/2011, Register 197)

Authority: AS 23.05.060 AS 36.05.030
AS 36.10.075

8 AAC 30.920. Definition of "Economic Region."
In AS 36.10, "economic region" means a geographic area of the state sharing similar economic or demographic characteristics.
(Eff. 9/27/87, Register 103)
Authority: AS 36.10.075 AS 36.10.990

Editor's note:
Forms and any other assistance needed for compliance with 8 AAC 30 may be obtained by contacting any state employment center or the Department of Labor and Workforce Development, Wage and Hour Administration, 1251 Muldoon Road, Suite 113, Anchorage, Alaska 99504.

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CITY OF VALDEZ
Project Title: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project No.: 23-315-1623
Contract No.: 2161

TO: All Recipients **Date: January 2, 2024**

SUBJECT: Addendum No.1

This One (1) page Addendum forms a part of the project scope documents and modifies the project scope for the above-referenced project. **Acknowledge receipt of this Addendum in the space provided on the Bid Form**. Failure to do so may subject the Bidder to disqualification.

This Addendum makes the following changes and/or clarifications:

Due to the short duration allowed to bid on this project and because it was run over the holidays the City of Valdez will extend the Bid-Opening date by three (3) weeks to allow bidders more time to complete competitive bids.

The Pre-Bid Conference date will remain the same, January 4, 2024, at 2:00pm.

The deadline for questions will be extended to February 5, 2024, at 2:00pm.

The Bid-Opening date will be extended to February 8, 2024, at 2:00pm.

End of Addendum

CITY OF VALDEZ
Project Title: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project No.: 23-315-1623
Contract No.: 2161

TO: All Recipients **Date: January 25, 2024**

SUBJECT: Addendum No.2

This Seven (7) page Addendum forms a part of the project scope documents and modifies the project scope for the above-referenced project. **Acknowledge receipt of this Addendum in the space provided on the Bid Form**. Failure to do so may subject the Bidder to disqualification.

This Addendum makes the following changes and/or clarifications:

A line item for owner contingency will be added to the bid schedule. This contingency will be used for unseen work not included in the contract documents at the owner's discretion. The new line will be Item No. 7, item description is Owner's Contingency, Quantity will be contingent sum (CS), and the total item price is $50,000. Please see the updated bid schedule in Bid Express.

Photos were requested of the project site and equipment. The photos provided by AMC Engineers are available to download in the Bid Express solicitation under attached documents.

Responses to Questions:

RESPONSES TO BIDDER QUESTIONS

PVMC LEVEL 1 GENERATOR REPLACEMENT

1. Question: Please provide a detailed list of any and all equipment the customer expects to retain ownership of and how the transfer of property being removed by the contractor should be managed jointly between the owner and contractor.
    a. **Response:**
        i. Contractor is responsible for removal and disposal of existing hospital generator.
        ii. Contractor demolishes existing hospital generator day tank and delivers to COV/PVMC who retain ownership.

iii. Contractor demolishes existing clinic generator and delivers to COV/PVMC who retain ownership.
iv. Contractor demolishes existing clinic ATS and delivers to COV/PVMC who retain ownership.
v. Contractor demolishes clinic generator load bank and delivers to COV/PVMC who retain ownership.

2. **Question:** The contractor is requesting clarification regarding the responsibility for transfer, storage, and disposal of approximately 300 gallons of fuel salvaged from any fuel tanks of the existing emergency generator(s) and the day tank(s) within the scope of work.
    a. **Response:** Contractor is responsible for coordination with North Pacific to empty the subject tanks prior to demolition. The contractor is responsible for the removal of all fuel in ancillary tank and piping systems.

3. **Question:** Please confirm that the contractor is not responsible for providing any fuel for this project. Can the contractor assume that any fuel required for startup and testing will be provided by the Owner at no cost to the contractor?
    a. **Response:** Contractor shall coordinate delivery of sufficient fuel to properly test and commission the generator. Once testing and commissioning is complete, the Contractor shall coordinate filling of the generator skid base fuel tank to the top at owner's expense. Once piping between the above ground storage tank and the generator skid base tank is complete, the Contractor shall valve off the connection so that the generator does not draw from the AST during testing and commissioning. Once testing and commissioning is done and the completed generator has been accepted, the Contractor shall open the valve.

4. **Question:** Please confirm if Long Controls or if Quality Controls will be responsible for the BMS scope. Also please provide POC and contact info for the BMS contractor.
    a. **Response:** See response below to the additional question regarding controls.

5. **Question:** Please confirm if the Owner has discussed and confirmed a Scope of Work with their selected BMS contractor. Our hope is the Owner and the BMS contractor have defined a single and prime BMS scope of work that will be issued to all potential bidders to ensure consistency and transparency for all hardware, software, upgrades, training, infrastructure scope and warranty management as it pertains to the BMS and Generator integration.

a. **Response:** The scope of work has NOT been discussed with any BMS contractor. Provide open source, Distec / BACnet controls compatible with existing infrastructure with graphics and programming compatible with the existing system and freely accessible by whomever has the annual maintenance contract.

6. **Question:** Sheet note # 15 on sheet E3.01 states; Provide Gabled Overhang with 3"x12" pitch centered over access door(s) to enclosure. Overhang shall extend to edge of Concrete support pad. Detail 1/E3.01 Plan view shows the over hangs to be larger than the man door outswing. Details A & B /E3.01 show elevations of the over hangs but there are not further dimensions provided. Please provide structural and architectural information for construction and finishes for the Gabled Overhang called out on Sheet E3.01 to include details on how the Gabled overhand is to be connected to the generator enclosure.
    a. **Response:** Elements of the enclosure are deferred design submittals from the enclosure manufacturer. The Contractor shall provide roof overhang support structure drawings and details along with engineered walk-in, arctic enclosure shop drawings required by Specification Section 26 3213.2.10 – Engine Generator for review and approval prior to construction. Engineer roof overhang and roof overhand support structure to support COV snow loads as listed in the Specifications.

7. **Question:** Detail 4/ C2.00 shows that the concrete support pad for the generator enclosure but does not show any foundation accommodations for the overhang roof shown on sheet E3.01 or roof support posts. Please clarify and provide additional information and any changes are to be made to Civil drawings to include additional concrete, rebar, post supports / connections and civil excavation details.
    a. **Response:** Elements of the enclosure are deferred design submittals from the enclosure manufacturer. The Contractor shall provide roof overhang support structure drawings and details along with engineered walk-in, arctic enclosure shop drawings required by Specification Section 26 3213.2.10 – Engine Generator for review and approval prior to construction. Engineer roof overhang and roof overhand support structure to support COV snow loads as listed in the Specifications.

8. **Question:** Sheet E1.01 sheet note #1 states the "storage shed will be relocated by PVMC". Does the shed have a foundation and / or an electrical feed and if so will that be removed also by PVMC?
    a. **Respond:** The shed does not have an electrical feed or a foundation.

9. **Question:** Sheet A1.01 shows two details labeled 6/A1.01, both have different detail descriptions. One detail shows multiple framing members thickness for the wall, and one shows single framing member thick wall. Detail 5/A1.01 has a detail bubble for 7/A1.01, detail 7 is not shown on A1.01. Please clarify detailed applications.
    a. **Response:** "TYPICAL LOUVER INFILL HEAD (JAMB SIMILAR)" was erroneously misnumbered. This is detail 7/A1.01.

10. **Question:** Detail 2/ C2.0 is the only reference I can find to the thickness of the generator pad. Note #2. "Pad thickness shall be 1.5 times the Anchor Bolt Embedment depth." Can the Contractor assume that the "single mat #4 rebar at 12" on each direction" will be adequate for the slab?
    a. **Response:** Correct, assume the single mat #4 rebar at 12" on each direction will be adequate for the slab.

11. **Question:** Detail 1/C2.00 calls for the new bollards to be Painted yellow. Would yellow 1/8" wall dome top bollard sleeves be an acceptable substitute?
    a. **Response:** The proposal is acceptable.

12. **Question:** Are existing ATS CLIN, UPS, and EQUIP currently capable of the load shed as stated in 26 3213 2.2.F?
    a. **Response:** ATS-EQUIP is set up to load shed. The others are not and are not required to be load shed as ATS-EQUIP represents a great majority of the load.

13. **Question:** Will the Providence Valdez Medical Center be responsible for infection control/containment within the Medical Center?
    a. **Response:** No, the Contractor is responsible for infection control/containment within the Medical Center. An ICRA form with more details of the contractor's responsibility for infection control/containment will be posted on Bid Express in a new addendum.

14. **Question:** E2.06 Note 5 shows feeder 0304. This feeder is not on the feeder schedule.

a. **Response:** Feeder 0304 is a 3/4 INCH CONDUIT WITH 4-#10 + 1-#12 GROUND.

15. **Question:** Please confirm ANN and ANNUN are the same.
    a. **Response:** Yes, "ANN" and "ANNUN" are the same and represent the word "Annunciator".

16. **Question:** Is there a basis of design for the new ATS?
    a. **Response:** ASCO 7000 series, open transition. Voltage, amperage, number of phases, and number of poles as indicated on the drawings. Provide factory load shed provisions for future use.

17. **Question:** Is there any information on the existing UPS? Can this UPS be programmed to stagger battery charging?
    a. **Response:** No need to do so. The generator is sufficiently sized to obviate the need for this.

18. **Question:** Sheet Note #5 on sheet A1.01 states "Demolish concrete housekeeping slab down to finished floor height. Patch or replace as necessary to provide smooth finish." Does the Owner have any As Built information on how that housekeeping pad was placed on the finished floor slab on grade?
    a. Was the housekeeping pad poured on a "roughened surface?"
        i. **Response:** Assume mechanical pad for generator, etc., were poured on top of finished slab with vertical dowls on 16-inch center.
    b. Was slab on grade rebar stubbed up to interface with housekeeping pad rebar?
        i. **Response:** Unknown. Assume that it was for bid purposes.

19. **Question:** Does sheet note #6 on sheet A1.01 (new epoxy floor paint) apply to the entire floor area of room M110? If yes, does the existing wall base get replaced?
    a. **Response:** Yes, it does. Replace wall base. Match existing.

20. **Question:** Does sheet note #7 on sheet A1.01 (paint walls) only apply to area's effected by wall patch areas noted in sheet notes #1-#4?
    a. **Response**: Yes, paint wall patch areas to match existing as close as is practical.

21. **Question:** Detail 6/A1.01 references “Tube Steel Support, Refer to Structural” but no structural sheets are provided. Please provide additional structural information.
    a. **Response:** Referenced steel tube is HSS 6 x 2 x length required.

22. **Question:** Provide additional information for generator load bank indicated on Sheet E3.01.
    a. **Response:** Provide nominal 200kW, 480V, 3-phase load bank as indicated on Sheet E3.01. Refer to the attached, revised Sheet E4.02 for additional information.

End of Addendum

GENERAL NOTES

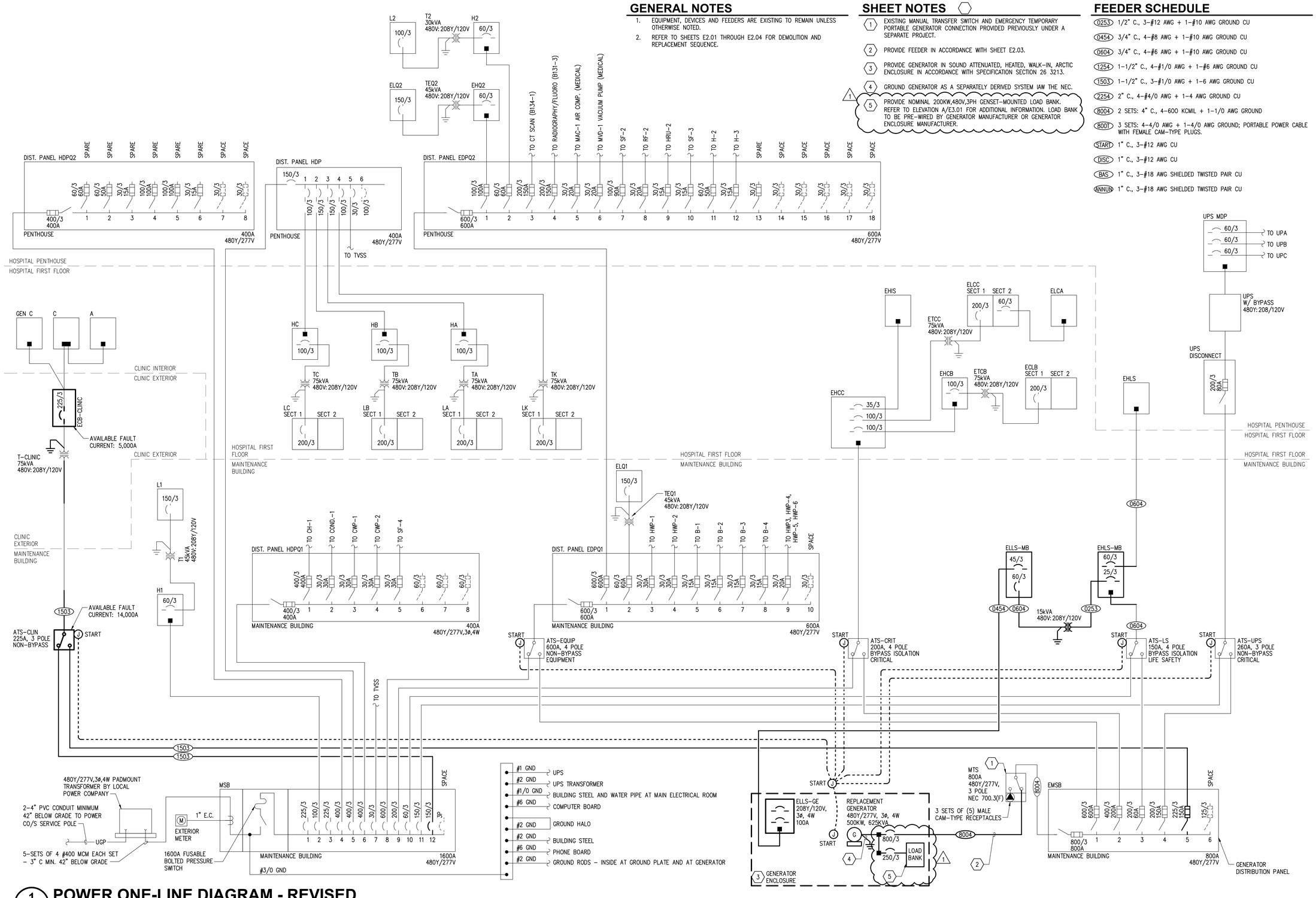
1. EQUIPMENT, DEVICES AND FEEDERS ARE EXISTING TO REMAIN UNLESS OTHERWISE NOTED.
2. REFER TO SHEETS E2.01 THROUGH E2.04 FOR DEMOLITION AND REPLACEMENT SEQUENCE.

SHEET NOTES

1. EXISTING MANUAL TRANSFER SWITCH AND EMERGENCY TEMPORARY PORTABLE GENERATOR CONNECTION PROVIDED PREVIOUSLY UNDER A SEPARATE PROJECT.
2. PROVIDE FEEDER IN ACCORDANCE WITH SHEET E2.03.
3. PROVIDE GENERATOR IN SOUND ATTENUATED, HEATED, WALK-IN, ARCTIC ENCLOSURE IN ACCORDANCE WITH SPECIFICATION SECTION 26 3213.
4. GROUND GENERATOR AS A SEPARATELY DERIVED SYSTEM IAW THE NEC.
5. PROVIDE NOMINAL 200KW,480V,3PH GENSET-MOUNTED LOAD BANK. REFER TO ELEVATION A/E3.01 FOR ADDITIONAL INFORMATION. LOAD BANK TO BE PRE-WIRED BY GENERATOR MANUFACTURER OR GENERATOR ENCLOSURE MANUFACTURER.

FEEDER SCHEDULE

0253	1/2" C., 3-#12 AWG + 1-#10 AWG GROUND CU
0454	3/4" C., 4-#8 AWG + 1-#10 AWG GROUND CU
0604	3/4" C., 4-#6 AWG + 1-#10 AWG GROUND CU
1254	1-1/2" C., 4-#1/0 AWG + 1-#6 AWG GROUND CU
1503	1-1/2" C., 3-#1/0 AWG + 1-6 AWG GROUND CU
2254	2" C., 4-#4/0 AWG + 1-4 AWG GROUND CU
8004	2 SETS: 4" C., 4-600 KCMIL + 1-1/0 AWG GROUND
8007	3 SETS: 4-4/0 AWG + 1-4/0 AWG GROUND; PORTABLE POWER CABLE WITH FEMALE CAM-TYPE PLUGS.
START	1" C., 3-#12 AWG CU
DISC	1" C., 3-#12 AWG CU
BAS	1" C., 3-#18 AWG SHIELDED TWISTED PAIR CU
ANNUN	1" C., 3-#18 AWG SHIELDED TWISTED PAIR CU



1 POWER ONE-LINE DIAGRAM - REVISED

E3.01 SCALE: NONE

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CITY OF VALDEZ, ALASKA — OPPORTUNITIES IN EVERY SEASON

PROVIDENCE VALDEZ MEDICAL CENTER
LEVEL 1 EPS GENERATOR REPLACEMENT

Revisions		
No.	Date	Description
1	1/26/24	ADDENDUM 2

1 INCH AT FULL SIZE — 1" ACTUAL — IF NOT 1 INCH, SCALE ACCORDINGLY

Designed by:	DSD
Checked by:	KAC
AMC Project:	23305
Date:	12/08/2023

Project Phase
100% CONSTRUCTION DOCUMENTS

Sheet Title
POWER ONE-LINE DIAGRAM - REVISED

Sheet Number
E4.02

CITY OF VALDEZ
Project Title: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project No.: 23-315-1623
Contract No.: 2161

TO: All Recipients **Date: February 1, 2024**

SUBJECT: Addendum No. 3

This Three (3) page Addendum forms a part of the project scope documents and modifies the project scope for the above-referenced project. **Acknowledge receipt of this Addendum in the space provided on the Bid Form**. Failure to do so may subject the Bidder to disqualification.

This Addendum makes the following changes and/or clarifications:

Attached to this addendum is the Infection Control Risk Assessment (ICRA) Construction Permit for the Providence Valdez Medical Center Level 1 EPS Generator Replacement project. This information is being provided to the contractors to assist with the bidding process for any cost associated with this portion of work included in the contract documents.

End of Addendum

Infection Control Risk Assessment (ICRA) Construction Permit

Infection Prevention Department Phone: 834-1826

Project/Permit #: 012624

Maintenance Location: Radiology, ER Dept and Nurses Station	**Start Date: 2024-05-01**
Description: Run conduit through ceiling to nurses' station from riser room for the generator alarm.	**Permit Expiration Date: 2025-05-01**
Project Coordinator/Supervisor: Brent Ferguson	**Phone: 907 202 1965 Brad Sontag**
Contractor Performing Work: TBA	**Phone: TBA**

Project Risk Class **II** (***See reverse side for Risk Assessment Matrix-Permit Required for Class IV and V Project***)

Class	Construction	
I	✓ Perform noninvasive work activity as to not block or interrupt patient care. ✓ Perform noninvasive work activities in areas that are not directly occupied with patients.	✓ Perform noninvasive work activity in a manner that does not create dust. ✓ Immediately replace any displaced ceiling tile before leaving the area and/or at end of noninvasive work activity.
II	**In addition to Class I:**	
	✓ Perform only limited dust work and/or activities designed for basic facilities and engineering work.	✓ Perform limited dust and invasive work following standing precautions procedures approved by the organization.
III	**In addition to Class I and II:**	
	✓ **Have all patient/unit equipment and supplies moved out of the construction/work area prior to beginning project** ✓ Provide active means to prevent airborne dust dispersion into the occupied areas through the use of hand-held HEPA vacuum devices, polyethylene plastic containment, isolation of work area by closing room door, etc ✓ Remove or isolate return air diffusers to avoid dust from entering the HVAC system. ✓ Remove or isolate the supply air diffusers to avoid positive pressurization of the space. ✓ If work area is contained, then it must be neutrally to negatively pressurized at all times. ✓ Seal all doors with tape that will not leave residue. ✓ Contain all trash and debris in the work area.	✓ Nonporous/smooth and cleanable containers (with a hard lid) must be used to transport trash and debris from the construction areas. These containers must be damp-wiped cleaned and free of visible dust/debris before leaving the contained work area. ✓ Do not remove barriers from work area until completed project is thoroughly cleaned by Env. Services Dept. ✓ Install an adhesive (dust collection) mat at entrance of contained work area based on facility policy. Adhesive mats must be changed routinely and when visibly soiled. ✓ Maintain clean surroundings when area is not contained by damp mopping or HEPA vacuuming surfaces. ✓ Worker clothing must be clean and free of visible dust before leaving the work area. HEPA vacuuming of clothing or use of cover suits is acceptable
IV	**In addition to Class I, II, and III:**	
	✓ Construct and complete critical barriers meeting NFPA 241 requirements including: Barriers must extend to the ceiling or, if ceiling tile is removed, to the deck above, and all penetrations through the barrier shall meet the appropriate fire rating requirements. (See Technical Standard 465 – Infection Control Risk Assessment for additional barrier requirements) ✓ Environmental containment units (ECUs) are approved for Class IV precautions in small areas totally contained by the unit and that has HEPA-filtered exhaust air. ✓ Maintain negative pressurization of the entire workspace by use of HEPA exhaust air systems directed outdoors. Exhaust discharged directly to the outdoors that is 25 feet or greater from entrances, air intakes and windows does not require HEPA-filtered air. ✓ If exhaust is directed indoors, then the system must be HEPA filtered. Prior to start of work, HEPA filtration must be verified by particulate measurement as no less than 99.97% efficiency and must not alter or change airflow/pressure relationships in other areas.	✓ **Exhaust into shared or recirculating HVAC systems, or other shared exhaust systems (e.g., bathroom exhaust) is not acceptable.** ✓ *See Technical Standard 465 – Infection Control Risk Assessment for additional guidance on negative pressure* ✓ Install device on exterior of work containment to continually monitor negative pressurization. To assure proper pressure is continuously maintained, it is recommended that the device(s) have a visual pressure indicator. ✓ Vacuum work area with HEPA filtered vacuums or wet mop every shift of construction activity, minimize tracking. ✓ Workers must wear shoe covers prior to entry into the work area. Shoe covers must be changed prior to exiting the anteroom to the occupied space (non-work area). Damaged shoe covers must be immediately changed.
V	**In addition to Class I, II, III, and IV:**	
	✓ Construct anteroom large enough for equipment staging, cart cleaning, workers. The anteroom must be constructed adjacent to entrance of construction work area. ✓ Personnel will be required to wear disposable coveralls at all times during Class V work activities. Disposable coveralls must be removed before leaving the anteroom.	✓ Negative airflow pattern must be maintained from the entry point to the anteroom and into the construction area. The airflow must cascade from outside to inside the construction area. The entire construction area must remain negatively pressurized.

Additional Requirements: See Class III for abatement work. Reference Mold Mitigation Remediation – PolicyStat ID: *10024905.*

Permit Requested By: Brent Ferguson	**Permit Authorized by: Olivia Foster, RN – Infection Preventionist**
Date: 1/25/2024	**Date: 01/26/2024**

This permit must be posted at worksite for duration of the project.

Failure to comply with any of the above requirements will result in immediate shut down of the job.

Revised: 7/27/2023

Step 1: Select Construction Activity Type

Type A	**Inspection and Non-Invasive/General Upkeep Activities.** Includes but is not limited to: removal of ceiling tiles for visual inspection (limited to 1 tile per 50 square feet); limited building system maintenance (e.g., pneumatic tube station, HVAC system, fire suppression system, electrical and carpentry work to include painting without sanding) that does not create dust or debris; clean plumbing activity limited in nature.
Type B	**Small scale, short duration activities that create minimal dust.** Includes but not limited to: work conducted above the ceiling (e.g., prolonged inspection or repair of firewalls and barriers, installation of conduit and/or cabling, and access to mechanical and/or electrical chase spaces); fan shutdown/startup; installation of electrical devices, installation of new flooring, removal of drywall, or controlled sanding activities which produce minimal dust and debris. (Projects in this category are typically completed in a single work shift)
Type C	**Any work that generates a moderate-to-high level of dust.** Includes but not limited to**:** removal of pre-existing floor covering, walls, casework or other building components; new drywall placement; renovation work in a single room; non-existing cable pathway or invasive electrical work above ceilings; removal of drywall or dry sanding where a moderate amount of dust and debris is created; work creating significant vibration and/or noise. (Projects of this type cannot be complete within a single work shift.)
Type D	**Major demolition work and construction projects**. Includes but is not limited to: removal or replacement of building system component(s); removal/installation of drywall partitions; invasive large-scale new building construction; renovation work in two or more rooms.

Step 2: Select Infection Control Risk Assessment Groups/ Zones

Group 1 – Lowest	**Group 2 – Medium**	**Group 3 – High**	**Group 4 – Highest**
Public hallways and gathering areas not on clinical units	Waiting areas	All acute care units	All intensive care units (including PICU/NICU)
Office areas not on clinical units	Clinical engineering	Emergency Department	All oncology units/clinics
Breakrooms not on clinical units	Materials management/General Stores	Pharmacy – general work zone	OR theaters and restricted areas (including day surgery, Labor and Delivery, PACU, etc)
Bathrooms or locker rooms not on clinical units	Sterile processing department – dirty side	Medication rooms and clean utility rooms	Procedural suites (Including Cath labs, etc)
Mechanical rooms not on clinical units	Gift shop	Imaging suites: diagnostic imaging	Pharmacy compounding
EVS not on clinical units	Kitchen, cafeteria, coffee shop, and food kiosks	Laboratory	Sterile processing department – clean side
Non-patient/ low risk areas not listed elsewhere	Cardiac Rehab	Outpatient Clinic*	Transfusion services
	PT/OT Rehab		Dedicated Isolation wards/units
			Imaging suites: invasive imaging
			Children's Hospital/Pediatrics
			Dialysis Suites/Renal Care Units
			Wound centers
			Microbiology and Special Laboratories

*Outpatient clinic spaces risk class may be different based on level of care provided

Step 3: Determine Project Risk Class from Construction Activity Infection Control Matrix

Risk Level	**Construction Activity**			
	Type A	**Type B**	**Type C**	**Type D**
Group 1	I	II	II	III/IV
Group 2	I	II	III/IV	IV
Group 3	II	III	IV	V
Group 4	III	IV	V	V

Project Title: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project No.: 23-315-1623
Contract No.: 2161

TO: All Recipients **Date: February 5, 2024**

SUBJECT: Addendum No.4

This Four (4) page Addendum forms a part of the project scope documents and modifies the project scope for the above-referenced project. **Acknowledge receipt of this Addendum in the space provided on the Bid Form**. Failure to do so may subject the Bidder to disqualification.

This Addendum makes the following changes and/or clarifications:

RESPONSES TO BID QUESTIONS:

1. Question: Response; Can the contractor assume the demolished equipment is turned over to COV/PVMC at the jobsite once demoed or does the COV have an address that equipment will be transported to?
    a. **Response:** The contractor will take ownership of the demolished PVMC Generator. COV will take ownership of the Clinic generator and the contractor will be responsible for transporting it to the City's Building Maintenance Facility at 555 West Egan Drive. All other demolished equipment ownership will go to the contractor unless determined otherwise in the field.

2. Question: Reference Question #3 Response; Response outlines sequence and coordination of fuel needs but does not clarify whom provides fuel. Can the contractor assume COV/PVMC is providing all fuel costs and delivery coordination will be make through COV/PVMC?
    a. **Response:** Yes, assume COV/PVMC is providing all fuel costs. Contractor is responsible for fuel delivery coordination and scheduling on an as needed basis.

3. Question: Reference Question #10 response; Details and notes stated in the contractor's clarification question indicate design requirements may be needed for the generator

CITY OF VALDEZ
Project Title: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project No.: 23-315-1623
Contract No.: 2161

TO: All Recipients **Date: February 9, 2024**

SUBJECT: Addendum No. 5

This One (1) page Addendum forms a part of the project scope documents and modifies the project scope for the above-referenced project. **Acknowledge receipt of this Addendum in the space provided on the Bid Form**. Failure to do so may subject the Bidder to disqualification.

This Addendum makes the following changes and/or clarifications:

Extended deadline for questions: February 13, 2024 at 4:00pm Alaska Time.

Extended date for Bid Opening: To allow bidders more time to include the new cost of a contractor provided temporary generator we have again extended the Bid Opening date to February 22, 2024, at 2:00pm Alaska Time.

End of Addendum

concrete pad. Anchor bolt embedment is not provided in the contract documents therefore contractor cannot calculate the pad thickness. Can the contractor assume a 12 inch thick pad, dimensions and rebar as shown on sheet C2.00 will be required?

a. **Response:** Yes, assume a 12 inch thick pad, dimensions and rebar as shown on sheet C2.00 will be required.

4. Question 4: Can COV provide make and model of the temporary generator they will be supplying as well as self-contained /on board fuel capacity for the unit?
    a. **Response:** The CoV can no longer provide said temporary generator. The Contractor shall provide the temporary generator as required by the Drawings and Specifications. Refer to Specification and Drawing revisions below for additional information.

5. Question: Will the temporary generator need a test run periodically by the GC? If yes will the COV be monitoring the fuel capacity level and providing refueling as needed?
    a. **Response:** Yes, coordinate with PVMC and provide monthly testing as required. CoV will pay for fuel costs. Contractor is responsible for fuel delivery coordination and scheduling on an as needed basis.

6. **Revise** Specification Section 26 0000.1.2.B to read as follows:
    a. "A Contractor furnished, contractor installed (CFCI) temporary, portable generator will be utilized to function as a temporary Level 1, emergency power system (EPS) generator for the Providence Valdez Medical Center while the replacement generator is furnished and installed. The Contractor shall provide said generator. This temporary, trailerable, generator will connect to an existing manual transfer switch that was recently installed for just this purpose and in accordance with NEC Article 700.3(f)."

7. Refer to Sheet G0.01, under "SCOPE OF WORK", Revise the 2nd paragraph down to read as follow:
    a. "A CONTRACTOR FURNISHED, CONTRACTOR INSTALLED (CFCI) TEMPORARY, PORTABLE GENERATOR WILL BE UTILIZED TO FUNCTION AS A TEMPORARY LEVEL 1, EMERGENCY POWER SYSTEM (EPS) GENERATOR FOR THE PROVIDENCE VALDEZ MEDICAL CENTER WHILE THE REPLACEMENT GENERATOR IS FURNISHED AND INSTALLED. THE CONTRACTOR SHALL PROVIDE SAID GENERATOR. THIS TEMPORARY, TRAILERABLE GENERATOR

WILL CONNECT TO AN EXISTING MANUAL TRANSFER SWITCH THAT WAS RECENTLY INSTALLED FOR JUST THIS PURPOSE AND IN ACCORDANCE WITH NEC ARTICLE 700.3(F)."

8. Refer to Sheet E2.02. **Revise** Sheet Note 1 to read as follow:
    a. "PROVIDE 500KW/625KVA, 480Y/277V, PORTABLE CFCI TEMPORARY GENERATOR AND TEMPORARY FEEDERS AT LOCATION INDICATED. DO NOT CONNECT."

Extra Clarification to Question No.4 response: Reminder to bidders that the City of Valdez can no longer provide the temporary generator needed to complete this project. The contractor will now take on the responsibility of providing the temporary generator as required by the Drawings and Specifications. See attached Specification and Drawing revisions.

Bidders should include this new cost in the Bid Schedule under line-item No.5

Wording on item #5 of the bid schedule will be modified to reflect this change.

Extended date for Bid Opening: To allow bidders more time to include the new cost of the contractor providing the temporary generator we have extended the Bid Opening date to February 13, 2024, at 10:00am Alaska Time.

End of Addendum

GENERAL NOTES

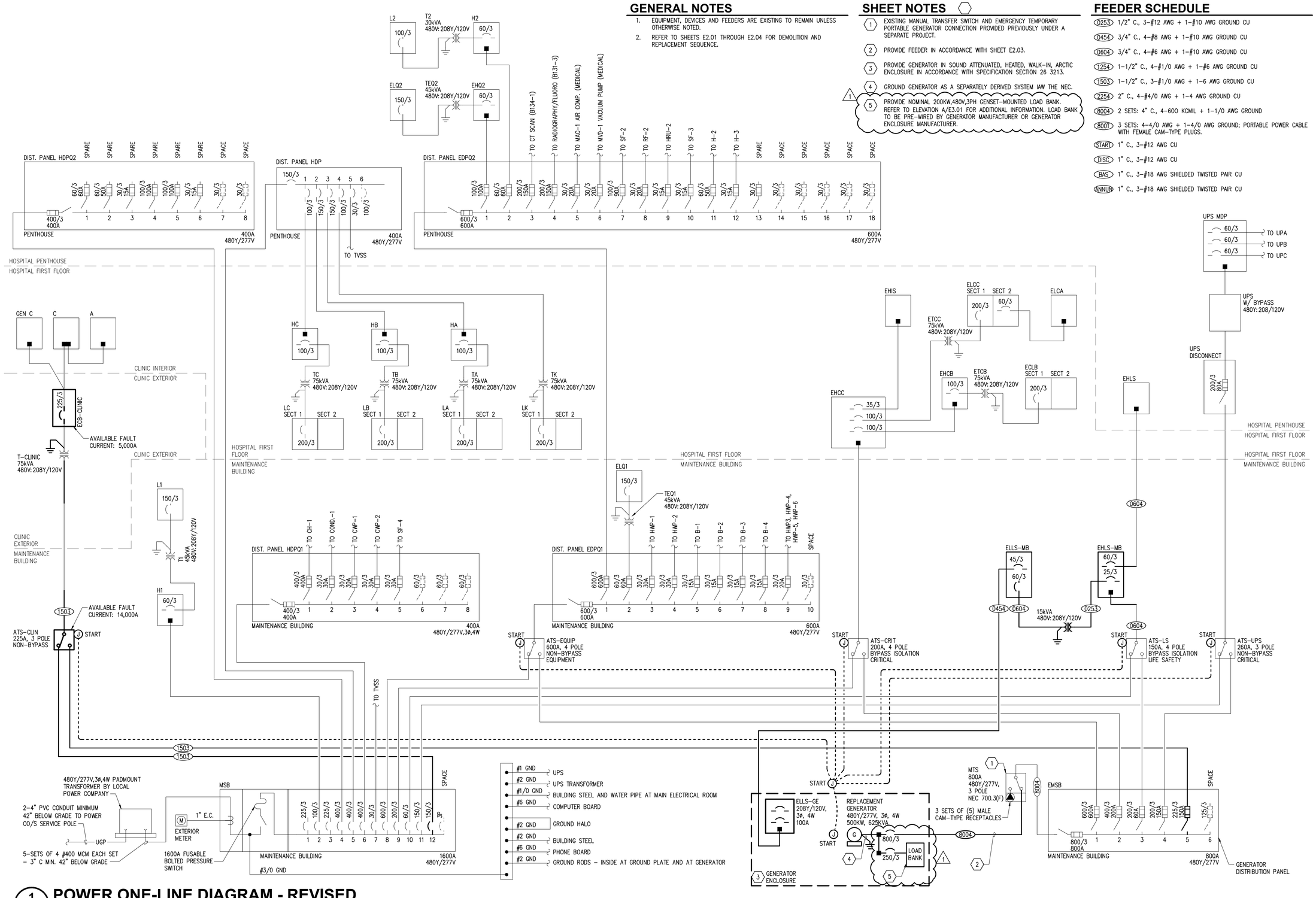
1. EQUIPMENT, DEVICES AND FEEDERS ARE EXISTING TO REMAIN UNLESS OTHERWISE NOTED.
2. REFER TO SHEETS E2.01 THROUGH E2.04 FOR DEMOLITION AND REPLACEMENT SEQUENCE.

SHEET NOTES

1. EXISTING MANUAL TRANSFER SWITCH AND EMERGENCY TEMPORARY PORTABLE GENERATOR CONNECTION PROVIDED PREVIOUSLY UNDER A SEPARATE PROJECT.
2. PROVIDE FEEDER IN ACCORDANCE WITH SHEET E2.03.
3. PROVIDE GENERATOR IN SOUND ATTENUATED, HEATED, WALK-IN, ARCTIC ENCLOSURE IN ACCORDANCE WITH SPECIFICATION SECTION 26 3213.
4. GROUND GENERATOR AS A SEPARATELY DERIVED SYSTEM IAW THE NEC.
5. PROVIDE NOMINAL 200KW,480V,3PH GENSET-MOUNTED LOAD BANK. REFER TO ELEVATION A/E3.01 FOR ADDITIONAL INFORMATION. LOAD BANK TO BE PRE-WIRED BY GENERATOR MANUFACTURER OR GENERATOR ENCLOSURE MANUFACTURER.

FEEDER SCHEDULE

0253	1/2" C., 3-#12 AWG + 1-#10 AWG GROUND CU
0454	3/4" C., 4-#8 AWG + 1-#10 AWG GROUND CU
0604	3/4" C., 4-#6 AWG + 1-#10 AWG GROUND CU
1254	1-1/2" C., 4-#1/0 AWG + 1-#6 AWG GROUND CU
1503	1-1/2" C., 3-#1/0 AWG + 1-6 AWG GROUND CU
2254	2" C., 4-#4/0 AWG + 1-4 AWG GROUND CU
8004	2 SETS: 4" C., 4-600 KCMIL + 1-1/0 AWG GROUND
8007	3 SETS: 4-4/0 AWG + 1-4/0 AWG GROUND; PORTABLE POWER CABLE WITH FEMALE CAM-TYPE PLUGS.
START	1" C., 3-#12 AWG CU
DISC	1" C., 3-#12 AWG CU
BAS	1" C., 3-#18 AWG SHIELDED TWISTED PAIR CU
ANNUN	1" C., 3-#18 AWG SHIELDED TWISTED PAIR CU



1 POWER ONE-LINE DIAGRAM - REVISED

E3.01 SCALE: NONE

FILE NAME: X:\23305 PVMCGEN3\Dwgs\Edwg\Sheet Files\23305 - E4.02.dwg
PLOTTED: tcorey 1/25/2024 12:12 PM

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STATE OF ALASKA 49TH Keith A. Confer 12/09/2023 EE-11391 REGISTERED PROFESSIONAL ENGINEER

© 23305

Providence St. Joseph Health

CITY OF VALDEZ, ALASKA — OPPORTUNITIES IN EVERY SEASON

PROVIDENCE VALDEZ MEDICAL CENTER
LEVEL 1 EPS GENERATOR REPLACEMENT

Revisions		
No.	Date	Description
1	1/26/24	ADDENDUM 2

1 INCH AT FULL SIZE — 1" ACTUAL — IF NOT 1 INCH, SCALE ACCORDINGLY

Designed by:	DSD
Checked by:	KAC
AMC Project:	23305
Date:	12/08/2023

Project Phase
100% CONSTRUCTION DOCUMENTS

Sheet Title
POWER ONE-LINE DIAGRAM - REVISED

Sheet Number
E4.02

CITY OF VALDEZ
Project Title: Providence Valdez Medical Center Level 1 EPS Generator Replacement
Project No.: 23-315-1623
Contract No.: 2161

TO: All Recipients **Date: February 14, 2024**

SUBJECT: Addendum No. 6

This One (1) page Addendum forms a part of the project scope documents and modifies the project scope for the above-referenced project. **Acknowledge receipt of this Addendum in the space provided on the Bid Form**. Failure to do so may subject the Bidder to disqualification.

This Addendum makes the following changes and/or clarifications:

Response to Question:

Question – In the Bid documents Special Provisions SP-03 states the Completion date is June 1, 2025. CAT has stated in their proposal for the new generator that the lead time on the Generator Module is 55 weeks after full submittal release, estimating an additional 4 weeks for submittal preparation, 4 weeks for submittal review and possible approval and 4 weeks delivery time all of which is beyond the contractors control indicates a possible completion after June 1, 2024. Can the contractor assume that the COV will coordinate with the contractor to extend the contract completion date to 60 days after the new CAT generator arrives on site?

Response- The City will work with the contractor to extend the final completion deadline after award of contract. It is expected that the extension will only be a matter of weeks beyond the original contract completion date in the bid documents. Final completion extension will be contingent upon a good faith effort from the contractor to meet expected deadlines and only justified by circumstances beyond their control. The necessity of extension will be evidenced by the preliminary critical path schedule provided to the owner indicating a realistic, logic based, sequence of critical activities.

End of Addendum

PROVIDENCE VALDEZ MEDICAL CENTER
LEVEL 1 EPS GENERATOR REPLACEMENT

100% CONSTRUCTION DOCUMENTS
DECEMBER 08, 2023

PROJECT TEAM

Owner	**City of Valdez**	212 Chenega Ave. Valdez, Alaska 99686 907.835.4313 www.valdezak.gov
Tenant	**Providence Medical Center**	911 Meals Avenue Valdez, AK 99686 907.835.2249 www.providence.org
Prime Consultant **Electrical Engineering** **Mechanical Engineering**	**AMC Engineers**	701 East Tudor Road, Suite 250 Anchorage, AK 99503 907.257.9100 www.amc-engineers.com
Civil	**DOWL**	5015 Business Park Boulevard, Suite 4000 Anchorage, AK 99503 907.562.2000 www.dowl.com
Architectural	**Architects Alaska**	900 W. 5th Avenue, Suite 403 Anchorage, Alaska 99654 907.272.3567 www.architectsalaska.com

SCOPE OF WORK

GENERAL

GENERAL PROJECT SCOPE INCLUDES PROVIDING A REPLACEMENT DIESEL FIRED, LEVEL 1, EMERGENCY POWER SYSTEM (EPS) GENERATOR IN A SOUND ATTENUATED, HEATED, FULL WALK-IN ARCTIC ENCLOSURE FOR THE PROVIDENCE VALDEZ MEDICAL CENTER (PVMC) WHICH OPERATES AS A CRITICAL ACCESS HOSPITAL WITH NORMAL, LIFE SAFETY, CRITICAL, EQUIPMENT, AND OPTIONAL STANDBY POWER SYSTEMS IN ACCORDANCE WITH NEC ARTICLES 517, 700 AND 702. PROVIDE A DRY AGENT FIRE SUPPRESSION SYSTEM WITHIN THE GENERATOR ENCLOSURE AND FIRE ALARM SYSTEM SIGNALING AND NOTIFICATION DEVICES. CONNECT THE FIRE SUPPRESSION SYSTEM AND DEVICES TO THE EXISTING HOSPITAL FIRE ALARM SYSTEM (HONEYWELL NOTIFIER).

AN OWNER FURNISHED, CONTRACTOR, INSTALLED (OFCI) TEMPORARY, PORTABLE GENERATOR WILL BE UTILIZED TO FUNCTION AS A TEMPORARY LEVEL 1, EMERGENCY POWER SYSTEM (EPS) GENERATOR FOR THE PROVIDENCE VALDEZ MEDICAL CENTER WHILE THE REPLACEMENT GENERATOR IS FURNISHED AND INSTALLED. THIS TEMPORARY, TRAILERABLE GENERATOR WILL CONNECT TO AN EXISTING MANUAL TRANSFER SWITCH THAT WAS RECENTLY INSTALLED FOR JUST THIS PURPOSE AND IN ACCORDANCE WITH NEC ARTICLE 700.3(F).

THE EXISTING GENERATOR WILL BE REMOVED FROM THE MAINTENANCE BUILDING, ITS ASSOCIATED MAINTENANCE PAD REMOVED, AND RELATED WALLS PATCHED AND FINISHED WHERE LOUVERS AND EXHAUST STACKS PENETRATE THE EXTERIOR SKIN. RELATED EQUIPMENT CODE REQUIRED CLEARANCES WILL BE MET AFTER EXISTING GENERATOR DEMOLITION.

THE EXISTING CLINIC GENERATOR AND ASSOCIATED CONCRETE PAD WILL ALSO BE REMOVED, RELATED EQUIPMENT FEEDER CONDUIT WILL BE INTERCEPTED AND CONNECTED TO NEW GENERATOR.

THE EXISTING 208 VOLT ATS WILL BE REPLACED WITH A NEW 480 VOLT ATS TO BE INSTALLED IN THE MAINTENANCE BUILDING. INTERCEPT THE NORMAL FEEDER FROM EXISTING TRANSFORMER.

PROVIDE A BUILDING AUTOMATION SYSTEM (BAS) PANEL WITHIN THE GENERATOR ENCLOSURE, CONNECTIONS TO NEW GENERATOR AND ASSOCIATED EQUIPMENT, INTEGRATION WITH EXISTING BAS, AND REQUIRED PROGRAMMING. REFER TO SPECIFICATION SECTION 26 3213.2.7.3.B.

REPLACE THE EXISTING GENERATOR REMOTE ANNUNCIATOR PANEL WITH A NEW PANEL AT THE SAME LOCATION. PROVIDE REQUIRED CONDUIT AND CABLING.

ELECTRICAL SCOPE INCLUDES PROVIDING THE REPLACEMENT GENERATOR ENCLOSURE, AND OTHER RELATED EQUIPMENT, OTHER EQUIPMENT AS INDICATED ON THE DRAWINGS AND CONDUIT, CONDUCTORS, AND CONNECTIONS TO PROVIDE A COMPLETE AND FUNCTIONAL REPLACEMENT LEVEL 1 EPS AT PVMC.

GENERAL NOTES

1. INTERIM LIFE SAFETY MEASURES, ILSM. COORDINATE WITH PROVIDENCE VALDEZ MEDICAL CENTER TO DETERMINE IF THERE ARE PRE-ESTABLISHED LIFE SAFETY MEASURES APPROPRIATE FOR THE PLANNED PROJECT. APPROVED PROJECT INTERIM LIFE SAFETY MEASURES SHALL BE FOLLOWED, MAINTAINED ON-SITE, AND PART OF THE PROJECT'S PERMANENT RECORD.
2. COORDINATE PHASING REQUIREMENTS AND ALL SERVICE DISRUPTIONS WITH THE OWNER AND OBTAIN SPECIFIC AGREEMENT OF THE TIMES AND DURATIONS OF SYSTEM DISRUPTIONS BEFORE STARTING WORK. PROVIDENCE VALDEZ MEDICAL CENTER WILL REMAIN OPERATIONAL DURING CONSTRUCTION.
3. COORDINATE WITH PROVIDENCE VALDEZ MEDICAL CENTER'S INFECTION CONTROL FOR CONSTRUCTION AND RENOVATION REQUIREMENTS AND ACCESS PERMITS. WORK IN AND AROUND CLINICAL AREAS SHALL BE CONDUCTED SUCH THAT A DUST-FREE ENVIRONMENT IS MAINTAINED IN ADJACENT CLINICAL AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ISOLATION AND ALL CONSTRUCTION ACTIVITIES TO ENSURE THAT AIR FLOW FROM THE CONSTRUCTION WORKSPACES TO CLINICAL AREAS IS PREVENTED.

CODE SUMMARY

CONSTRUCTION TYPE:	2021 INTERNATIONAL BUILDING CODE	2012 NFPA 101 LIFE SAFETY CODE
	II-A	II (111)
	F-1	HEALTHCARE
SPRINKLER SYSTEM:	REQUIRED THROUGHOUT, INSTALL PER NFPA 13	REQUIRED THROUGHOUT. INSTALL PER NFPA 13
MANUAL FIRE ALARM:	REQUIRED AT EXITS OR AT CONSTANTLY ATTENDED STAFF LOCATIONS. INSTALL PER NFPA 72.	MANUAL FIRE ALARM REQUIRED AT EXITS AND NURSE STATION IN PATIENT SLEEPING AREAS. INSTALL PER NFPA 72.
SMOKE DETECTION:	SMOKE DETECTION REQUIRED IN CORRIDORS. INSTALL PER NFPA 72.	SMOKE DETECTION REQUIRED IN CORRIDORS. INSTALL PER NFPA 72.
	CORRIDOR WALLS TO BE CONSTRUCTED AS SMOKE PARTITIONS.	CORRIDOR WALLS SHALL RESIST THE PASSAGE OF SMOKE
ELECTRICAL:	2020 NEC	
FACILITY GUIDELINES INSTITUTE (FGI):	2018 FGI	
INTERNATIONAL CODES:	2021 INTERNATIONAL EXISTING BUILDING CODE (IEBC), INTERNATIONAL FIRE CODE (IFC), INTERNATIONAL MECHANICAL CODE (IMC)	

DRAWING INDEX

GENERAL

G0.01	PROJECT COVER SHEET

ELECTRICAL

E0.01	ELECTRICAL LEGEND AND ABBREVIATIONS
E0.02	ELECTRICAL SCHEDULES
E1.01	SITE PLAN - ELECTRICAL
E1.02	FLOOR PLAN - HOSPITAL
E2.01	GENERATOR REPLACEMENT - SEQUENCES 1 & 2
E2.02	GENERATOR REPLACEMENT - SEQUENCES 3 & 4
E2.03	GENERATOR REPLACEMENT - SEQUENCES 5 & 6
E2.04	GENERATOR REPLACEMENT - SEQUENCES 7 & 8
E2.05	GENERATOR REPLACEMENT - SEQUENCES 9 & 10
E2.06	GENERATOR REPLACEMENT - SEQUENCE 11
E3.01	ENLARGED FLOOR PLAN - GENERATOR ENCLOSURE
E4.01	POWER ONE-LINE DIAGRAM - EXISTING & DEMOLITION
E4.02	POWER ONE-LINE DIAGRAM - REVISED

MECHANICAL

M0.01	MECHANICAL LEGEND, ABBREVIATIONS, AND SCHEDULES
M1.01	SITE PLAN - MECHANICAL
M2.01	GENERATOR REPLACEMENT PHASES - MECHANICAL
M3.01	ENLARGED FLOOR PLAN - GENERATOR ENCLOSURE - MECHANICAL
M4.01	FUEL OIL DIAGRAMS

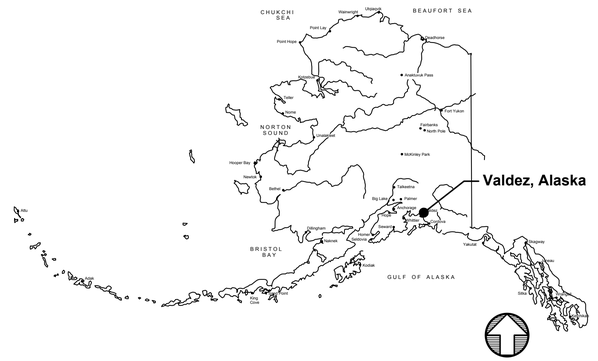
CIVIL

C1.00	SITE PLAN
C2.00	DETAILS SHEET

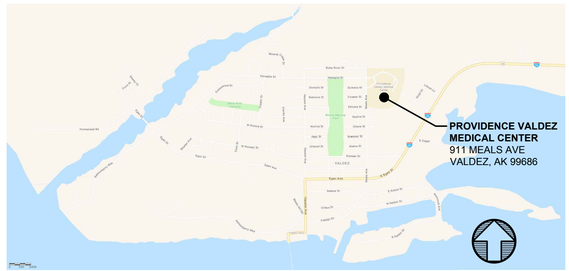
ARCHITECTURAL

A1.01	FLOOR PLAN, ELEVATIONS, DETAILS

LOCATION MAP

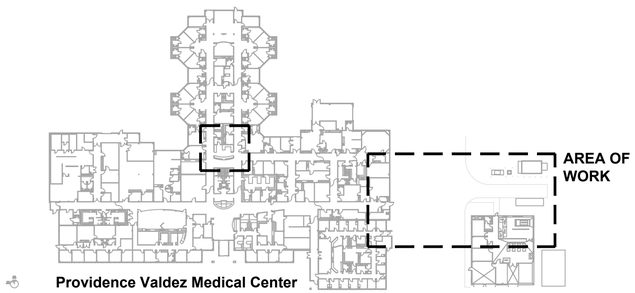


VICINITY MAP



Valdez, Alaska

SITE MAP



Providence Valdez Medical Center

Designed by:	DSD
Checked by:	KAC
AMC Project:	23305
Date:	12/08/2023

Project Phase
100% CONSTRUCTION DOCUMENTS

Sheet Title
PROJECT COVER SHEET

Sheet Number
G0.01

FILE NAME: X:\23305 PVMCGEN3\Dwgs\Edwgs\Sheet Files\23305 - G0.01.dwg
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GENERAL

SHEET NOTE CONVENTION:

1 — REFERENCED SHEET NOTE

2. — GENERAL SHEET NOTE

— FEEDER IDENTIFICATION TAG

FEEDER NUMBER

1 / E0.01 — DETAIL REFERENCE

DETAIL NUMBER

SHEET WHERE DETAIL APPEARS

A / E0.01 — SECTION/ELEVATION REFERENCE

REFERENCE LETTER

SHEET WHERE VIEW APPEARS

LINE WORK CONVENTION:

NEW OR REINSTALLED ITEM

ITEM TO BE DEMOLISHED

EXISTING ITEM TO REMAIN

FUTURE ITEM

EXISTING ITEM TO BE RELOCATED

CONDUIT/FEEDER LINE CONVENTION:

CONCEALED

UNDERGROUND OR CONCEALED IN FLOOR

EXPOSED

FLEXIBLE CONDUIT

P-1,3 — CIRCUITING CONVENTION

CIRCUIT NUMBER(S)

PANEL

BRANCH CIRCUIT HOMERUN TO PANELBOARD

NUMBER OF MARKS INDICATE NUMBER OF CONDUCTORS IN RACEWAY, NOT COUNTING GROUNDING CONDUCTORS. (ABSENCE OF MARKS INDICATE TWO CONDUCTORS, PLUS REQUIRED GROUNDS)

NUMBER OF ARROWS INDICATE NUMBER OF CIRCUITS

UNSWITCHED CONDUCTORS SHOWN ON HOMERUN SIDE OF NEUTRAL

NEUTRAL

SWITCHED CONDUCTORS SHOWN ON LOAD SIDE OF NEUTRAL

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AL	ALUMINUM
APPROX	APPROXIMATE
AHJ	AUTHORITY HAVING JURISDICTION
CKT	CIRCUIT
C.	CONDUIT
C.O.	CONDUIT ONLY
CU	COPPER
(D)	DEMOLISH
(E)	EXISTING
(F)	FUTURE
HZ	FREQUENCY
HP	HORSEPOWER
IAW	IN ACCORDANCE WITH
KVA	KILO VOLT-AMPS
KW	KILOWATT
MIN	MINIMUM
MTS	MANUAL TRANSFER SWITCH
NEC	NATIONAL ELECTRICAL CODE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
N/A	NOT APPLICABLE
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
PH	PHASE (ELECTRICAL)
PVMC	PROVIDENCE VALDEZ MEDICAL CENTER
SPD	SURGE PROTECTIVE DEVICE
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
VAC	VOLTS (ALTERNATING CURRENT)
VDC	VOLTS (DIRECT CURRENT)
V	VOLTS OR VOLTAGE
W	WATT
WP	WEATHER PROOF

POWER

RECEPTACLE – WALL MOUNTED / ENCLOSURE MOUNTED

SPECIAL PURPOSE RECEPTACLE, NEMA TYPE AS NOTED

J — JUNCTION BOX AND/OR CONNECTION TO EQUIPMENT

PANEL – SURFACE MOUNTED

PANEL – FLUSH MOUNTED

AUTOMATIC TRANSFER SWITCH (ATS)

LIGHTING

LIGHTING FIXTURE

EMERGENCY LIGHTING UNIT – WALL MOUNTED (FIXTURE TYPE XA)

$_3 — THREE-WAY SWITCH

NOTE: THIS IS A STANDARD LEGEND, SOME OF THE SYMBOLS SHOWN ON LEGEND ARE NOT NECESSARILY ON THE DRAWINGS.

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CITY OF VALDEZ, ALASKA — OPPORTUNITIES IN EVERY SEASON

PROVIDENCE VALDEZ MEDICAL CENTER
LEVEL 1 EPS GENERATOR REPLACEMENT

Revisions

No.	Date	Description

1 INCH AT FULL SIZE
1" ACTUAL
IF NOT 1 INCH, SCALE ACCORDINGLY

Designed by:	DSD
Checked by:	KAC
AMC Project:	23305
Date:	12/08/2023

Project Phase
100% CONSTRUCTION DOCUMENTS

Sheet Title
ELECTRICAL LEGEND AND ABBREVIATIONS

Sheet Number
E0.01

FILE NAME: X:\23305 PVMCGEN3\Dwgs\Edwg\Sheet Files\23305 - E0.01.dwg
PLOTTED: kconfer 12/11/2023 10:33 AM

EHLS-MB

LOCATION: PENTHOUSE
FED FROM: LIFE SAFETY ATS
MOUNTING: SURFACE

VOLTS: 480/277 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING: 18,000
MAINS TYPE: CIRCUIT BREAKER
RATING: 60A

CKT#	CIRCUIT DESCRIPTION	AMP	POLE	VA–PHASE A	VA–PHASE B	VA–PHASE C	POLE	AMP	CIRCUIT DESCRIPTION	CKT#
1	PNL – EHLS	60	3	13296 5930			3	60	PNL – ELLS–MB	2
3	--	--	--		8864 1696		--	--	--	4
5	--	--	--			4432 1364	--	--	--	6
7		20	1				1	20		8
9		20	1				1	20		10
11		20	1				1	20		12
13		20	1				1	20		14
15		20	1				1	20		16
17		20	1				1	20		18
19		20	1				1	20		20
21		20	1				1	20		22
23		20	1				1	20		24
25		20	1				1	20		26
27		20	1				1	20		28
29		20	1				1	20		30

PANEL		PHASE A	PHASE B	PHASE C
	LOAD	19.2 kVA	10.6 kVA	5.8 kVA
	AMPS	69 A	38 A	21 A

LOAD TYPE	CONNECTED LOAD	DEMAND FACTOR	TOTAL LOAD WITH NEC FACTORS
CONTINUOUS	0 VA	125%	0
LIGHTING	26788 VA	100%	26788
MOTOR	0 VA	0%	0
NON–CONTINUOUS	0 VA	100%	0
RECEPTACLE	8794 VA	100%	8794

PANEL TOTALS	
TOTAL CONNECTED LOAD:	35.6 kVA
TOTAL NEC LOAD:	35.6 kVA
TOTAL CONNECTED AMPS:	42.8 A
TOTAL NEC AMPS:	42.8 A

NOTES:

PVMC GENERATOR SIZING CALCULATION NEC 220.87

SQUARE FEET: N/A

EXISTING PEAK DEMAND FROM UTILITY RECORDS WILL BE UTILIZED PER NEC 220.87 FOR ADDITIONS TO EXISTING LOADS (AND WITH NO CREDIT TAKEN FOR DEMOLISHED LOADS).

PEAK KWD: 406.4 KW, REPORTED BY UTILITY
ESTIMATED PF: 90.0%
PEAK KVA: 451.6 KVA
NEC KVA: 564.5 NEC KVA (125% PEAK KVA)

ITEMIZED NEW LOADS	QUAN	VA PER UNIT	UNDIV. KVA	N.E.C. FACTOR	KVA LOAD
PANEL ELLS–GE	1	8900.0	8.9	1.00	8.9
EXISTING CLINIC STANDBY POWER LOADS (ATS–CLIN), SEE NOTE 1	0	46700.0	0.0	1.00	0.0
TOTAL NEW LOAD			8.9 KVA		8.9 KVA
PLUS 220.87 LOAD			564.5 KVA		564.5 KVA
TOTAL LOAD			573.4 KVA		573.4 KVA
			690 AMPS		690 AMPS
			MINIMUM REQUIRED GEN KVA		573.4 KVA

SERVICE PARAMETERS: 480 VOLTS
3 PHASE

GENERATOR SYSTEM CAPACITY = 625 KVA

SPARE CAPACITY BASED ON HISTORIC PEAK DEMAND
WITH 125% NEC FACTOR 9%
WITHOUT 125% NEC FACTOR 26%

NOTE 1: ALTHOUGH THIS LOAD REPRESENTS 46.7 kVA, IT IS ALREADY REPRESENTED IN THE PEAK DEMAND LOAD OBTAINED FROM COPPER VALLEY ELECTRIC ASSOCIATION SINCE THAT DEMAND LOAD REPRESENTS THE ENTIRE LOAD ON THE EXISTING METERED UTILITY SERVICE WHICH INCLUDED THE CLINIC. AS SUCH, THIS LOAD DOESN'T NEED TO BE ADDED AND IS ONLY SHOWN HERE FOR CLARITY.

EHLS (EXISTING PANEL)

LOCATION: PENTHOUSE
FED FROM: EHLS–MB
MOUNTING: SURFACE

VOLTS: 480/277 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING: 18,000
MAINS TYPE: CIRCUIT BREAKER
RATING: 60A

CKT#	CIRCUIT DESCRIPTION	AMP	POLE	VA–PHASE A	VA–PHASE B	VA–PHASE C	POLE	AMP	CIRCUIT DESCRIPTION	CKT#
1	LTG– 'A'	20	1	4432	4432		1	20	LTG – 'B'	2
3	LTG– 'A'	20	1		4432	4432	1	20	LTG – 'B' AND 'C'	4
5	LTG– PENTHOUSE	20	1			4432	1	20	SPARE	6
7	LTG – PHARMACY STORAGE	20	1	4432			1	20	SPARE	8
9	SPARE	20	1				1	20	SPARE	10
11	SPARE	20	1				1	20	SPARE	12
13	SPACE								SPACE	14
15	SPACE								SPACE	16
17	SPACE								SPACE	18
19	SPACE								SPACE	20
21	SPACE								SPACE	22
23	SPACE								SPACE	24
25	SPACE								SPACE	26
27	SPACE								SPACE	28
29	SPACE								SPACE	30

PANEL		PHASE A	PHASE B	PHASE C
	LOAD	13.3 kVA	8.9 kVA	4.4 kVA
	AMPS	48 A	32 A	16 A

LOAD TYPE	CONNECTED LOAD	DEMAND FACTOR	TOTAL LOAD WITH NEC FACTORS
CONTINUOUS	0 VA	125%	0
LIGHTING	26592 VA	100%	26592
MOTOR	0 VA	0%	0
NON–CONTINUOUS	0 VA	100%	0
RECEPTACLE	0 VA	0%	0

PANEL TOTALS	
TOTAL CONNECTED LOAD:	26.6 kVA
TOTAL NEC LOAD:	26.6 kVA
TOTAL CONNECTED AMPS:	32.0 A
TOTAL NEC AMPS:	32.0 A

NOTES:

ELLS-GE

LOCATION: GENERATOR ENCLOSURE
FED FROM: ELLS–MB
MOUNTING: SURFACE

VOLTS: 208/120 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING: 10,000
MAINS TYPE: LUGS
RATING: 100A

CKT#	CIRCUIT DESCRIPTION	AMP	POLE	VA–PHASE A	VA–PHASE B	VA–PHASE C	POLE	AMP	CIRCUIT DESCRIPTION	CKT#
1	REC – INTERIOR	20	1	720	360		1	20	REC – EXTERIOR	2
3	LTG – OVERHEAD LIGHTS	20	1		196	1000	1	20	BATTERY CHARGER	4
5	LOUVER	20	1			864	1	20	DAYTANK	6
7	BLOCK HEATER	20	1	1500	3000		1	20	ENCLOSURE HEATER	8
9	ACTUATOR MOTOR	20	1		250	250	1	20	ACTUATOR MOTOR	10
11	ACTUATOR MOTOR	20	1			250 250	1	20	ACTUATOR MOTOR	12
13	DAMPER CONTROLS	20	1	250	100		1	20	LEAK DETECTION PANEL	14
15		20	1				1	20		16
17		20	1				1	20		18

PANEL		PHASE A	PHASE B	PHASE C
	LOAD	5.9 kVA	1.7 kVA	1.4 kVA
	AMPS	49 A	14 A	11 A

LOAD TYPE	CONNECTED LOAD	DEMAND FACTOR	TOTAL LOAD WITH NEC FACTORS
CONTINUOUS	0 VA	125%	0
LIGHTING	196 VA	100%	196
MOTOR	0 VA	0%	0
NON–CONTINUOUS	0 VA	100%	0
RECEPTACLE	8794 VA	100%	8794

PANEL TOTALS	
TOTAL CONNECTED LOAD:	9.0 kVA
TOTAL NEC LOAD:	9.0 kVA
TOTAL CONNECTED AMPS:	25.0 A
TOTAL NEC AMPS:	25.0 A

NOTES:

ELLS-MB

LOCATION: MAINTENANCE BUILDING
FED FROM: EHLS–MB
MOUNTING: SURFACE

VOLTS: 208/120 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING: 10,000
MAINS TYPE: CIRCUIT BREAKER
RATING: 60A

CKT#	CIRCUIT DESCRIPTION	AMP	POLE	VA–PHASE A	VA–PHASE B	VA–PHASE C	POLE	AMP	CIRCUIT DESCRIPTION	CKT#
1		20	1				1	20		2
3		20	1				1	20		4
5		20	1				1	20		6
7		20	1				1	20		8
9		20	1				1	20		10
11		20	1				1	20		12
13		20	1	5930			3	100	PANEL: ELLS–GE	14
15		20	1		1696		--	--		16
17		20	1			1364	--	--		18

PANEL		PHASE A	PHASE B	PHASE C
	LOAD	5.9 kVA	1.7 kVA	1.4 kVA
	AMPS	49 A	14 A	11 A

LOAD TYPE	CONNECTED LOAD	DEMAND FACTOR	TOTAL LOAD WITH NEC FACTORS
CONTINUOUS	0 VA	125%	0
LIGHTING	196 VA	100%	196
MOTOR	0 VA	0%	0
NON–CONTINUOUS	0 VA	100%	0
RECEPTACLE	8794 VA	100%	8794

PANEL TOTALS	
TOTAL CONNECTED LOAD:	9.0 kVA
TOTAL NEC LOAD:	9.0 kVA
TOTAL CONNECTED AMPS:	25.0 A
TOTAL NEC AMPS:	25.0 A

NOTES:

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12/09/2023
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PROVIDENCE VALDEZ MEDICAL CENTER
LEVEL 1 EPS GENERATOR REPLACEMENT

Revisions

No.	Date	Description

1 INCH AT FULL SIZE
1" ACTUAL
IF NOT 1 INCH, SCALE ACCORDINGLY

Designed by: DSD
Checked by: KAC
AMC Project: 23305
Date: 12/08/2023

Project Phase
100% CONSTRUCTION DOCUMENTS

Sheet Title
ELECTRICAL SCHEDULES

Sheet Number
E0.02

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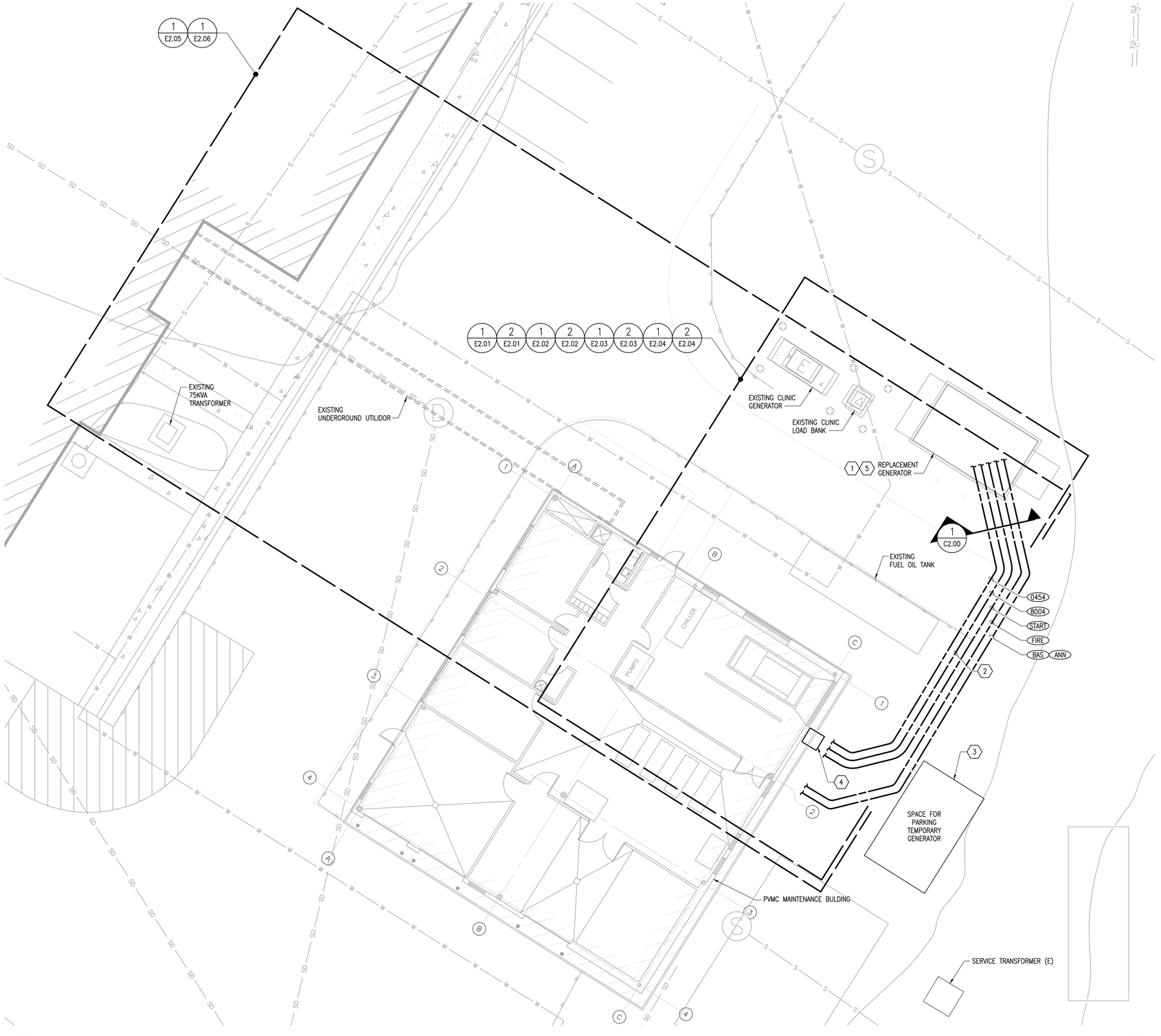

1 E1.01 **SITE PLAN - ELECTRICAL**

SCALE: 1" = 10'

GENERAL NOTES

1. REFERENCE SHEETS E2.01 THROUGH E2.05 FOR DETAILED SITE PLAN WORK.

SHEET NOTES

1. LOCATION OF PERMANENT GENERATOR IN WEATHERPROOF ENCLOSURE. STORAGE SHED TO BE RELOCATED BY PVMC TO ACCOMMODATE GENERATOR INSTALLATION.
2. PROPOSED ROUTING OF FUTURE UNDERGROUND FEEDER BETWEEN MANUAL TRANSFER SWITCH AND PERMANENT GENERATOR.
3. PROPOSED LOCATION OF PORTABLE TEMPORARY GENERATOR FOR CONNECTION TO TEMPORARY GENERATOR CONNECTION POINT INSTALLED UNDER THIS PROJECT.
4. LOCATION OF EXISTING MANUAL TRANSFER SWITCH (MTS). PROVIDE TEMPORARY GENERATOR CONNECTION UNDER THIS PROJECT. REFER TO SHEET E2.01 FOR ADDITIONAL INFORMATION.
5. REFER TO CIVIL DRAWINGS FOR GENERATOR ENCLOSURE PAD, TRENCHING, AND BOLLARD REQUIREMENTS.

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Sheet Title
SITE PLAN - ELECTRICAL

Sheet Number
E1.01

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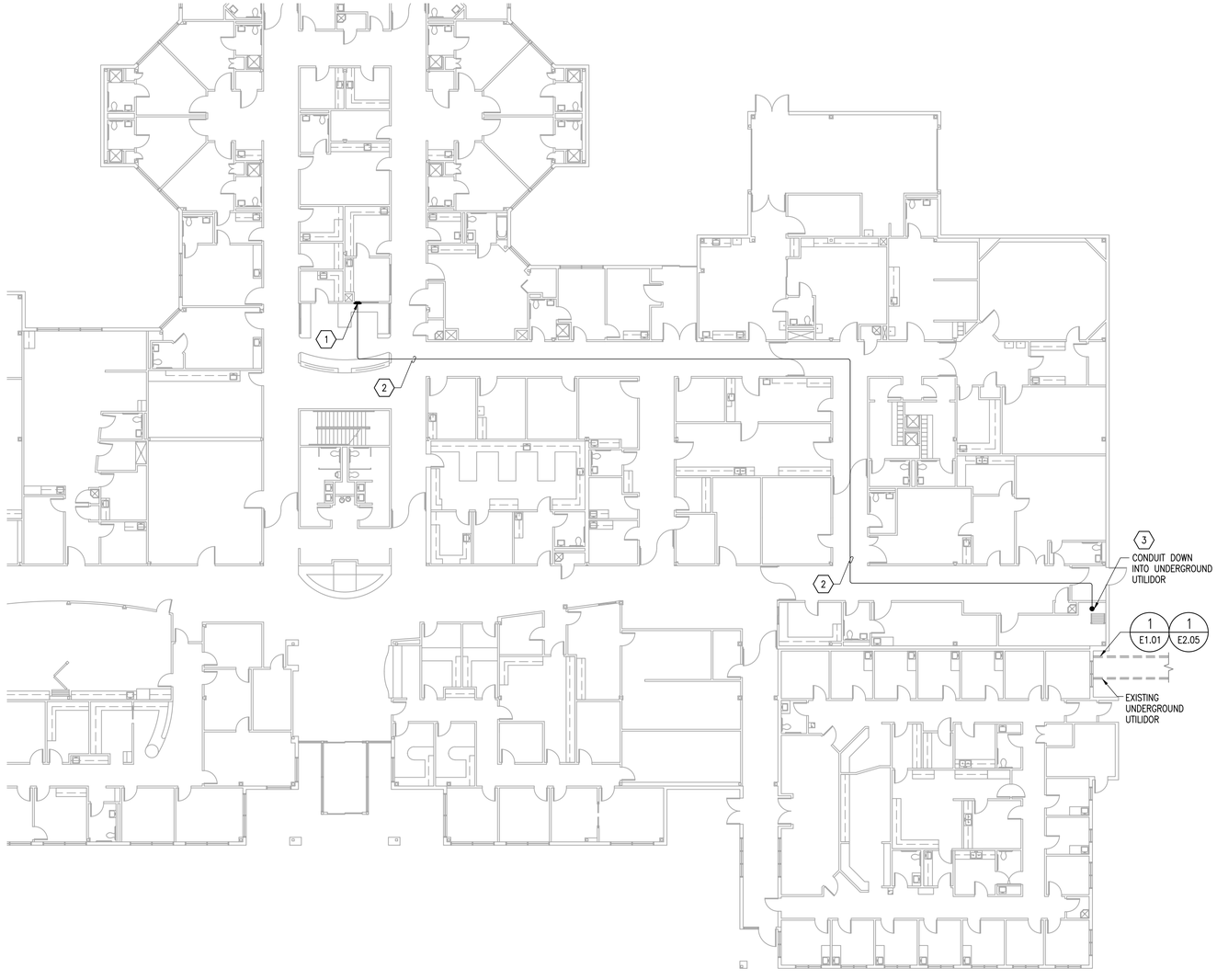
GENERAL NOTES

1. DEVICES ARE EXISTING TO REMAIN UNLESS OTHERWISE NOTED.
2. EXISTING GENERATOR REMOTE ANNUNCIATOR CONDUIT AND CABLE ROUTING IS ASSUMED.

SHEET NOTES

1. DEMOLISH EXISTING GENERATOR REMOTE ANNUNCIATOR AND ASSOCIATED CABLING. PROVIDE GENERATOR REMOTE ANNUNCIATOR IN EXISTING GENERATOR ANNUNCIATOR LOCATION AND PROVIDE CABLING IAW GENERATOR MANUFACTURER'S REQUIREMENTS.
2. EXISTING GENERATOR REMOTE ANNUNCIATOR CONDUIT AND CABLE ROUTED ABOVE ACCESSIBLE CEILING SPACE.
3. EXTEND EXISTING ANNUNCIATOR CONDUIT AND CABLING TO NEW PERMANENT GENERATOR IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.



1 E1.02 **FLOOR PLAN - HOSPITAL**

SCALE: 1/16" = 1'-0"

0 8' 16' 32' 48'

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AMC Project:	23305
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Project Phase
100% CONSTRUCTION DOCUMENTS

Sheet Title
FLOOR PLAN - HOSPITAL

Sheet Number
E1.02

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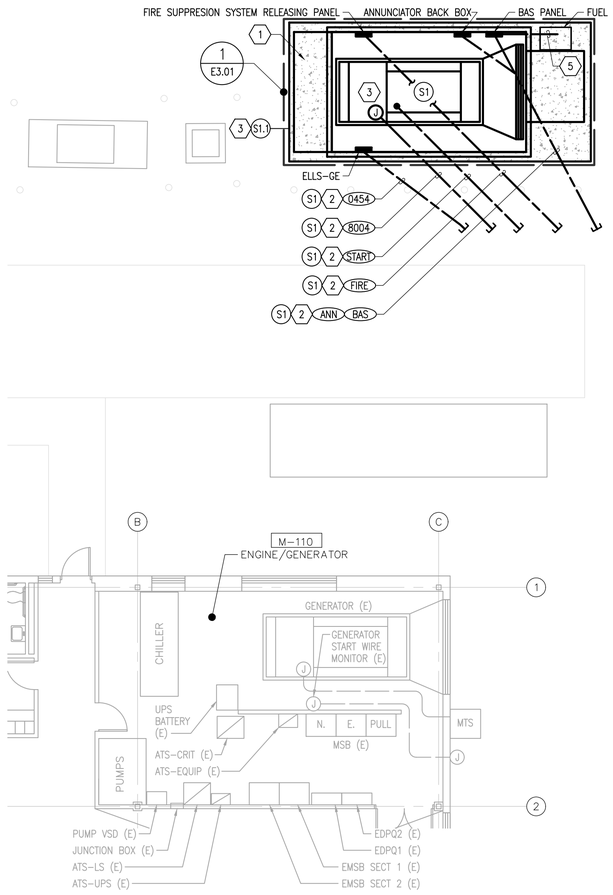
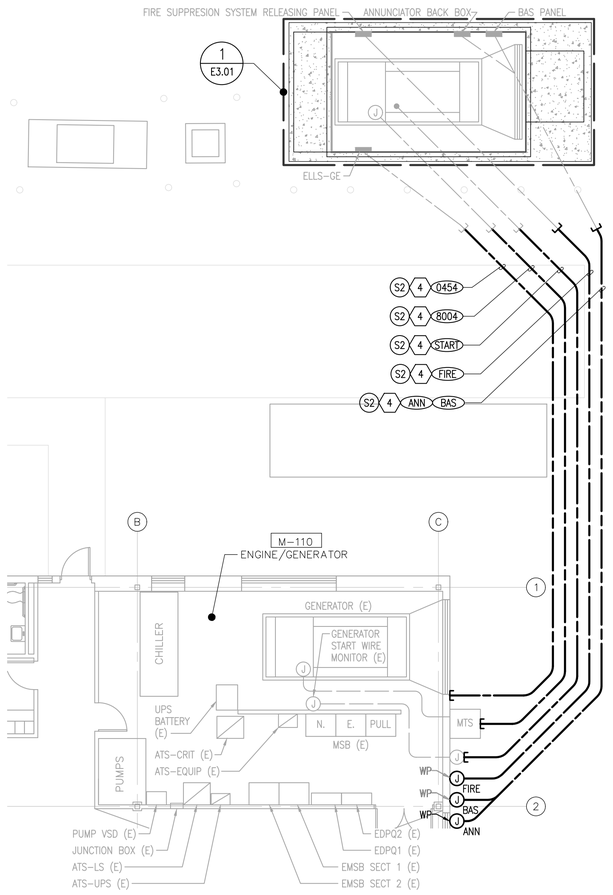




1 E2.01 ENLARGED PLAN - SEQUENCE 1

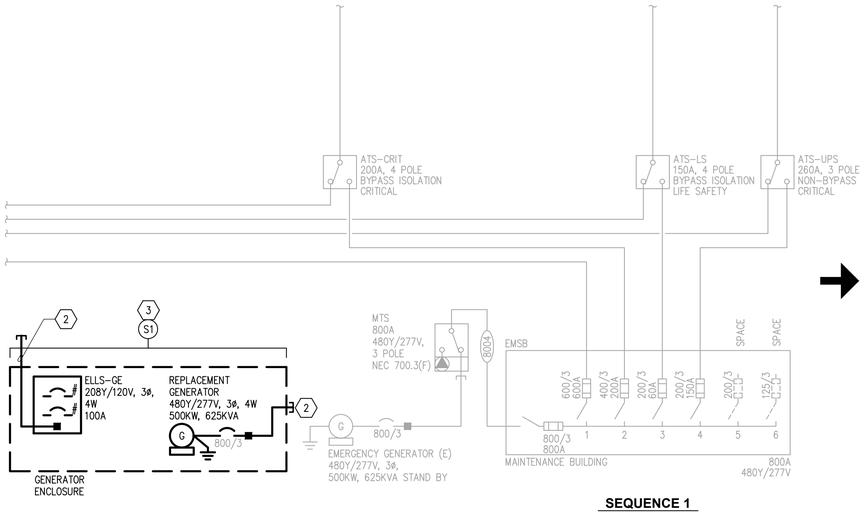
SCALE: 1/8" = 1'-0"

0 4' 8' 16' 24'

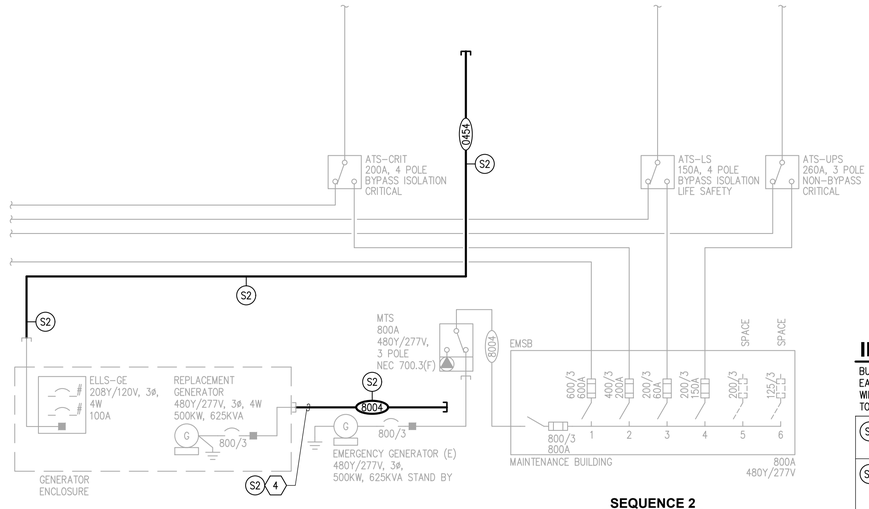
2 E2.01 ENLARGED PLAN - SEQUENCE 2

SCALE: 1/8" = 1'-0"

0 4' 8' 16' 24'



SEQUENCE 1



SEQUENCE 2

3 E2.01 PARTIAL POWER ONE-LINE DIAGRAM - SEQUENCES 1 & 2

SCALE: NONE

GENERAL NOTES

1. EQUIPMENT AND DEVICES SHOWN ON THIS SHEET ARE EXISTING TO REMAIN UNLESS OTHERWISE NOTED.
2. REFER TO SHEET E4.02 FOR FEEDER INFORMATION.

SHEET NOTES

1. PROVIDE CONCRETE PAD IN PREPARATION FOR GENERATOR ENCLOSURE. REFER TO CIVIL DRAWINGS.
2. PROVIDE CONDUITS AND STUB-OUT FOR FUTURE FEEDER CONNECTIONS TO GENERATOR AND SERVICE PANEL AT LOCATIONS INDICATED.
3. PROVIDE CATERPILLAR C15 500kW GENERATOR AND ENCLOSURE AT LOCATION INDICATED. FUTURE CONNECTIONS IN ACCORDANCE WITH SEQUENCES ON THIS SHEET AND POWER ONE-LINE DIAGRAM ON SHEET E4.02. FIELD COORDINATE EXACT MOUNTING LOCATION.
4. TRENCH IN CONDUIT AND FEEDERS FOR GENERATOR, GENERATOR START WIRE AND SERVICE PANEL. ROUTE TO MAINTENANCE BUILDING AT LOCATIONS INDICATED FOR FUTURE CONNECTION.
5. PROVIDE 3/4" CONDUIT BETWEEN BAS PANEL AND TRANSITION SUMP FOR SUMP LEAK DETECTION CABLING PROVIDED BY OTHERS. REFER TO MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION.

INSTALLATION SEQUENCE

BUBBLE INDICATES CURRENT STEP OF SEQUENCE FOR THE ASSOCIATED VIEW OF EACH SHEET. AN OUTAGE OF THE ELECTRICAL SYSTEM LIFE SAFETY BRANCH WILL OCCUR DURING SEQUENCE STEP 6. SCHEDULE OUTAGE WITH PVMC PRIOR TO BEGINNING WORK.

		ALTERNATE POWER SOURCE		
		EXISTING GENSET	TEMPORARY GENSET	REPLACEMENT GENSET
S1	1.1 POUR CONCRETE PAD FOR GENERATOR ENCLOSURE AND STUB CONDUITS OUT. 1.2 INSTALL AND SET REPLACEMENT GENERATOR AND GENERATOR MODULE.	X		
S2	2.1 TRENCH IN REPLACEMENT GENERATOR FEEDER AND ROUTE TO EXISTING MANUAL TRANSFER SWITCH (MTS). DO NOT CONNECT. 2.2 ROUTE GENERATOR START WIRE FROM MTS TO REPLACEMENT GENERATOR. 2.3 ROUTE FEEDER FROM GENERATOR SERVICE PANEL TO FUTURE 208V LIFE SAFETY PANEL "ELLS-MB" LOCATION IN MAINTENANCE BUILDING. DO NOT CONNECT.	X		

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Revisions

No.	Date	Description

1 INCH AT FULL SIZE
1" ACTUAL
IF NOT 1 INCH, SCALE ACCORDINGLY

Designed by:	DSD
Checked by:	KAC
AMC Project:	23305
Date:	12/08/2023

Project Phase
100% CONSTRUCTION DOCUMENTS

Sheet Title
GENERATOR REPLACEMENT - SEQUENCES 1 & 2

Sheet Number
E2.01

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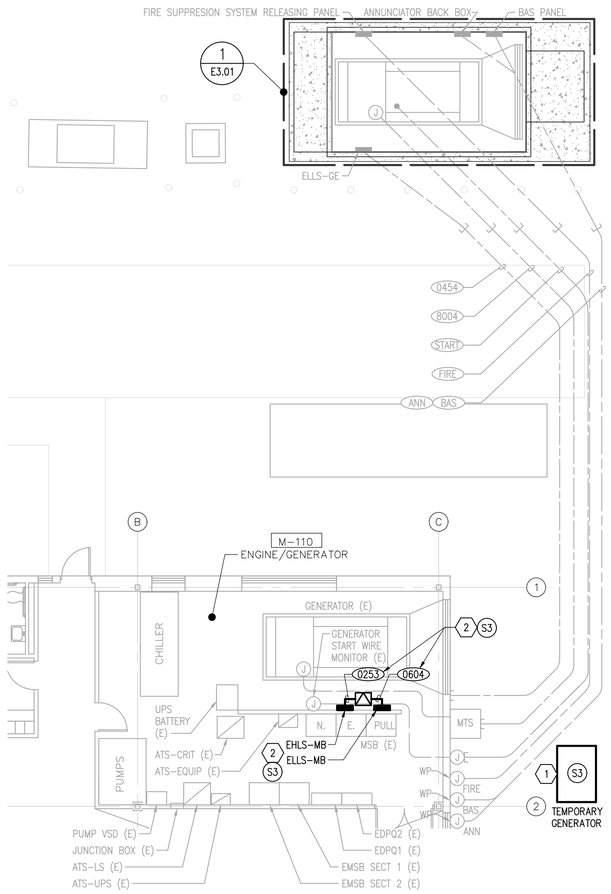
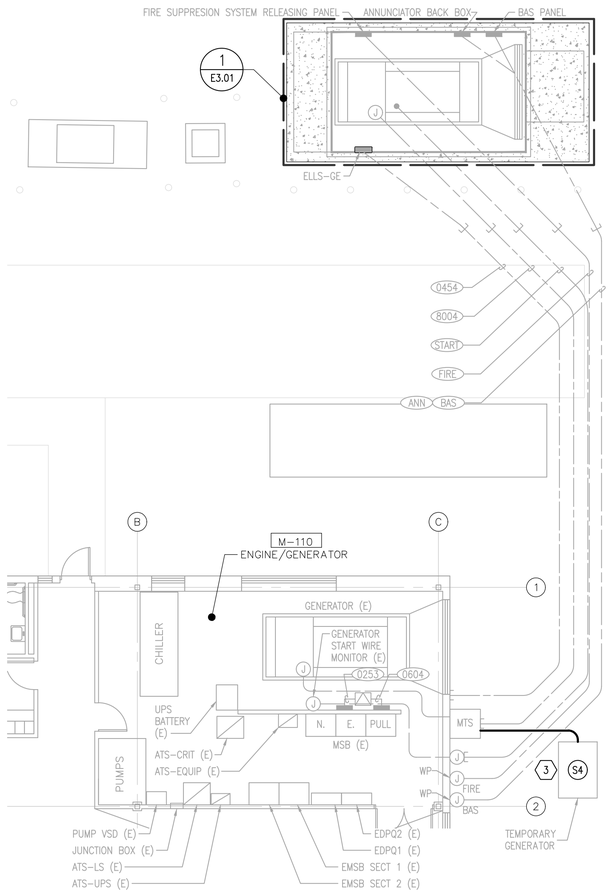
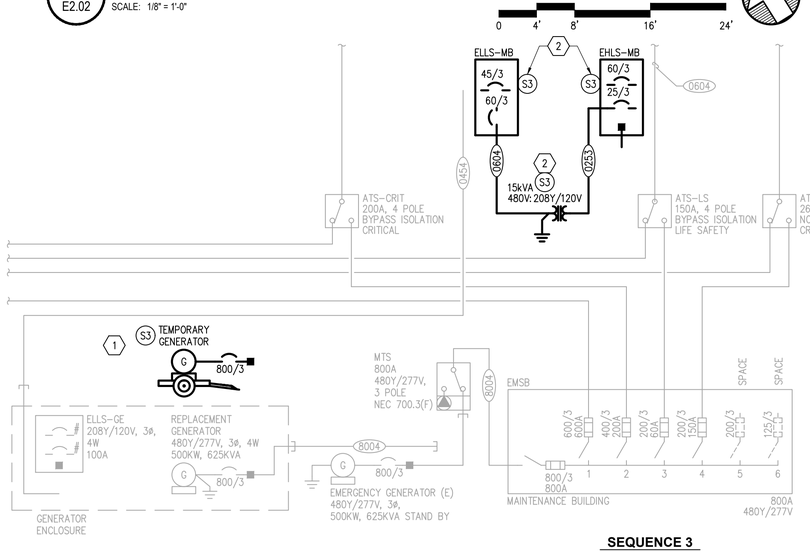




1 E2.02 ENLARGED PLAN - SEQUENCE 3

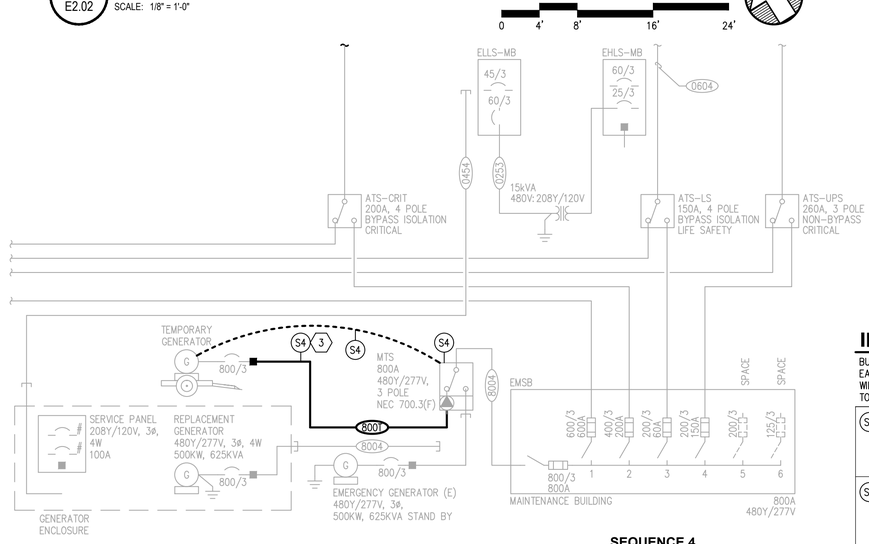
SCALE: 1/8" = 1'-0"



SEQUENCE 3

2 E2.02 ENLARGED PLAN - SEQUENCE 4

SCALE: 1/8" = 1'-0"



SEQUENCE 4

3 E2.02 PARTIAL POWER ONE-LINE DIAGRAM - SEQUENCE OF WORK

SCALE: NONE

GENERAL NOTES

1. EQUIPMENT AND DEVICES SHOWN ON THIS SHEET ARE EXISTING TO REMAIN UNLESS OTHERWISE NOTED.
2. REFER TO SHEET E4.02 FOR FEEDER INFORMATION.

SHEET NOTES

1. PROVIDE PORTABLE OFCI TEMPORARY GENERATOR AT LOCATION INDICATED. DO NOT CONNECT.
2. PROVIDE AND INSTALL LIFE-SAFETY PANELS ELLS-MB AND EHLS-MB WITH ASSOCIATED 480Y:208/120V 15kVA XFMR IN MAINTENANCE BUILDING AT LOCATION INDICATED. DO NOT CONNECT. REFER TO SHEET E4.02 FOR FEEDER INFORMATION.
3. CONNECT TEMPORARY GENERATOR FEEDERS TO TEMPORARY GENERATOR POWER SOURCE MALE CAM TYPE RECEPTACLES OF EXISTING MANUAL TRANSFER SWITCH.

INSTALLATION SEQUENCE

BUBBLE INDICATES CURRENT STEP OF SEQUENCE FOR THE ASSOCIATED VIEW OF EACH SHEET. AN OUTAGE OF THE ELECTRICAL SYSTEM LIFE SAFETY BRANCH WILL OCCUR DURING SEQUENCE STEP 6. SCHEDULE OUTAGE WITH PVMC PRIOR TO BEGINNING WORK.

		ALTERNATE POWER SOURCE		
		EXISTING GENSET	TEMPORARY GENSET	REPLACEMENT GENSET
S3	3.1 TRAILER IN TEMPORARY GENERATOR ON SITE NEAR MTS. 3.2 INSTALL LIFE-SAFETY PANELS ELLS-MB AND EHLS-MB WITH ASSOCIATED 480:208V 15kVA XFMR AT LOCATION INDICATED. DO NOT CONNECT. CLEARANCES WILL BE COMPLETE WITH REMOVAL OF EXISTING GENERATOR IN FUTURE SEQUENCE #S7.	X		
S4	4.1 LAND TEMPORARY GENERATOR FEEDERS TO TEMPORARY GENERATOR POWER SOURCE MALE CAM TYPE RECEPTACLES OF MTS. BUILDING OPERATES ON NORMAL POWER WITH TEMPORARY GENERATOR AS A BACKUP. 4.2 PROVIDE CONNECTION TO TEMPORARY GENERATOR SHORE PANEL FROM 30A RECEPTACLE IN MTS. 4.3 CONNECT TEMPORARY GENERATOR CONTROLLER TO AUTO-START TERMINALS OF MTS. 4.4 SWITCH MTS TO TEMPORARY GENERATOR SOURCE.		X	

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Revisions

No.	Date	Description

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Sheet Title
GENERATOR REPLACEMENT - SEQUENCES 3 & 4

Sheet Number
E2.02

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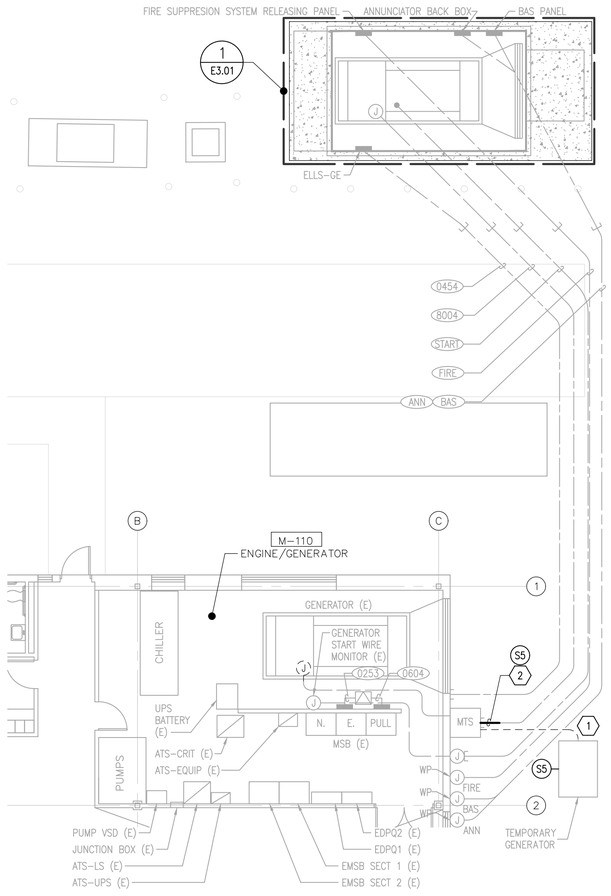
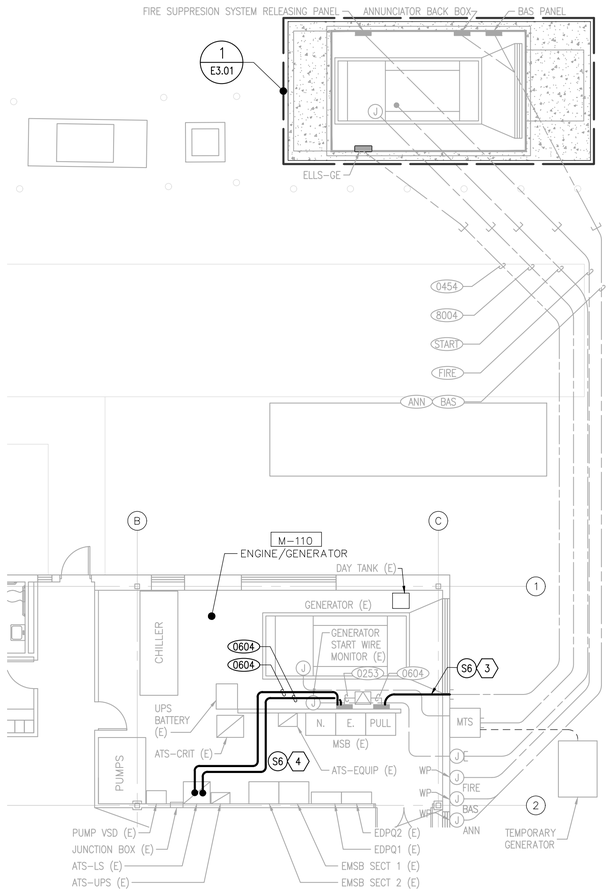
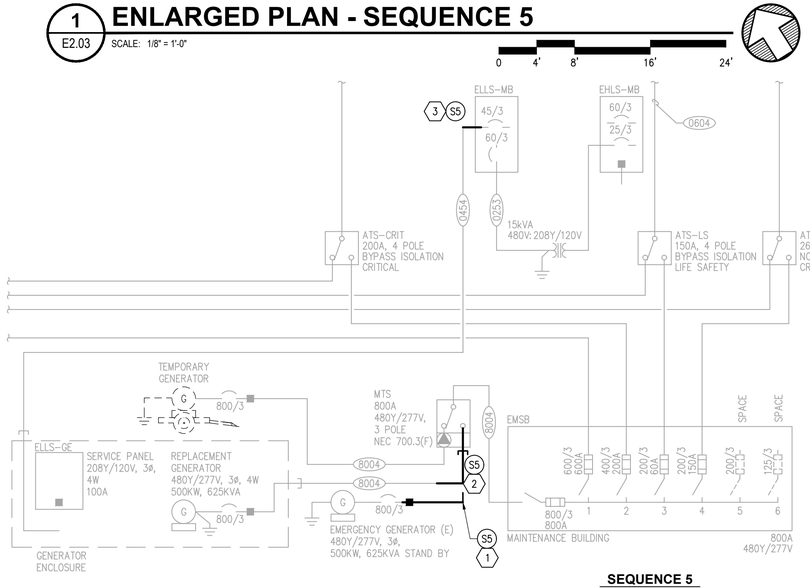




1 ENLARGED PLAN - SEQUENCE 5

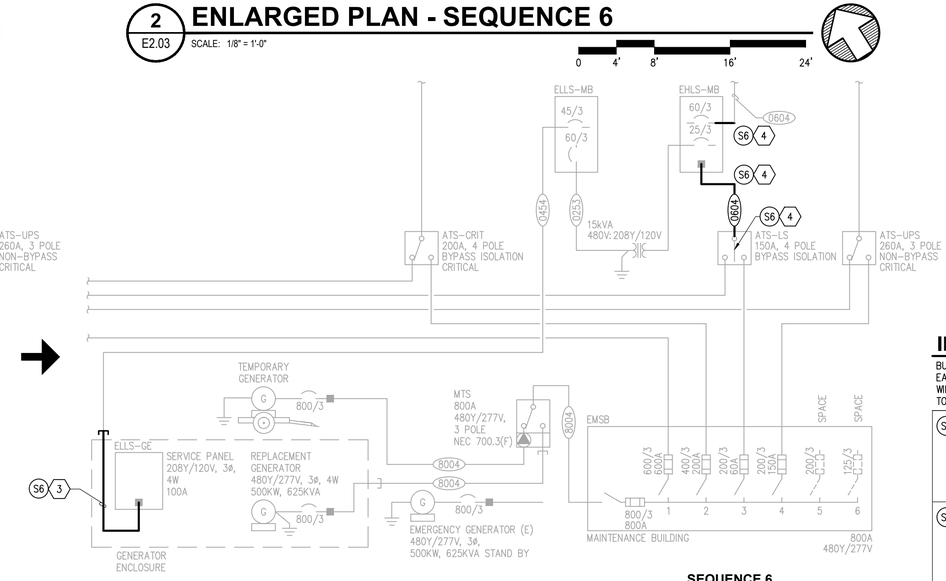
1 / E2.03 SCALE: 1/8" = 1'-0"



SEQUENCE 5

2 ENLARGED PLAN - SEQUENCE 6

2 / E2.03 SCALE: 1/8" = 1'-0"



SEQUENCE 6

3 PARTIAL POWER ONE-LINE DIAGRAM - SEQUENCE OF WORK

3 / E2.03 SCALE: NONE

GENERAL NOTES

1. EQUIPMENT AND DEVICES SHOWN ON THIS SHEET ARE EXISTING TO REMAIN UNLESS OTHERWISE NOTED.
2. REFER TO SHEET E4.02 FOR FEEDER INFORMATION.

SHEET NOTES

1. DISCONNECT EXISTING GENERATOR FROM MTS.
2. CONNECT REPLACEMENT GENERATOR FEEDER TO PERMANENT SOURCE LUGS OF THE MTS.
3. CONNECT FEEDER FROM GENERATOR SERVICE PANEL 'ELLS-GE' TO LIFE-SAFETY PANEL 'ELLS-MB'. REFER TO PANEL SCHEDULE ON SHEET E0.02 FOR ADDITIONAL INFORMATION.
4. CONNECT EXISTING AND NEW ATS-LS FEEDERS TO PANEL EHLS-MB.

INSTALLATION SEQUENCE

BUBBLE INDICATES CURRENT STEP OF SEQUENCE FOR THE ASSOCIATED VIEW OF EACH SHEET. AN OUTAGE OF THE ELECTRICAL SYSTEM LIFE SAFETY BRANCH WILL OCCUR DURING SEQUENCE STEP 6. SCHEDULE OUTAGE WITH PVMC PRIOR TO BEGINNING WORK.

		ALTERNATE POWER SOURCE		
		EXISTING GENSET	TEMPORARY GENSET	REPLACEMENT GENSET
S5	5.1 PROVIDE CONDUCTORS FOR CONNECTION BETWEEN GENERATOR AND MTS. REFER TO SHEET E4.02 FOR ADDITIONAL INFORMATION. 5.2 DISCONNECT EXISTING GENERATOR. 5.3 CONNECT REPLACEMENT GENERATOR FEEDER TO PERMANENT GENERATOR POWER SOURCE LUGS OF THE MTS. 5.4 CONNECT FEEDER FROM GENERATOR SERVICE PANEL TO LIFE-SAFETY PANEL 'ELLS-MB'.		X	
S6	6.1 PROVIDE FEEDERS BETWEEN EHLS-MB AND ATS-LS. DO NOT CONNECT. 6.2 SWITCH ATS-LS TO OPEN POSITION. LIFE-SAFETY BRANCH IS DE ENERGIZED. 6.3 DISCONNECT EXISTING FEEDER FROM ATS-LS LOAD SIDE LUGS AND SPLICE TO NEW FEEDER FROM EHLS-MB FEEDER BREAKER. 6.4 CONNECT FEEDER FROM EHLS-MB MAIN LUGS TO ATS-LS LOAD SIZE LUGS. 6.5 SWITCH ATS-LS TO PRIMARY SOURCE. LIFE-SAFETY BRANCH IS ENERGIZED.		X	

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GENERATOR REPLACEMENT - SEQUENCES 5 & 6

Sheet Number
E2.03

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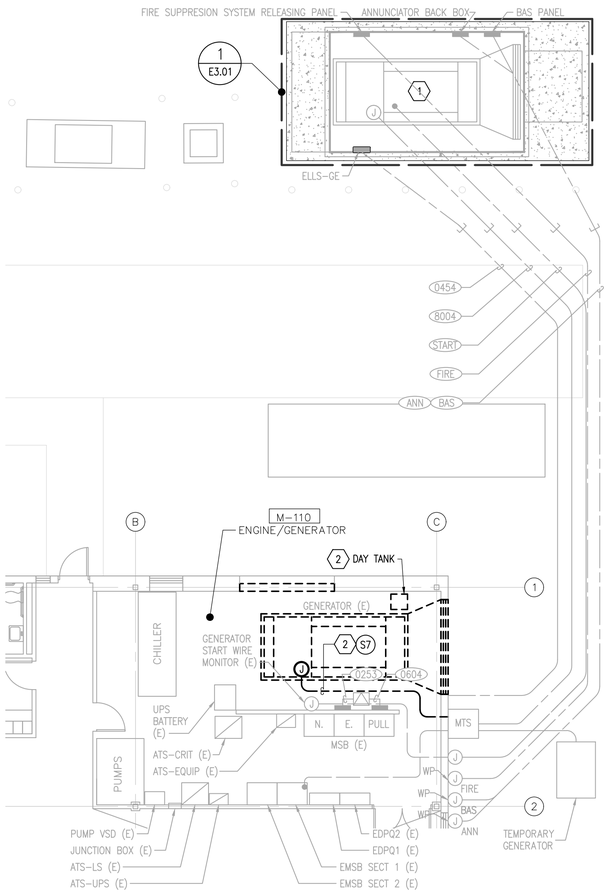
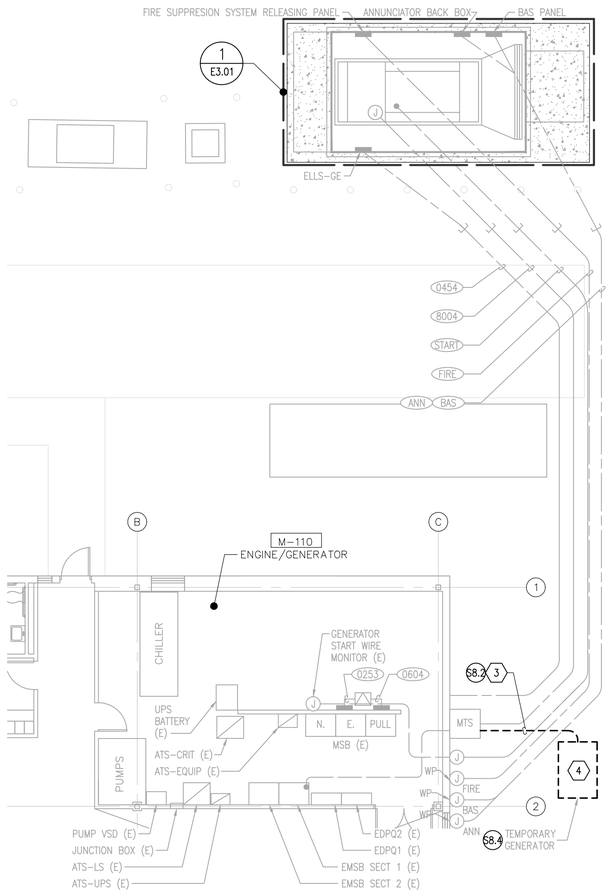
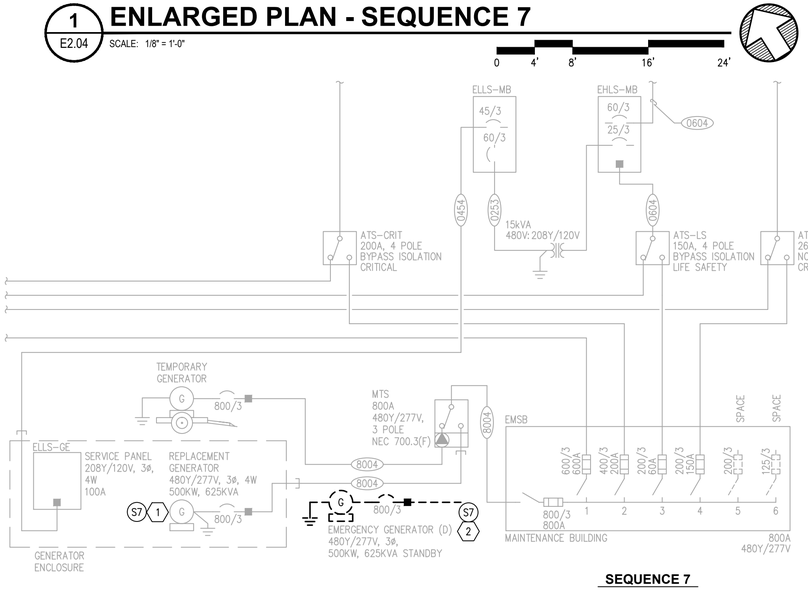




1 ENLARGED PLAN - SEQUENCE 7

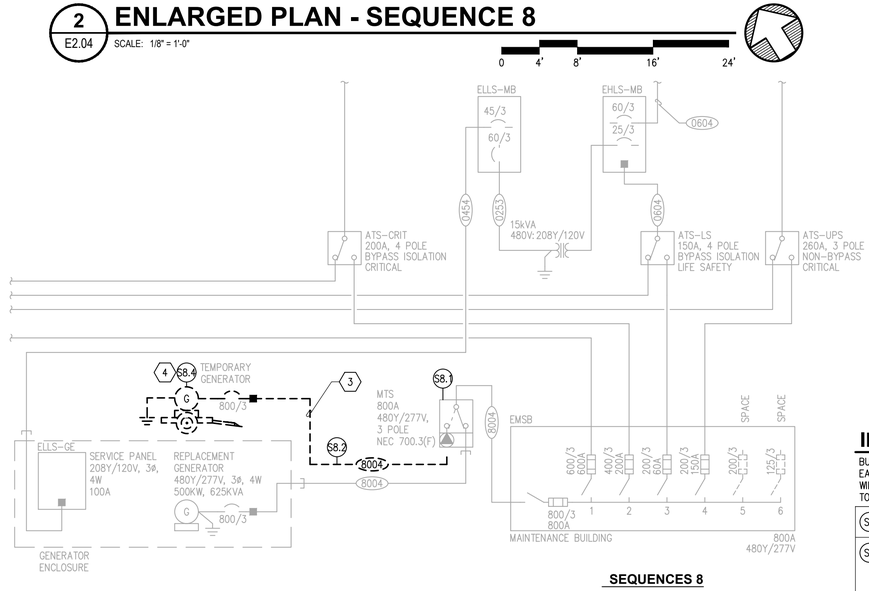
E2.04 SCALE: 1/8" = 1'-0"



SEQUENCE 7

2 ENLARGED PLAN - SEQUENCE 8

E2.04 SCALE: 1/8" = 1'-0"



SEQUENCES 8

3 PARTIAL POWER ONE-LINE DIAGRAM - SEQUENCE OF WORK

E2.04 SCALE: NONE

GENERAL NOTES

1. EQUIPMENT AND DEVICES SHOWN ON THIS SHEET ARE EXISTING TO REMAIN UNLESS OTHERWISE NOTED.
2. REFER TO SHEET E4.02 FOR FEEDER INFORMATION.

SHEET NOTES

1. COMMISSION REPLACEMENT GENERATOR AND ASSOCIATED EQUIPMENT.
2. AFTER REPLACEMENT GENERATOR COMMISSIONING HAS BEEN COMPLETED, DEMOLISH EXISTING GENERATOR, GENERATOR DAY TANK, AND ALL ASSOCIATED CONDUCTORS AND CONDUIT. REMOVE FROM MAINTENANCE BUILDING AND FINISH/PATCH WALLS WHERE EXISTING LOUVERS AND EXHAUST STACKS PENETRATED THE EXTERIOR OF BUILDING. MATCH EXISTING CONSTRUCTION AND FINISH TYPES.
3. DISCONNECT AND REMOVE TEMPORARY GENERATOR FEEDERS.
4. REMOVE TEMPORARY GENERATOR FROM SITE.

INSTALLATION SEQUENCE

BUBBLE INDICATES CURRENT STEP OF SEQUENCE FOR THE ASSOCIATED VIEW OF EACH SHEET. AN OUTAGE OF THE ELECTRICAL SYSTEM LIFE SAFETY BRANCH WILL OCCUR DURING SEQUENCE STEP 6. SCHEDULE OUTAGE WITH PVMC PRIOR TO BEGINNING WORK.

		ALTERNATE POWER SOURCE		
		EXISTING GENSET	TEMPORARY GENSET	REPLACEMENT GENSET
S7	7.1 COMMISSION REPLACEMENT GENERATOR AND EQUIPMENT. 7.2 DEMOLISH EXISTING GENERATOR.		X	
S8	8.1 SWITCH MTS TO PERMANENT GENERATOR SOURCE. 8.2 DISCONNECT TEMPORARY GENERATOR FEEDERS FROM TEMPORARY GENERATOR POWER SOURCE MALE CAM TYPE RECEPTACLES OF MTS. 8.3 HOSPITAL AND CLINIC OPERATES ON NORMAL POWER WITH REPLACEMENT GENERATOR AS ALTERNATE POWER SOURCE OF THE ESSENTIAL ELECTRICAL SYSTEM. 8.4 REMOVE TEMPORARY GENERATOR FROM SITE.			X

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GENERATOR REPLACEMENT - SEQUENCES 7 & 8

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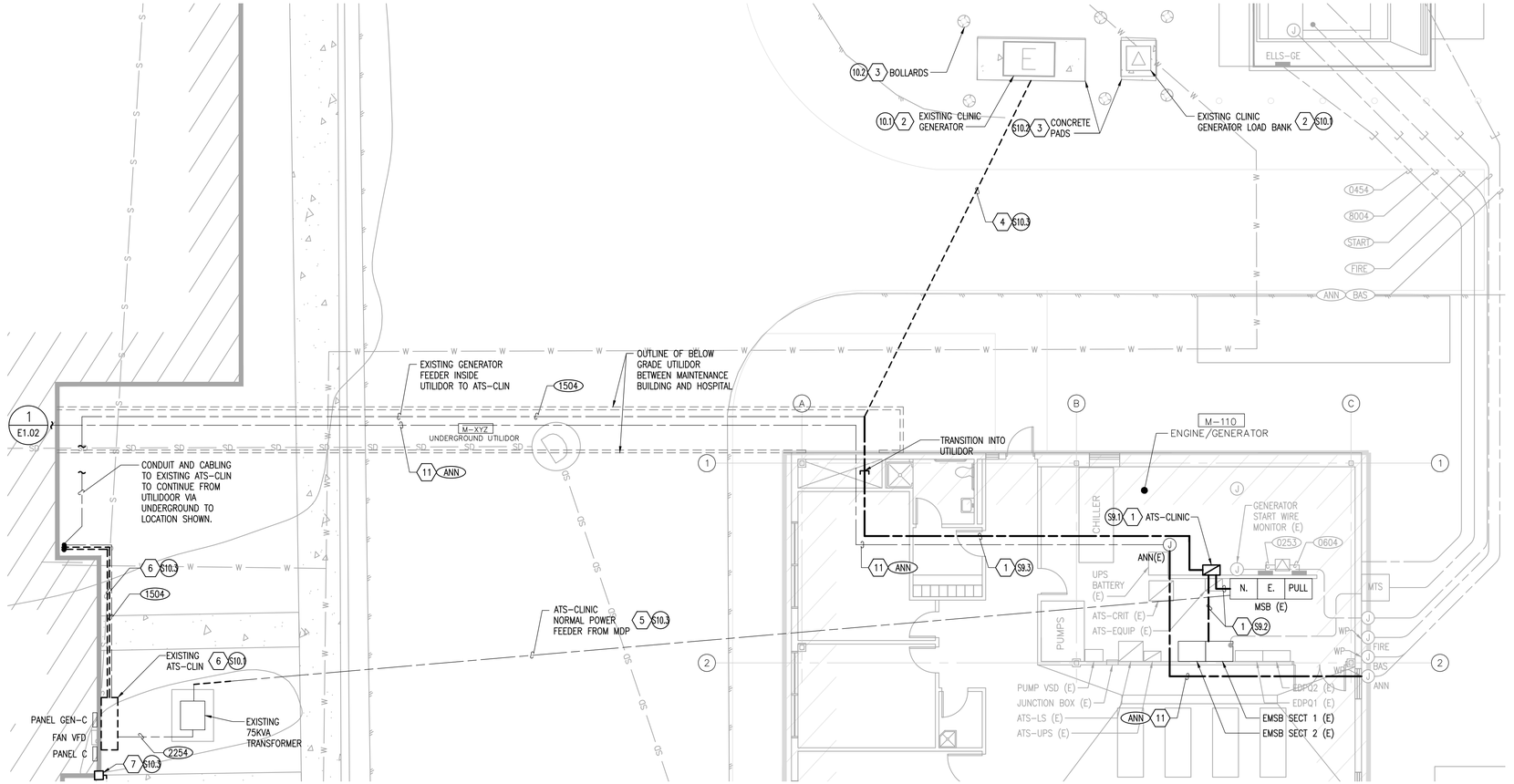

1 ENLARGED PLAN - SEQUENCES 9 & 10

1 / E2.05 SCALE: 1/8" = 1'-0"

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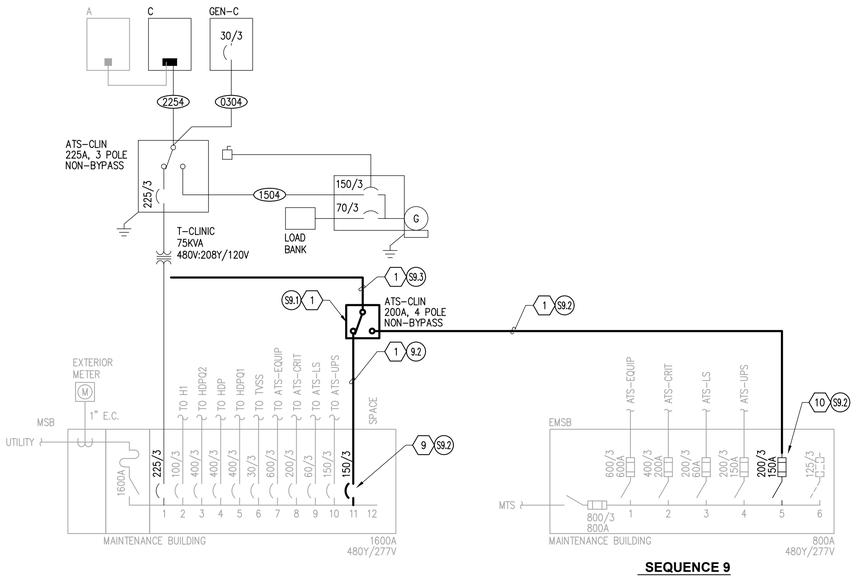
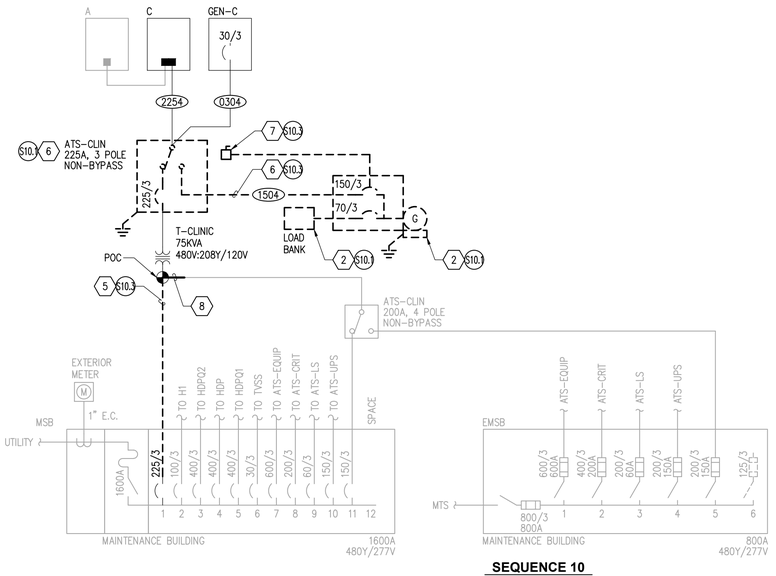


SEQUENCE 9



SEQUENCE 10

3 PARTIAL POWER ONE-LINE DIAGRAM - SEQUENCE OF WORK

3 / E2.05 SCALE: NONE

INSTALLATION SEQUENCE

BUBBLE INDICATES CURRENT STEP OF SEQUENCE FOR THE ASSOCIATED VIEW OF EACH SHEET. AN OUTAGE OF THE ELECTRICAL SYSTEM LIFE SAFETY BRANCH WILL OCCUR DURING SEQUENCE STEP 6. SCHEDULE OUTAGE WITH PVMC PRIOR TO BEGINNING WORK.

		ALTERNATE POWER SOURCE		
		EXISTING GENSET	TEMPORARY GENSET	REPLACEMENT GENSET
S9	9.1 PROVIDE NEW CLINIC ATS IN MAINTENANCE BUILDING. 9.2 PROVIDE ATS-CLINIC PRIMARY AND SECONDARY SOURCE FEEDERS AND ASSOCIATED OVERCURRENT PROTECTIVE DEVICES. 9.3 PROVIDE FEEDER CONDUIT FROM ATS-CLINIC TO UTILIDOR FOR CONNECTION TO EXISTING CLINIC GENERATOR FEEDER.			X
S10	10.1 REMOVE EXISTING CLINIC ATS, GENERATOR, AND LOAD BANK. 10.2 DEMOLISH EQUIPMENT PADS AND ASSOCIATED BOLLARDS. 10.3 DEMOLISH EXISTING CLINIC GENERATOR FEEDER TO UTILIDOR AND CLINIC TRANSFORMER FEEDER CONDUCTORS FROM MSB. DEMOLISH GENERATOR START SIGNAL CONDUIT AND CABLING BETWEEN EXISTING ATS-CLIN AND CLINIC GENERATOR. DEMOLISH CLINIC GENERATOR REMOTE SHUNT-TRIP DISCONNECT AND ASSOCIATED CONDUIT AND CONDUCTORS.			X

GENERAL NOTES

1. EQUIPMENT AND DEVICES SHOWN ON THIS SHEET ARE EXISTING TO REMAIN UNLESS OTHERWISE NOTED.
2. REFER TO SHEET E4.02 FOR FEEDER INFORMATION.

SHEET NOTES

1. PROVIDE NEW ATS-CLIN AND ASSOCIATED FEEDERS.
2. REMOVE EXISTING CLINIC GENERATOR AND LOAD BANK AND DELIVER TO THE CITY OF VALDEZ.
3. DEMOLITION OF THE EXISTING CLINIC GENERATOR CONCRETE PAD, LOAD BANK CONCRETE PAD, AND ASSOCIATED BOLLARDS IS PER THE CIVIL DRAWINGS AND SPECIFICATIONS.
4. DEMOLISH EXISTING GENERATOR POWER FEEDER TO UTILIDOR. RETAIN REMAINING FEEDER FOR RECONNECTION.
5. DEMOLISH EXISTING NORMAL POWER FEEDER CONDUCTORS TO CLINIC ATS FROM MAINTENANCE BUILDING. CAP AND ABANDON CONDUIT IN PLACE.
6. REMOVE EXISTING ATS-CLIN AND DELIVER TO CITY OF VALDEZ. DEMOLISH CLINIC GENERATOR START SIGNAL CONDUIT AND CABLING.
7. DEMOLISH EXISTING CLINIC GENERATOR REMOTE SHUNT TRIP DISCONNECT FROM EXTERIOR SIDE OF CLINIC WALL. DEMOLISH ASSOCIATED CONDUIT AND CONDUCTORS.
8. INTERCEPT EXISTING CLINIC GENERATOR FEEDER CONDUIT AT THIS LOCATION, EXTEND, AND CONNECT TO NEW GENERATOR FEEDER CONDUIT PROVIDED IN ACCORDANCE WITH SHEET NOTE 1. REFER TO THE POWER ONE-LINE DIAGRAM FOR FEEDER INFORMATION.
9. PROVIDE CIRCUIT BREAKER IN EXISTING SPACE.
10. PROVIDE 150A FUSES IN EXISTING SPARE FUSED DISCONNECT.
11. EXISTING GENERATOR ANNUNCIATOR CONDUIT. REMOVE EXISTING GENERATOR ANNUNCIATOR WIRING/CABLING TO PERMIT INSTALLATION OF NEW GENERATOR ANNUNCIATOR WIRING/CABLING.

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GENERATOR REPLACEMENT - SEQUENCES 9 & 10

Sheet Number
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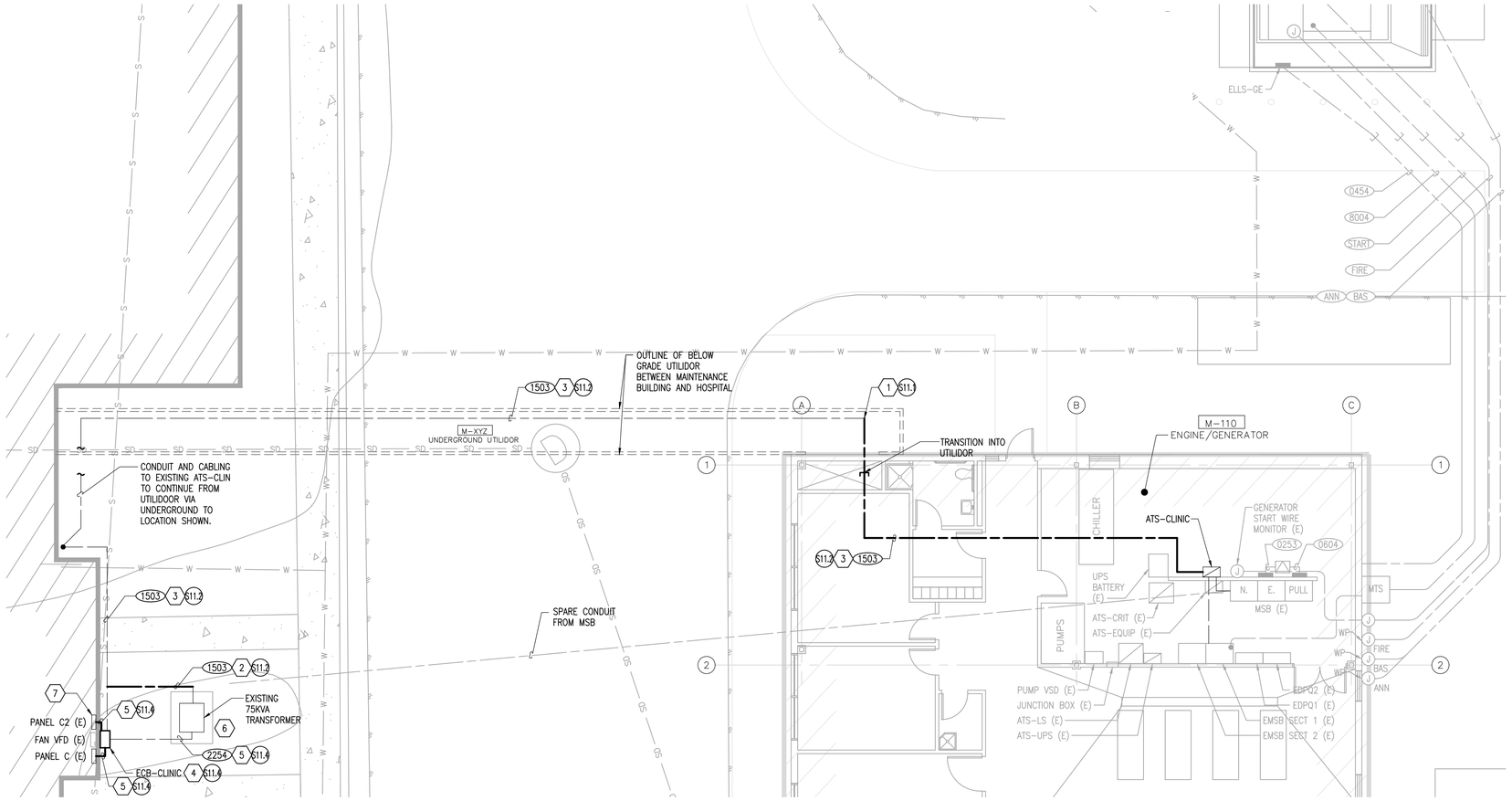

1 ENLARGED PLAN - SEQUENCE 11

E2.06 SCALE: 1/8" = 1'-0"

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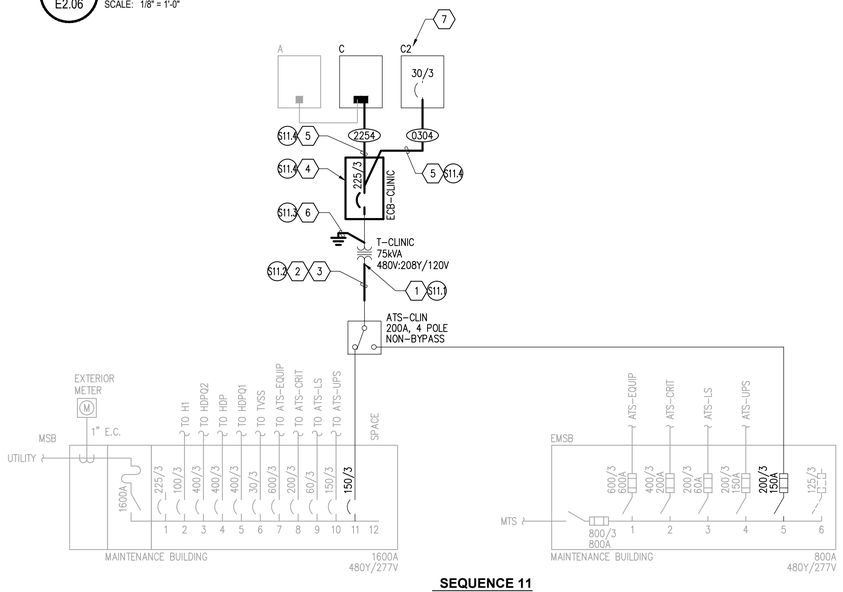

SEQUENCE 11

1 PARTIAL POWER ONE-LINE DIAGRAM - SEQUENCE OF WORK

E2.06 SCALE: NONE

GENERAL NOTES

1. EQUIPMENT AND DEVICES SHOWN ON THIS SHEET ARE EXISTING TO REMAIN UNLESS OTHERWISE NOTED.
2. REFER TO SHEET E4.02 FOR FEEDER INFORMATION.

SHEET NOTES

1. INTERCEPT EXISTING CLINIC GENERATOR FEEDER CONDUIT AND CONNECT TO NEW FFEDER CONDUIT FROM NEW ATS-CLIN.
2. INTERCEPT, EXTEND, AND CONNECT EXISTING CLINIC GENERATOR FEEDER CONDUIT TO EXISTING CLINIC TRANSFORMER.
3. PROVIDE FEEDER CONDUCTORS IN NEW AND EXISTING CONDUITS.
4. PROVIDE ENCLOSED NEMA 3R CIRCUIT BREAKER ECB-CLINIC ON BUILDING EXTERIOR.
5. CONNECT EXISTING CLINIC TRANSFORMER SECONDARY, PANEL C, AND PANEL GEN-C FEEDER TO ECB-CLINIC.
6. PROVIDE BONDING JUMPER TO GROUND TRANSFORMER AS A SEPARATELY DERIVED SYSTEM.
7. RELABEL PANEL GEN-C AS PANEL C2.

INSTALLATION SEQUENCE

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		ALTERNATE POWER SOURCE		
		EXISTING GENSET	TEMPORARY GENSET	REPLACEMENT GENSET
S11	11.1 INTERCEPT, EXTEND, AND CONNECT EXISTING CLINIC GENERATOR FEEDER CONDUIT TO NEW ATS-CLIN CONDUIT AND EXISTING CLINIC TRANSFORMER. 11.2 PROVIDE CLINIC TRANSFORMER FEEDER CONDUCTORS IN NEW AND EXISTING CONDUITS. 11.3 GROUND EXISTING CLINIC AS A SEPARATELY DERIVED SYSTEM. 11.4 PROVIDE ECB-CLINIC AND CONNECT TO EXISTING CLINIC TRANSFORMER, PANEL C, AND PANEL GEN-C.			

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GENERATOR REPLACEMENT - SEQUENCE 11

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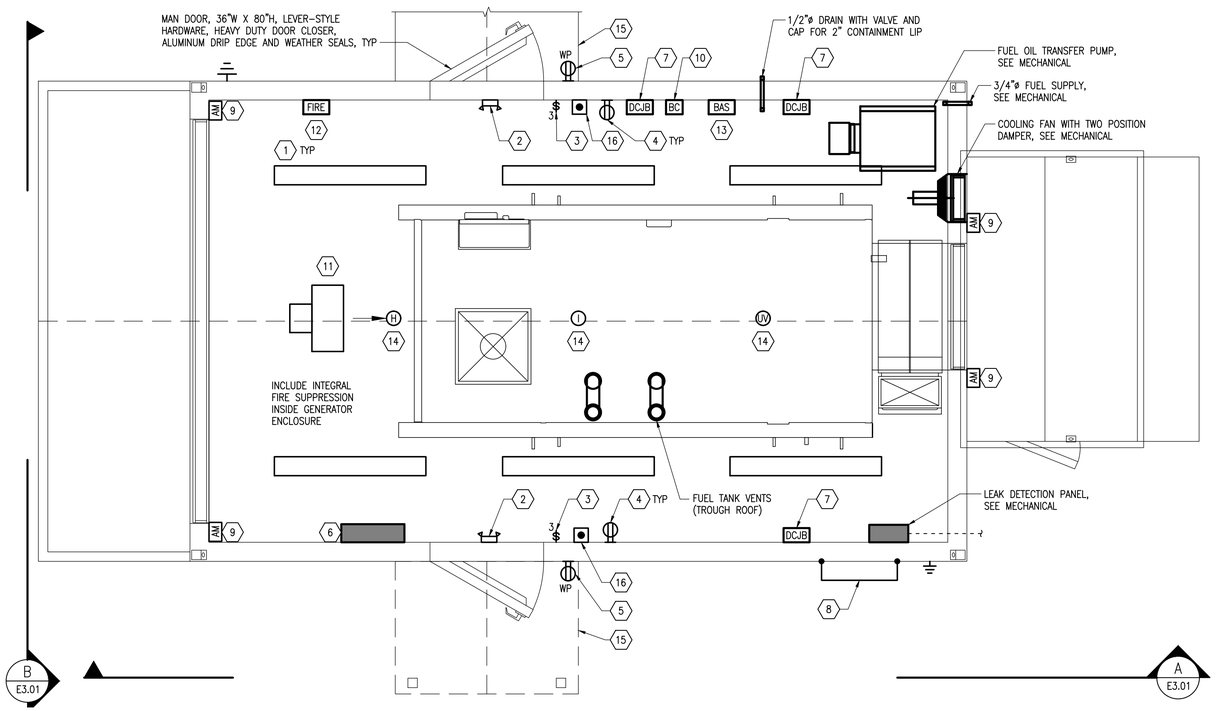

1 E3.01 ENLARGED FLOOR PLAN - GENERATOR ENCLOSURE

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

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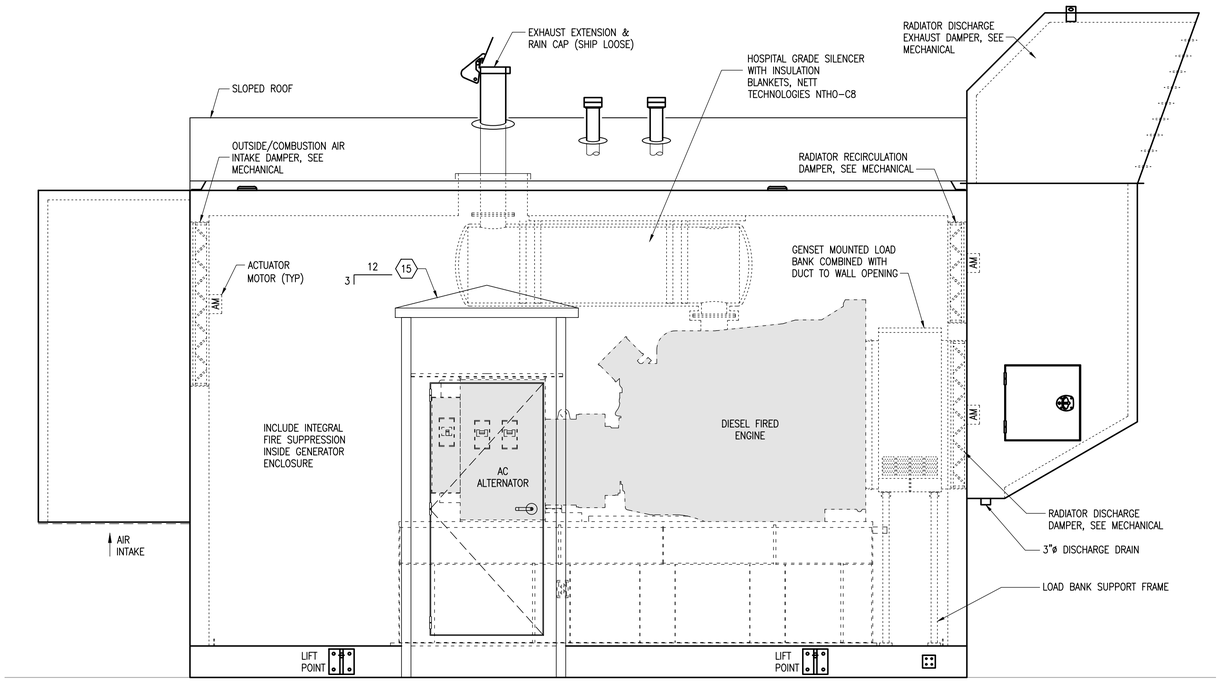
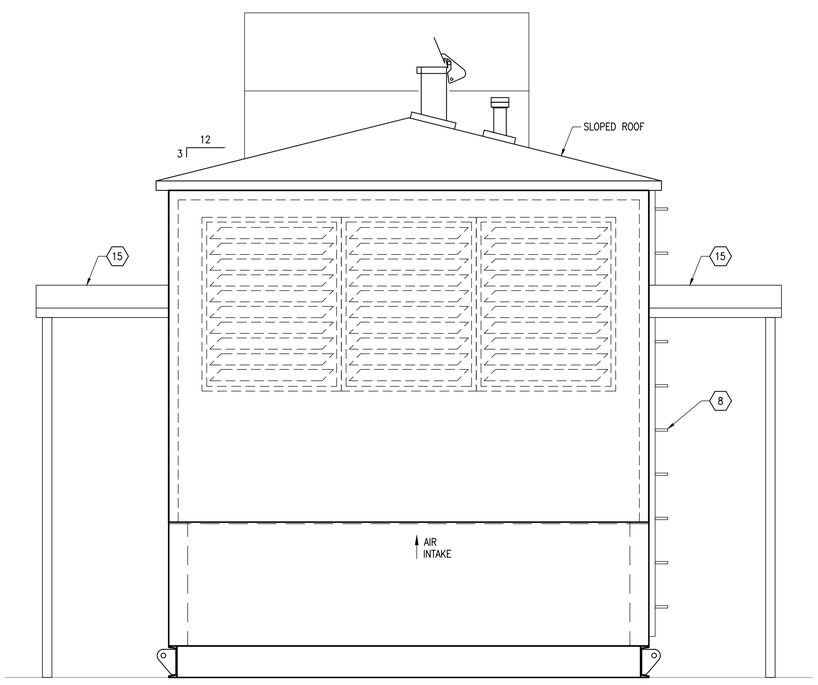


A E3.01 GENERATOR ENCLOSURE - ELEVATION

SCALE: NONE



B E3.01 GENERATOR ENCLOSURE - ELEVATION

SCALE: NONE

GENERAL NOTES

1. PROVIDE ENGINEERED SHOP DRAWINGS OF THE GENERATOR AND GENERATOR ENCLOSURE SHOWING ALL EQUIPMENT, INTEGRAL FIRE SUPPRESSION, CONDUIT, WIRING, CONNECTIONS, ETC FOR REVIEW AND APPROVAL PRIOR TO ORDERING EQUIPMENT.

SHEET NOTES

1. 32W, VAPOR PROOF LED LIGHT FIXTURE.
2. EMERGENCY LIGHT.
3. 3-WAY SWITCH; 125V, 20A.
4. DUPLEX RECEPTACLE; 125V, 20A, GFCI.
5. DUPLEX RECEPTACLE WITH WEATHER PROOF COVER; 125V, 20A, GFCI.
6. SERVICE PANEL, ELLS-GE: 208/120V, 100A, 3-PHASE, 4-WIRE.
7. DAMPER CONTROLS JUNCTION BOX. SEE MECHANICAL.
8. PROVIDE ALUMINUM LADDER AND MOUNT SECURELY TO GENERATOR ENCLOSURE.
9. ACTUATOR MOTOR. SEE MECHANICAL.
10. BATTERY CHARGER.
11. ELECTRIC UNIT HEATER, SEE MECHANICAL.
12. FIRE SUPPRESSION SYSTEM CLEAN/DRY AGENT RELEASING PANEL.
13. BAS PANEL/BAS MONITORING POINT TIE IN LOCATION.
14. PROVIDE THREE (3) SMOKE/FIRE DETECTORS: ONE (1) HEAT TYPE, ONE (1) IONIZATION TYPE, AND ONE (1) ULTRAVIOLET TYPE.
15. PROVIDE GABLED OVERHANG WITH 3"x12" PITCH CENTERED OVER ACCESS DOOR(S) TO ENCLOSURE. OVERHANG SHALL EXTEND TO EDGE OF CONCRETE SUPPORT PAD.
16. PROVIDE GENERATOR EMERGENCY SHUTDOWN PUSHBUTTON WITHIN POLYCARBONATE ENCLOSURE WITH HINGED ACCESS COVER.

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Date:	12/08/2023

Project Phase
100% CONSTRUCTION DOCUMENTS

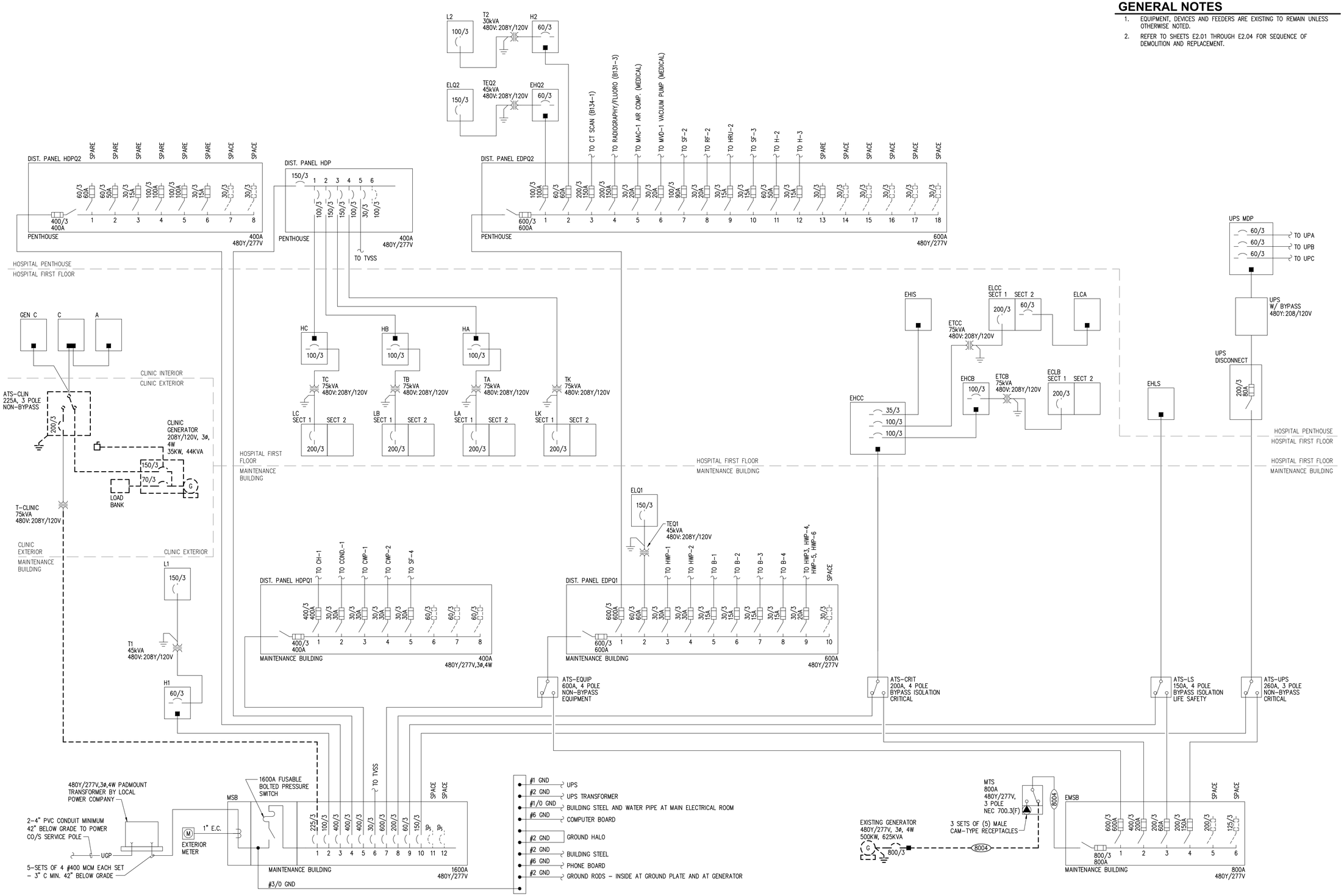
Sheet Title
ENLARGED FLOOR PLAN - GENERATOR ENCLOSURE

Sheet Number
E3.01

FILE NAME: X:\23305 PVMCGEN3\Dwgs\Et\dwg\Sheet Files\23305 - E3.01.dwg
PLOTTED: kconfer 12/11/2023 10:34 AM

GENERAL NOTES

1. EQUIPMENT, DEVICES AND FEEDERS ARE EXISTING TO REMAIN UNLESS OTHERWISE NOTED.
2. REFER TO SHEETS E2.01 THROUGH E2.04 FOR SEQUENCE OF DEMOLITION AND REPLACEMENT.



1 POWER ONE-LINE DIAGRAM - EXISTING & DEMOLITION

E4.01 SCALE: NONE

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12/09/2023
EE-11391
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Providence St. Joseph Health

CITY OF VALDEZ, ALASKA
OPPORTUNITIES IN EVERY SEASON

PROVIDENCE VALDEZ MEDICAL CENTER
LEVEL 1 EPS GENERATOR REPLACEMENT

Revisions		
No.	Date	Description

1 INCH AT FULL SIZE
1" ACTUAL
IF NOT 1 INCH,
SCALE ACCORDINGLY

Designed by:	DSD
Checked by:	KAC
AMC Project:	23305
Date:	12/08/2023

Project Phase
100% CONSTRUCTION DOCUMENTS

Sheet Title
POWER ONE-LINE DIAGRAM - EXISTING & DEMOLITION

Sheet Number
E4.01

FILE NAME: X:\23305 PVMCGEN3\Dwgs\Edwg\Sheet Files\23305 - E4.01.dwg
PLOTTED: kconfer 12/11/2023 10:34 AM

GENERAL NOTES

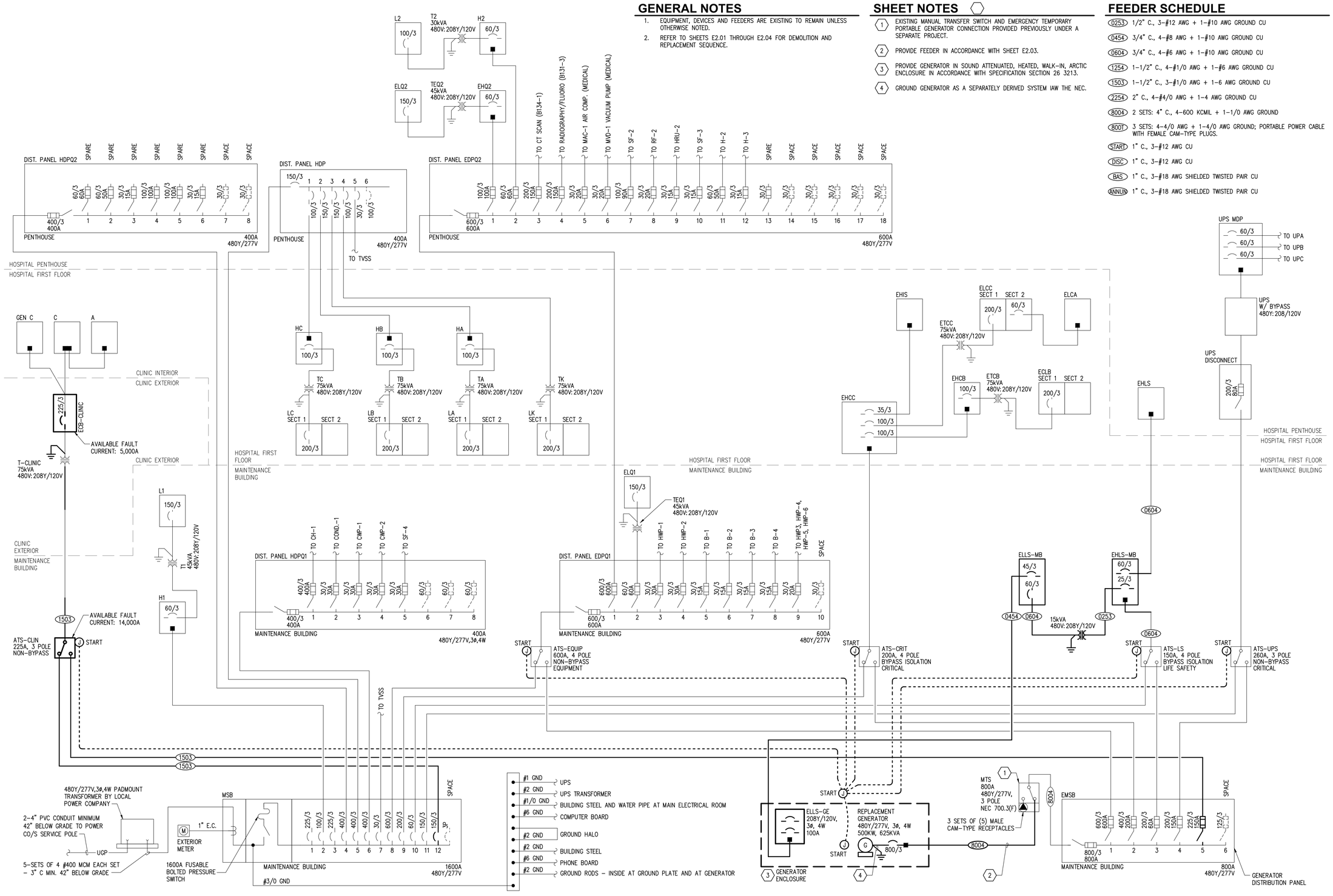
1. EQUIPMENT, DEVICES AND FEEDERS ARE EXISTING TO REMAIN UNLESS OTHERWISE NOTED.
2. REFER TO SHEETS E2.01 THROUGH E2.04 FOR DEMOLITION AND REPLACEMENT SEQUENCE.

SHEET NOTES

1. EXISTING MANUAL TRANSFER SWITCH AND EMERGENCY TEMPORARY PORTABLE GENERATOR CONNECTION PROVIDED PREVIOUSLY UNDER A SEPARATE PROJECT.
2. PROVIDE FEEDER IN ACCORDANCE WITH SHEET E2.03.
3. PROVIDE GENERATOR IN SOUND ATTENUATED, HEATED, WALK-IN, ARCTIC ENCLOSURE IN ACCORDANCE WITH SPECIFICATION SECTION 26 3213.
4. GROUND GENERATOR AS A SEPARATELY DERIVED SYSTEM IAW THE NEC.

FEEDER SCHEDULE

0253	1/2" C., 3-#12 AWG + 1-#10 AWG GROUND CU
0454	3/4" C., 4-#8 AWG + 1-#10 AWG GROUND CU
0604	3/4" C., 4-#6 AWG + 1-#10 AWG GROUND CU
1254	1-1/2" C., 4-#1/0 AWG + 1-#6 AWG GROUND CU
1503	1-1/2" C., 3-#1/0 AWG + 1-6 AWG GROUND CU
2254	2" C., 4-#4/0 AWG + 1-4 AWG GROUND CU
8004	2 SETS: 4" C., 4-600 KCMIL + 1-1/0 AWG GROUND
8007	3 SETS: 4-4/0 AWG + 1-4/0 AWG GROUND; PORTABLE POWER CABLE WITH FEMALE CAM-TYPE PLUGS.
START	1" C., 3-#12 AWG CU
DISC	1" C., 3-#12 AWG CU
BAS	1" C., 3-#18 AWG SHIELDED TWISTED PAIR CU
ANNUN	1" C., 3-#18 AWG SHIELDED TWISTED PAIR CU



1 POWER ONE-LINE DIAGRAM - REVISED

E3.01 SCALE: NONE

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Sheet Title
POWER ONE-LINE DIAGRAM - REVISED

Sheet Number
E4.02

GENERAL NOTES

1. DRAWING INFORMATION IS BASED UPON AVAILABLE OWNER DRAWINGS AND LIMITED FIELD VERIFICATION. DRAWING INFORMATION DOES NOT REPRESENT AS-BUILT CONDITIONS. FIELD VERIFY ALL INFORMATION INCLUDING PIPES, DUCTS, AND EQUIPMENT LOCATIONS, ROUTING, CONTROLS, AND APPURTENANCES PRIOR TO START OF WORK.
2. FIELD COORDINATE THE EXACT LOCATIONS OF EQUIPMENT, PIPING, DUCT WORK, AND CONTROLS WITH EXISTING AND NEW WORK, INCLUDING RATED ASSEMBLIES, CONSTRUCTION PHASING AND STRUCTURAL REQUIREMENTS.
3. REMOVE ABANDONED OR INDICATED FOR DEMOLITION PIPES, DUCTS, MEDICAL GAS LINES, EQUIPMENT AND CONTROLS. REMOVE BRACKETS, STEMS, HANGERS, CONDUIT, CONDUCTORS, DEVICES AND OTHER ACCESSORIES.
4. PLUG, PATCH, REPAIR HOLES AND SURFACES. REFINISH SURFACE AND REPAIR ASSEMBLIES TO MATCH EXISTING FIRE, TEMPERATURE, AND/OR SMOKE RATINGS. REPAIR ALL DAMAGED SURFACES, INSULATION, CEILING TILES AND FIREPROOFING. SEAL ROOM PENETRATIONS TO MAINTAIN PRESSURE RELATIONSHIPS TO ADJACENT SPACES.
5. OBTAIN FROM FACILITY MAINTENANCE EQUIPMENT TAGS AND BAR CODES; INCORPORATE INFORMATION ON CONTRACTOR, AS-BUILTS, REDLINES AND CONTROLS WORK.
6. INTERIM LIFE SAFETY MEASURES, ILSM. COORDINATE WITH HOSPITAL'S FACILITIES DEPARTMENT TO DETERMINE IF THERE ARE PRE-ESTABLISHED LIFE SAFETY MEASURES APPROPRIATE FOR THE PLANNED PROJECT. APPROVED PROJECT INTERIM LIFE SAFETY MEASURES SHALL BE FOLLOWED, MAINTAINED ON-SITE, AND PART OF THE PROJECT'S PERMANENT RECORD.
7. CONTRACTOR SHALL OBTAIN AND REVIEW EQUIPMENT VENDORS PREINSTALLATION/INSTALLATION DRAWINGS AND MANUALS BEFORE STARTING WORK. CONFLICTS BETWEEN VENDOR REQUIREMENTS AND CONTRACT DOCUMENTS SHALL BE RESOLVED WITH OWNER AND ENGINEER BEFORE STARTING WORK. CONFIRM VENDOR FURNISHED EQUIPMENT AND MATERIALS FOR CONTRACTOR INSTALLATION.
8. SHOP DRAWINGS AND PHASING PLANS SHALL BE REVIEWED BY CONTRACTOR WITH ALL SUB-CONTRACTORS AND SIGNED-OFF AS ACCEPTABLE BEFORE PROCEEDING WITH WORK. COPIES OF SIGNED-OFF DRAWINGS SHALL BE SUBMITTED TO OWNER AND ENGINEER.
9. COORDINATE PHASING REQUIREMENTS AND ALL SERVICE DISRUPTIONS WITH THE OWNER AND OBTAIN SPECIFIC AGREEMENT OF THE TIMES AND DURATIONS OF SYSTEM DISRUPTIONS BEFORE STARTING WORK. HOSPITAL WILL BE OPERATIONAL DURING CONSTRUCTION.
10. ARRANGE WORK TO PROVIDE WORKABLE ACCESS TO SERVICEABLE OR OPERABLE EQUIPMENT. LOCATION OF VALVES, TRAPS, STRAINERS, MOTORS, DAMPER OPERATORS, ETC., SHALL BE EASILY ACCESSIBLE BY A PERSON STANDING ON THE FLOOR. ITEMS NOT IN THE OPEN SHALL BE READILY ACCESSIBLE THROUGH ACCESS OPENINGS IN THE BUILDING CONSTRUCTION. PROVIDE UL. LISTED ACCESS PANELS TO MATCH FIRE RATING OF ASSEMBLIES.

MISCELLANEOUS EQUIPMENT SCHEDULE

SYMBOL	LOCATION	MOTOR (HP,V,PH)	WEIGHT (LBS)	REMARKS, BASIS OF DESIGN
UH-1	GENERATOR ENCLOSURE	10KW,208V,3	–	HORIZONTAL ELECTRIC UNIT HEATER: 830 CFM, AIR DEFLECTORS, SAFETY GUARD, LOW VOLTAGE THERMOSTAT KIT. MODINE HER100.
SECTION 23 1113 – FUEL OIL PIPING AND SPECIALTIES				
FOP-1	GENERATOR ENCLOSURE	1/3, 115, 1 QTY: 2	–	REMOTE FUEL OIL DUPLEX PUMP PACKAGE: REMOTE MOUNTED, IN NEMA 1 CABINET, TWO 2 GPM CAST IRON UL SUPPLY PUMPS, STARTER, CONTROL PANEL AND DOOR MOUNTED DISCONNECT WITH INTERLOCK, SHUT-OFF VALVES, PRESSURE RELIEF VALVE, CHECK VALVE, CONTAINMENT SUMP WITH LEAK ALARM AND DRAIN. SIMPLEX SPS25-SD.

LOUVER SCHEDULE

SYMBOL	UNIT AND USAGE	SCFM	SIZE WIDTH X HT (INCHES)	MIN FREE AREA (SF)	MAX FREE AREA VEL (FPM)	MAX APD (IN WC)	WEIGHT (LBS)	REMARKS, BASIS OF DESIGN
SECTION 23 3700 – AIR OUTLETS AND INLETS								
LV-1	GENERATOR ROOM EF-13 MAKEUP AIR	2,000	120 X 36	16.2	150	0.02	120	6 INCH THICK EXTRUDED ALUMINUM, 37.5 DEGREE DRAINABLE BLADES WITH BIRD SCREEN, AMCA RATED FOR WATER AND AIR, COLOR TO MATCH EXISTING LOUVERS. RUSKIN ELF6375X.

ABBREVIATIONS

@	AT	IN WC	INCHES WATER COLUMN
&	AND	INSUL	INSULATION
#	NUMBER	IPS	INTERNATIONAL PIPE STANDARD
%	PERCENT	K	THERMAL CONDUCTIVITY
AD	ACCESS DOOR	KW	KILOWATT
AAP	AREA ALARM PANEL	KWH	KILOWATT HOUR
ADA	AMERICANS WITH DISABILITIES ACT	LAT	LEAVING AIR TEMPERATURE
AFF	ABOVE FINISHED FLOOR	LB/HR	POUNDS PER HOUR
AFG	ABOVE FINISHED GRADE	LBS	POUNDS
AHJ	AUTHORITY HAVING JURISDICTION	LF	LINEAR FEET
AHU	AIR-HANDLING UNIT	L	LENGTH
ALT	ALTERNATE	LWT	LEAVING WATER TEMPERATURE
AMB	AMBIENT	LOC	LOCATION/LOCATED
AMCA	AIR MOVEMENT AND CONTROL ASSOCIATION	LP	LOW PRESSURE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	LR	LONG RADIUS
APD	AIR PRESSURE DROP	MAN	MANUAL
APPROX	APPROXIMATE	MAT	MIXED AIR TEMPERATURE
AR	ACID RESISTANT	MAV	MANUAL AIR VENT
ARCH	ARCHITECTURAL	MAX	MAXIMUM
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS	MBH	THOUSAND BTU PER HOUR
ATM	ATMOSPHERE	MECH	MECHANICAL
AUTO	AUTOMATIC	MFR	MANUFACTURER
AVG	AVERAGE	MH	MANHOLE
AWG	AMERICAN WIRE GAUGE	MIN	MINIMUM, MINUTE
BAS	BUILDING AUTOMATION SYSTEM	MPH	MILES PER HOUR
BDD	BACKDRAFT DAMPER	MTD	MOUNTED
BHP	BRAKE HORSEPOWER, BOILER HORSEPOWER	N/A	NOT APPLICABLE
BLDG	BUILDING	NC	NOISE CRITERIA, NORMALLY CLOSED
BLW	BELOW	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
BOD	BOTTOM OF DUCT		NOT IN CONTRACT
BOP	BOTTOM OF PIPE	NO	NORMALLY OPEN, NUMBER
BTU	BRITISH THERMAL UNIT	NTS	NOT TO SCALE
BTUH	BTU PER HOUR	OD	OUTSIDE DIAMETER
C	COMMON, CONDENSATE	OFOI	OWNER FURNISHED, OWNER INSTALLED
C-C	CENTER TO CENTER	OSA	OUTSIDE AIR
CAP	CAPACITY, END CAP	OZ	OUNCE
CCW	COUNTER-CLOCKWISE	PD	PRESSURE DROP OR DIFFERENCE
CF	COOLING FAN, CIRCULATING FAN, CUBIC FOOT	PG	PROPYLENE GLYCOL
CFM	CUBIC FEET PER MINUTE	PL	PLATE
CI	CAST IRON	PLBG	PLUMBING
CL	CENTER LINE	POC	POINT OF CONNECTION
CLG	CEILING	PNL	PANEL
CMPR	COMPRESSOR	PH	PHASE (ELECTRICAL)
COEF	COEFFICIENT	PPM	PARTS PER MILLION
CONC	CONCRETE	PSI	POUNDS PER SQUARE INCH
COND	CONDENSER	PSIA	POUNDS PER SQUARE INCH – ABSOLUTE
CTR	CENTER	PSID	POUNDS PER SQUARE INCH – DIFFERENTIAL
CU	COPPER, CONDENSING UNIT	PSIG	POUNDS PER SQUARE INCH – GAUGE
CU IN	CUBIC INCH	PRESS	PRESSURE
CV	VALVE FLOW COEFFICIENT	PRI	PRIMARY
CW	CLOCKWISE	R-407C, R-410A	REFRIGERANT (407C,410A,ETC.)
DB	DECIBEL	R/A	RETURN AIR
DBT	DRY-BULB TEMPERATURE	RAD	RADIANT OR RADIATION
DDC	DIRECT DIGITAL CONTROL	RCVR	RECEIVER
DEG OR °	DEGREE	RECIRC	RECIRCULATE
DEG C	DEGREE CENTIGRADE	RED	REDUCER
DEG F	DEGREE FAHRENHEIT	REFRIG	REFRIGERATION
DEMO	DEMOLITION	REV	REVOLUTIONS
DENS	DENSITY	RF	RELIEF FAN OR RETURN FAN
DGM	DIAGRAM	RH	RELATIVE HUMIDITY
DI	DUCTILE IRON	RM	ROOM
DIA OR ø	DIAMETER	RPM	REVOLUTIONS PER MINUTE
DIFF	DIFFERENCE OR DELTA	RPS	REVOLUTIONS PER SECOND
DIP	DUCTILE IRON PIPE	S/A	SUPPLY AIR
DISS	DIAMETER-INDEX SAFETY SYSTEM	SAT	SATURATION
DN	DOWN	SCHD	SCHEDULE
DTL	DETAIL	SCFM	STANDARD CUBIC FEET PER MINUTE
DWDI	DOUBLE WIDTH DOUBLE INLET	SD	STORM DRAIN
DWG	DRAWING	SEC	SECONDARY
(E)	EXISTING	SF	SQUARE FEET
EA	EACH	SH	SENSIBLE HEAT
E/A	EXHAUST AIR	SHG	SENSIBLE HEAT GAIN
EAT	ENTERING AIR TEMPERATURE	SHR	SENSIBLE HEAT RATIO
EF	EXHAUST FAN	SHT	SHEET
EFF	EFFICIENCY	SHWR	SHOWER
EG	ETHYLENE GLYCOL, EXHAUST GRILLE	SP	STATIC PRESSURE
ELEC	ELECTRICAL	SPD	STATIC PRESSURE DROP
ELEV	ELEVATION	SPEC	SPECIFICATION, SPECIFIED
EMB	EMBEDMENT	SPKLR	SPRINKLER
ENT	ENTERING	SR	SHORT RADIUS
EQIV FT	EQUIVALENT FEET	SWSI	SINGLE WIDTH SINGLE INLET
ESP	EXTERNAL STATIC PRESSURE	SQ	SQUARE
EVAP	EVAPORATOR	SS	STAINLESS STEEL, SANITARY SEWER
EXP	EXPANSION	STD	STANDARD
EWT	ENTERING WATER TEMPERATURE	SUCT	SUCTION
°F	FAHRENHEIT	TA	TRANSFER AIR
FA	FACE AREA	TEMP	TEMPERATURE, TEMPORARY
F-F	FACE TO FACE	THRU	THROUGH
FD	FIRE DAMPER	TOD	TOP OF DUCT
FLEX	FLEXIBLE	TONS	TONS OF REFRIGERATION
FLR	FLOOR	TOP	TOP OF PIPE
FOB	FLAT ON BOTTOM	TYP	TYPICAL
FOT	FLAT ON TOP	UG	UNDERGROUND
FP	FREEZING POINT	UL	UNDERWRITERS LABORATORIES
FPM	FEET PER MINUTE	UNO	UNLESS NOTED OTHERWISE
FPS	FEET PER SECOND	UPC	UNIFORM PLUMBING CODE
FSD	FIRE-SMOKE DAMPER	V	VOLTS OR VOLTAGE
FSDM	FIRE-SMOKE DAMPER, MODULATING	VAC	VACUUM
FT OR '	FOOT OR FEET	VAC	VOLTS (ALTERNATING CURRENT)
FV	FACE VELOCITY	VAL	VALVE
GA	GAGE OR GAUGE	VAP PR	VAPOR PRESSURE
GAL	GALLONS	VAR	VARIABLE
GPD	GALLONS PER DAY	VAV	VARIABLE AIR VOLUME
GPH	GALLONS PER HOUR	VDC	VOLTS (DIRECT CURRENT)
GPM	GALLONS PER MINUTE	VEL	VELOCITY
GR	GRAINS	VERT	VERTICAL
GRD	GRILLES, REGISTERS, DIFFUSERS	VFD	VARIABLE FREQUENCY DRIVE
HD	HEAD	VOL	VOLUME
HDPE	HIGH DENSITY POLYETHYLENE	VP	VELOCITY PRESSURE
HG	HEAT GAIN	VSD	VARIABLE SPEED DRIVE
HT	HEIGHT	VTR	VENT THROUGH ROOF
HP	HORSEPOWER	W	WATT
HR	HOUR(S)	W/	WITH
HVAC	HEATING, VENTILATING & AIR-CONDITIONING	W/O	WITHOUT
HZ	FREQUENCY	WB	WET BULB TEMPERATURE
IAW	IN ACCORDANCE WITH	WC	WATER COLUMN
ID	INSIDE DIAMETER	WH	WATT-HOUR
IE	INVERT ELEVATION	WP	WEATHER PROOF, WATER PROOF
IBC	INTERNATIONAL BUILDING CODE	WPD	WATER PRESSURE DROP
IFC	INTERNATIONAL FIRE CODE	WT	WEIGHT
IMC	INTERNATIONAL MECHANICAL CODE	YD	YARD
IN OR "	INCH OR INCHES	ZVB	ZONE VALVE BOX
IN HG	INCHES MERCURY		

GENERAL

SHEET NOTE CONVENTION:
1 — REFERENCED SHEET NOTE
2. — GENERAL SHEET NOTE

NORTH ARROW

PHOTOGRAPH REFERENCE
A / M1.3 — PHOTOGRAPH LETTER; SHEET WHERE PHOTOGRAPH APPEARS

DETAIL REFERENCE
1 / M0.1 — DETAIL NUMBER; SHEET WHERE DETAIL APPEARS

POINT OF CONNECTION

EQUIPMENT TAG
ID / EQ# — EQUIPMENT DESIGNATION; EQUIPMENT NUMBER

LINE CONVENTION
NEW OR REINSTALLED ITEM
ITEM TO BE DEMOLISHED
EXISTING ITEM TO REMAIN
EXISTING ITEM TO BE RELOCATED

VENTILATION

DOUBLE LINE DUCTWORK
SINGLE LINE DUCTWORK
AIR FLOW ARROW
VD — AIR VOLUME DAMPER
AL — ACOUSTICAL DUCT LINING
DUCT INSULATION
12ø — DUCT: ROUND
20X12 — DUCT: RECTANGULAR, FIRST FIGURE SIDE SHOWN
MOD — MOTORIZED OPERATED DAMPER
OBD — OPPOSED BLADE DAMPER
PBD — PARALLEL BLADE DAMPER
BDD — BACK DRAFT DAMPER
DAMPER

SUPPLY / RETURN / EXHAUST / ROUND — DUCT TURNING UP OR TOWARD
SUPPLY / RETURN / EXHAUST / ROUND — DUCT TURNING DOWN OR AWAY

CONTROLS

T — TSTAT — THERMOSTAT
T 120V — LINE VOLTAGE THERMOSTAT
PI — PI — PRESSURE INDICATOR, GAUGE
TI — TI — TEMPERATURE INDICATOR, THERMOMETER

GENERAL PIPING

		BALL VALVE
	GV	GATE VALVE
	CV	CHECK VALVE
		PLUG VALVE
	SV	SAFETY VALVE, PRESSURE RELIEF VALVE
	VB	VACUUM BREAK
	PTTP	PRESSURE & TEMP TEST PLUG
		STRAINER W/ BLOWDOWN HOSE FITTING
HOSE		EQUIPMENT OR PIPE DRAIN VALVE W/HOSE FITTING
HOSE		EQUIPMENT OR PIPE DRAIN PLUG W/HOSE FITTING
		REDUCER (CONCENTRIC)
		REDUCER (ECCENTRIC)
		FLOW ARROW
		ANCHOR
		PIPE GUIDE
		PIPE SLEEVE
		PIPE UNION
		PIPE FLANGE
		FLEXIBLE CONNECTION
M		METER
		LINE BREAK
		END CAP
		PIPE UP / TEE UP
		PIPE DOWN (ELBOW)
		PIPE DOWN (TEE)

FUEL

	FOS	FUEL OIL SUPPLY
	FOR	FUEL OIL RETURN
	FOV	FUEL OIL VENT
	NG	NATURAL GAS
	PG	PROPANE (GAS)
	LP	PROPANE (LIQUID)
OSV	OSV	OIL SAFETY VALVE
F	F	FUEL FILTER
TL	TL	TIGERLOOP
		FUSIBLE LINK VALVE
	ASV	ANTI-SIPHON VALVE

NOTE: THIS IS A STANDARD LEGEND, SOME OF THE SYMBOLS SHOWN ON LEGEND ARE NOT NECESSARILY ON THE DRAWINGS.

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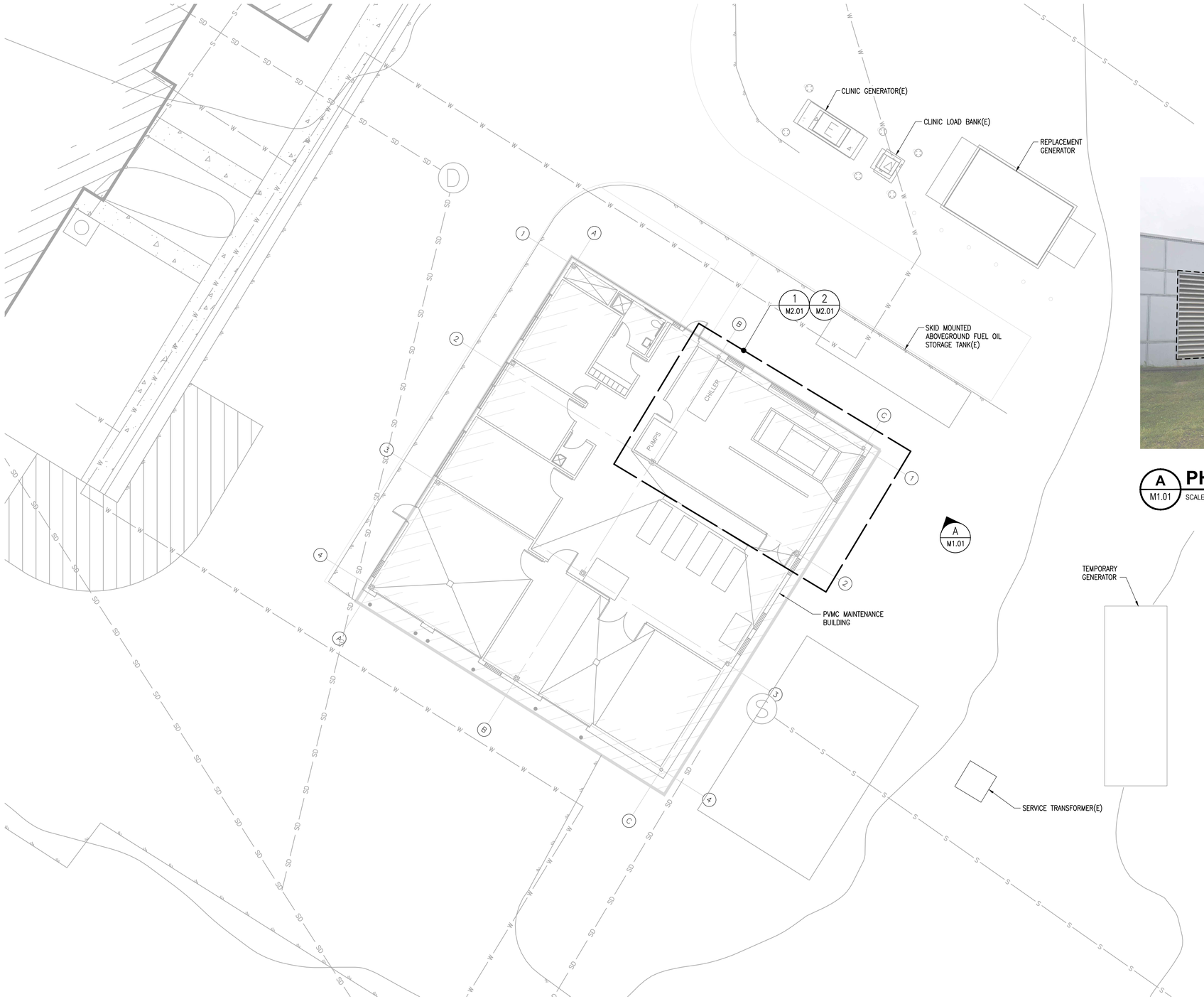
Sheet Title
MECHANICAL LEGEND, ABBREVIATIONS, AND SCHEDULES

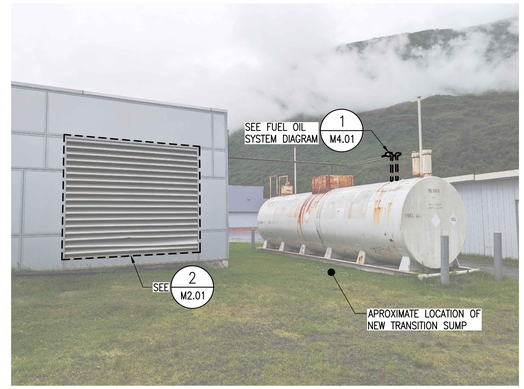
Sheet Number
M0.01

FILE NAME: x:\23305 pvmcgen3\Dwgs\Mdwg\sheet files\23305 - M0.01.dwg
PLOTTED: mlontoc 12/8/2023 5:36 PM

GENERAL NOTES

1. REFER TO CIVIL AND ELECTRICAL SITE PLAN 1/E1.01 FOR ADDITIONAL INFORMATION.





A M1.01 **PHOTO**
SCALE: NONE

1 M1.01 **SITE PLAN - MECHANICAL**
SCALE: 1" = 10'

0 5' 10' 20' 30'

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Project Phase
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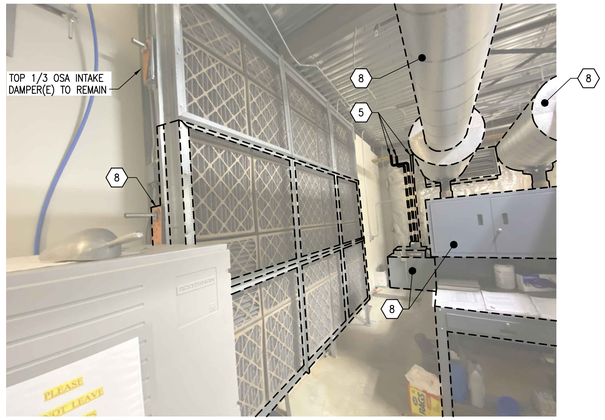
Sheet Title
SITE PLAN - MECHANICAL

Sheet Number
M1.01



A PHOTO

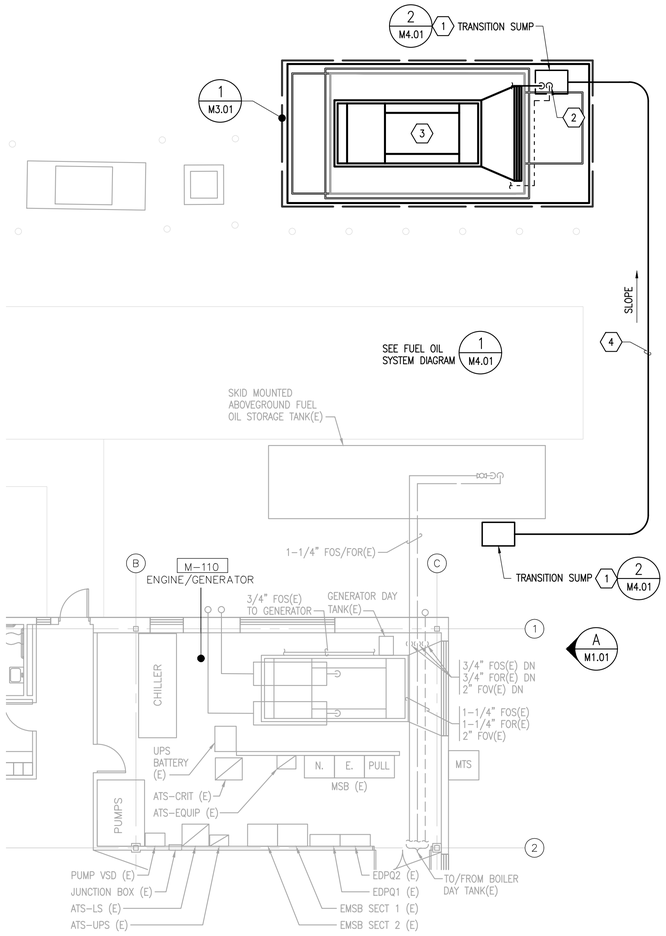
A / M2.01 SCALE: NONE

GENERAL NOTES

1. FIELD VERIFY EXISTING CONDITIONS.
2. COORDINATE DEMOLITION WITH NEW WORK.
3. COORDINATE MECHANICAL PHASING WITH ELECTRICAL INSTALLATION SEQUENCE.
4. COORDINATE FUEL SYSTEM SHUTDOWN WITH FACILITIES AND PROVIDE TEMPORARY BOILER DAY TANK FUEL SOURCE FOR DURATION OF SHUTDOWN, SEE DIAGRAM 1/M4.01.

SHEET NOTES

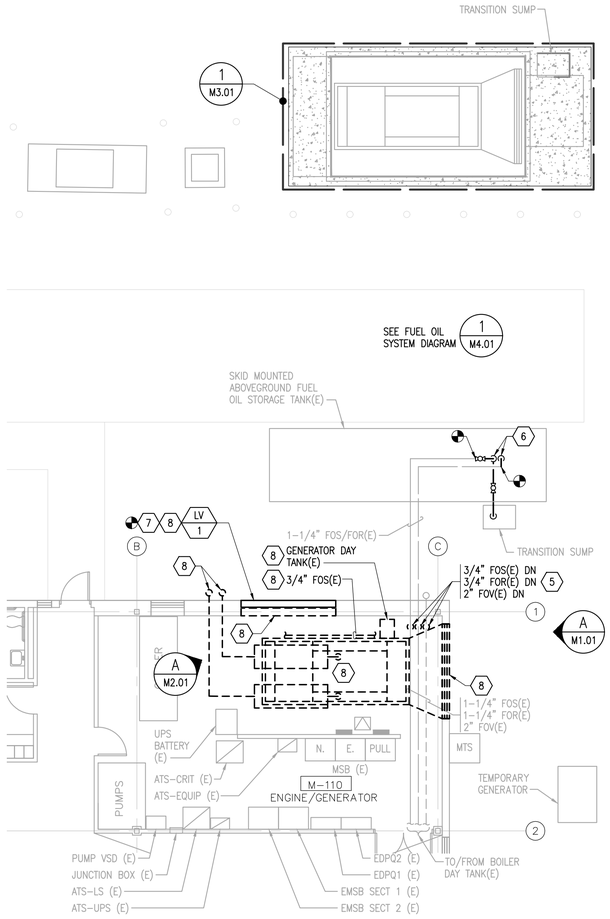
1. 41"X30" TRANSITION SUMP. TRANSITION FROM DOUBLE WALL FLEXIBLE PIPING TO SCHEDULE 40 STEEL PIPING. COORDINATE WITH CIVIL.
2. CONNECT LEAK SENSOR IN TRANSITION SUMP TO LEAK DETECTION PANEL IN GENERATOR ENCLOSURE.
3. SEE ELECTRICAL FOR GENERATOR ENCLOSURE.
4. 3/4" FOS ROUTED MINIMUM 18" BELOW GRADE IN 4" ACCESS PIPE WITH DETECTABLE WARNING TAPE. COORDINATE WITH ELECTRICAL AND CIVIL.
5. DEMOLISH 3/4" FOS, 3/4" FOR, AND 2" FOV SERVING EXISTING GENERATOR DAY TANK BACK TO MAIN AND REMOVE TEE FITTING. REPAIR 1-1/4" FOS/FOR(E) WITH STRAIGHT PIPE SECTION.
6. DEMOLISH AND REPLACE CORRODED 1-1/4" FOS/FOR PIPING AND CONNECT NEW 3/4" FOS PIPE.
7. CONNECT LOUVER LV-1 TO EXISTING TOP 1/3 OUTSIDE AIR DAMPER AND FILTER RACK. REFER TO ARCHITECTURAL.
8. AFTER REPLACEMENT GENERATOR COMMISSIONING HAS BEEN COMPLETED, DEMOLISH EXISTING GENERATOR FUEL OIL DAY TANK, ASSOCIATED FUEL OIL PIPING, EXHAUST STACKS, RADIATOR DISCHARGE LOUVER, OUTSIDE AIR INTAKE LOUVER, BOTTOM 2/3 OUTSIDE AIR DAMPER, AND BOTTOM 2/3 FILTER RACK. EXISTING TOP 1/3 OUTSIDE AIR DAMPER AND FILTER RACK TO REMAIN. PATCH WALL TO MATCH EXISTING, SEE ARCHITECTURAL.



1 ENLARGED PLAN - EXISTING GENERATOR PHASE

1 / M2.01 SCALE: 1/8" = 1'-0"

0 4' 8' 16' 24'



2 ENLARGED PLAN - TEMPORARY GENERATOR PHASE

2 / M2.01 SCALE: 1/8" = 1'-0"

0 4' 8' 16' 24'

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PROVIDENCE VALDEZ MEDICAL CENTER
LEVEL 1 EPS GENERATOR REPLACEMENT

Revisions

No.	Date	Description

1 INCH AT FULL SIZE
1" ACTUAL
IF NOT 1 INCH, SCALE ACCORDINGLY

Designed by:	TBD
Checked by:	DLB
AMC Project:	23305
Date:	12/08/2023

Project Phase
100% CONSTRUCTION DOCUMENTS

Sheet Title
GENERATOR REPLACEMENT PHASES - MECHANICAL

Sheet Number
M2.01

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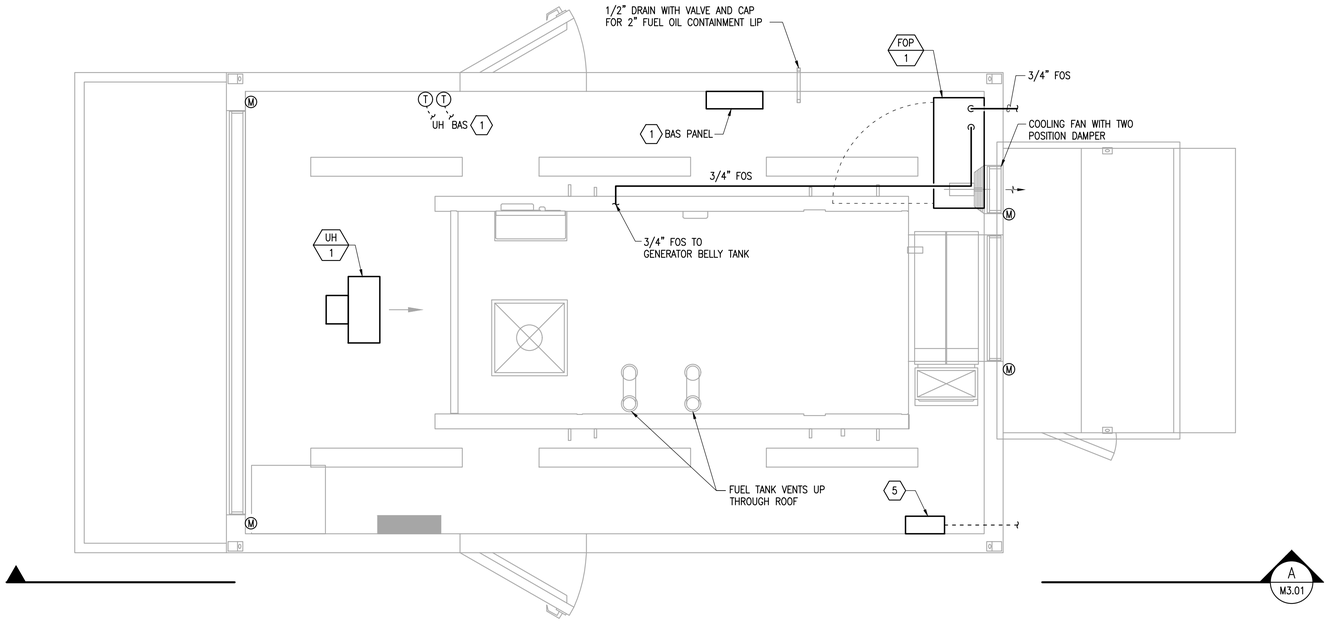
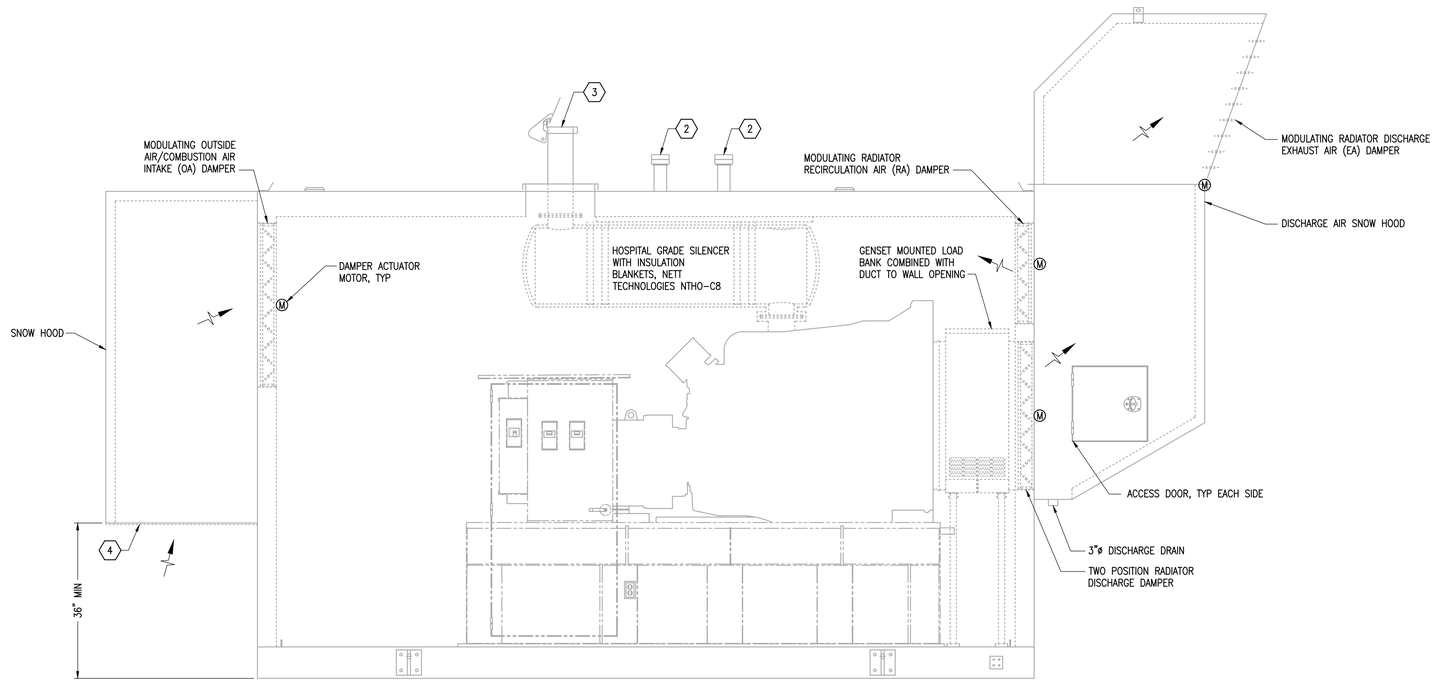


1 M3.01 ENLARGED FLOOR PLAN - GENERATOR ENCLOSURE

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



A M3.01 GENERATOR ENCLOSURE - ELEVATION

SCALE: NONE

GENERAL NOTES

1. MECHANICAL COMPONENTS OF GENERATOR ENCLOSURE ARE NOTED. REFER TO ELECTRICAL PLAN 1/E3.01 FOR ADDITIONAL INFORMATION.
2. FOR FUEL OIL SYSTEM DIAGRAM, SEE 1/M4.01.
3. FOR GENERATOR ENCLOSURE SEQUENCE OF OPERATIONS, SEE M4.01.

SHEET NOTES

1. FIELD COORDINATE LOCATION OF BAS PANEL AND BAS TEMPERATURE ZONE SENSOR INSIDE GENERATOR ENCLOSURE.
2. EXTEND FUEL OIL VENTS MINIMUM 36" ABOVE ENCLOSURE ROOF.
3. EXTEND GENERATOR EXHAUST STACK MINIMUM 36" ABOVE ENCLOSURE ROOF.
4. REMOVABLE 1" STAINLESS STEEL MESH BIRD SCREEN OVER OUTSIDE AIR INTAKE.
5. FUEL OIL TRANSITION SUMP LEAK DETECTION PANEL. FIELD COORDINATE LOCATION INSIDE GENERATOR ENCLOSURE.

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100% CONSTRUCTION DOCUMENTS

Sheet Title
ENLARGED FLOOR PLAN - GENERATOR ENCLOSURE - MECHANICAL

Sheet Number
M3.01

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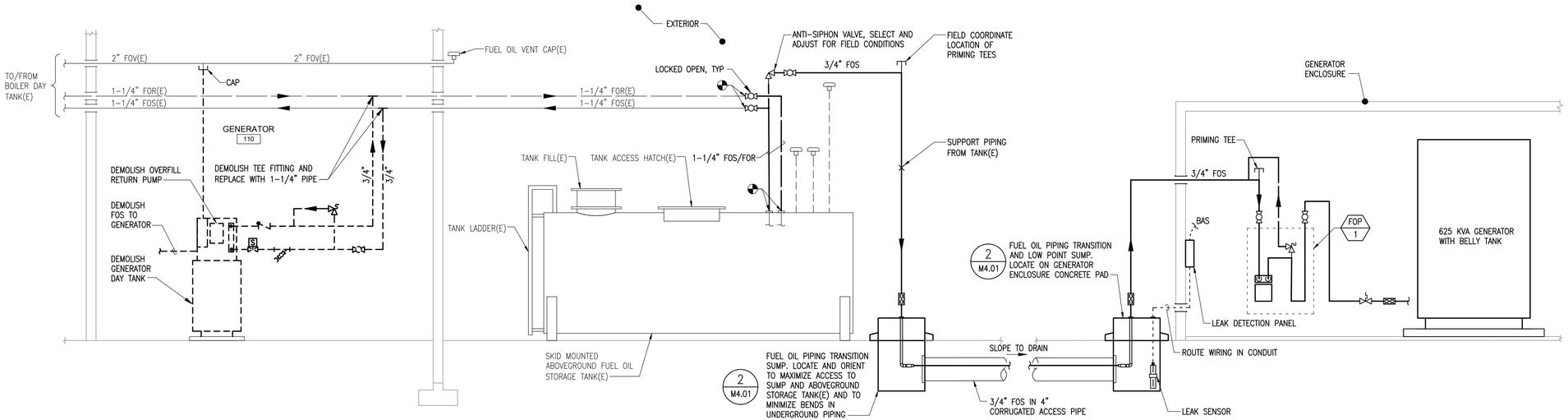
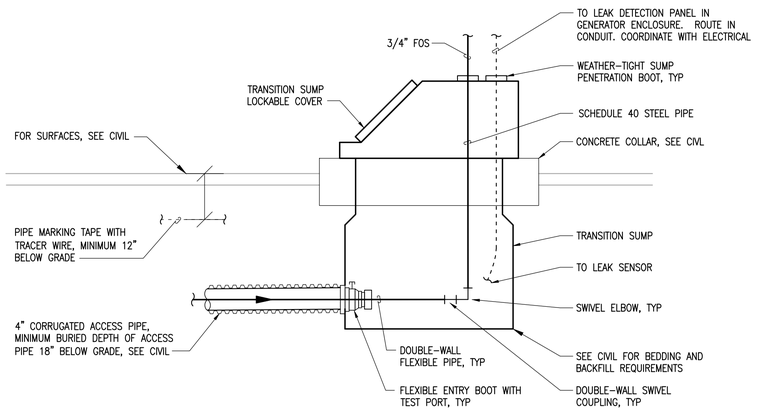


1 M4.01 DIAGRAM - FUEL OIL STORAGE AND TRANSFER SYSTEM PIPING

SCALE: NONE



2 M4.01 DETAIL - TRANSITION SUMP

SCALE: NONE

GENERATOR ENCLOSURE - SEQUENCE OF OPERATIONS

1.1 GENERAL OPERATION:

A. SEE SECTION 26 3213 – ENGINE GENERATOR (DIESEL) FOR ADDITIONAL CONTROL REQUIREMENTS SPECIFIC TO THE PACKAGED GENSET CONTROLS.

1.2 GENERATOR ENCLOSURE PACKAGED CONTROLLER:

A. GENERATOR ENCLOSURE DAMPER DESCRIPTION:
1. OUTSIDE AIR/COMBUSTION AIR (OA) DAMPER:
a. NORMALLY OPEN, OPPOSED AIRFOIL BLADE, MODULATING, SPRING RETURN.
b. POWERED CLOSED WHEN GENERATOR IS OFF.
c. OPENS ON LOSS OF POWER.
2. GENERATOR ENCLOSURE DISCHARGE EXHAUST AIR (EA) DAMPER:
a. NORMALLY CLOSED, OPPOSED AIRFOIL BLADE, MODULATING, SPRING RETURN.
3. GENERATOR RADIATOR DISCHARGE DAMPER:
a. NORMALLY CLOSED, OPPOSED AIRFOIL BLADE, TWO POSITION, SPRING RETURN.
4. GENERATOR RADIATOR DISCHARGE RECIRCULATION AIR (RA) DAMPER:
a. NORMALLY OPEN, OPPOSED AIRFOIL BLADE, MODULATING, SPRING RETURN.

B. GENERATOR ENCLOSURE VENTILATION SYSTEM OPERATION:
1. FULL SHUTDOWN (GENERATOR DISABLED/OFF):
a. GENERATOR ENCLOSURE OUTSIDE AIR/COMBUSTION AIR DAMPER (OA) IS CLOSED.
b. GENERATOR ENCLOSURE EXHAUST DAMPER (EA) IS CLOSED.
c. GENERATOR RADIATOR DISCHARGE EXHAUST DAMPER IS CLOSED.
d. GENERATOR RECIRCULATION AIR DAMPER (RA) IS OPEN.
2. GENERATOR STARTUP/OPERATION:
a. THE EA AND RA DAMPERS INVERSELY MODULATE, SO AS ONE OPENS THE OTHER CLOSES. UPON GENERATOR START UP, MODULATE THE EA DAMPER TO BE 20% OPEN AND RA DAMPER TO BE 80% OPEN. MODULATE BOTH DAMPERS TO MAINTAIN AN ENCLOSURE SETPOINT TEMPERATURE OF 80 DEGREES F.
b. AS ENCLOSURE TEMPERATURE RISES FROM 70 TO 80 DEG F, MODULATE OA DAMPER
BETWEEN 20% AND 100% OPEN.
c. AS ENCLOSURE COOLS, REVERSE THE ABOVE SEQUENCES.
3. GENERATOR STANDBY/NON-OPERATING:
a. OPEN RA DAMPER WHEN ENCLOSURE TEMPERATURE IS 70 DEG F AND COOLING FAN IS OFF.
b. AS ENCLOSURE TEMPERATURE RISES FROM 70 TO 80 DEG F, MODULATE OA DAMPER AND EA DAMPER BETWEEN 20% AND 100% OPEN.

C. GENERATOR ENCLOSURE COOLING FAN AND DAMPER OPERATION:
1. COOLING FAN DAMPER DESCRIPTION: NORMALLY CLOSED, 2-POSITION, SPRING RETURN.
a. OPEN COOLING FAN DAMPER, CLOSE RA DAMPER, AND START COOLING FAN WHEN ENCLOSURE TEMPERATURE IS 80 DEG F (ADJUSTABLE).
b. STOP FAN WHEN ENCLOSURE TEMPERATURE IS 75 DEG F (ADJUSTABLE).

D. GENERATOR ENCLOSURE UNIT HEATER:
1. ELECTRIC UNIT HEATER TO TURN ON TO MAINTAIN ENCLOSURE SETPOINT OF 45 DEG F.

1.3 BUILDING AUTOMATION SYSTEM:

A. MONITOR THE FOLLOWING CONDITIONS THROUGH THE BAS:
1. GENERATOR RUN STATUS (INCLUDING TOTALIZED RUN TIME).
2. GENERATOR COMMON PRE-ALARM (ANY ALARM CONDITION THAT DOES NOT PREVENT THE GENERATOR FROM OPERATING).
3. GENERATOR COMMON ALARM (ANY ALARM CONDITION THAT PREVENTS THE GENERATOR FROM PROVIDING POWER).
4. GENERATOR BATTERY CHARGER FAULT.
5. GENERATOR BELLY TANK LOW FUEL LEVEL ALARM.
6. PROVIDE ALARM IF GENERATOR RUNS MORE THAN 60 MINUTES AT ANY ONE TIME.
7. FUEL OIL LEAK DETECTION PANEL ALARM.
8. GENERATOR POINTS LISTED IN SECTION 26 3213 – ENGINE GENERATOR (DIESEL) PARAGRAPH 2.7.B.3.

B. ENCLOSURE TEMPERATURE MONITORING: GENERATE BAS ALARM IF ENCLOSURE TEMPERATURE DROPS BELOW 35 DEG F OR RISES ABOVE 95 DEG F (ADJUSTABLE) FOR 30 MINUTES.

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Designed by:	TBD
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AMC Project:	23305
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Project Phase
100% CONSTRUCTION DOCUMENTS

Sheet Title
FUEL OIL DIAGRAM

Sheet Number
M4.01

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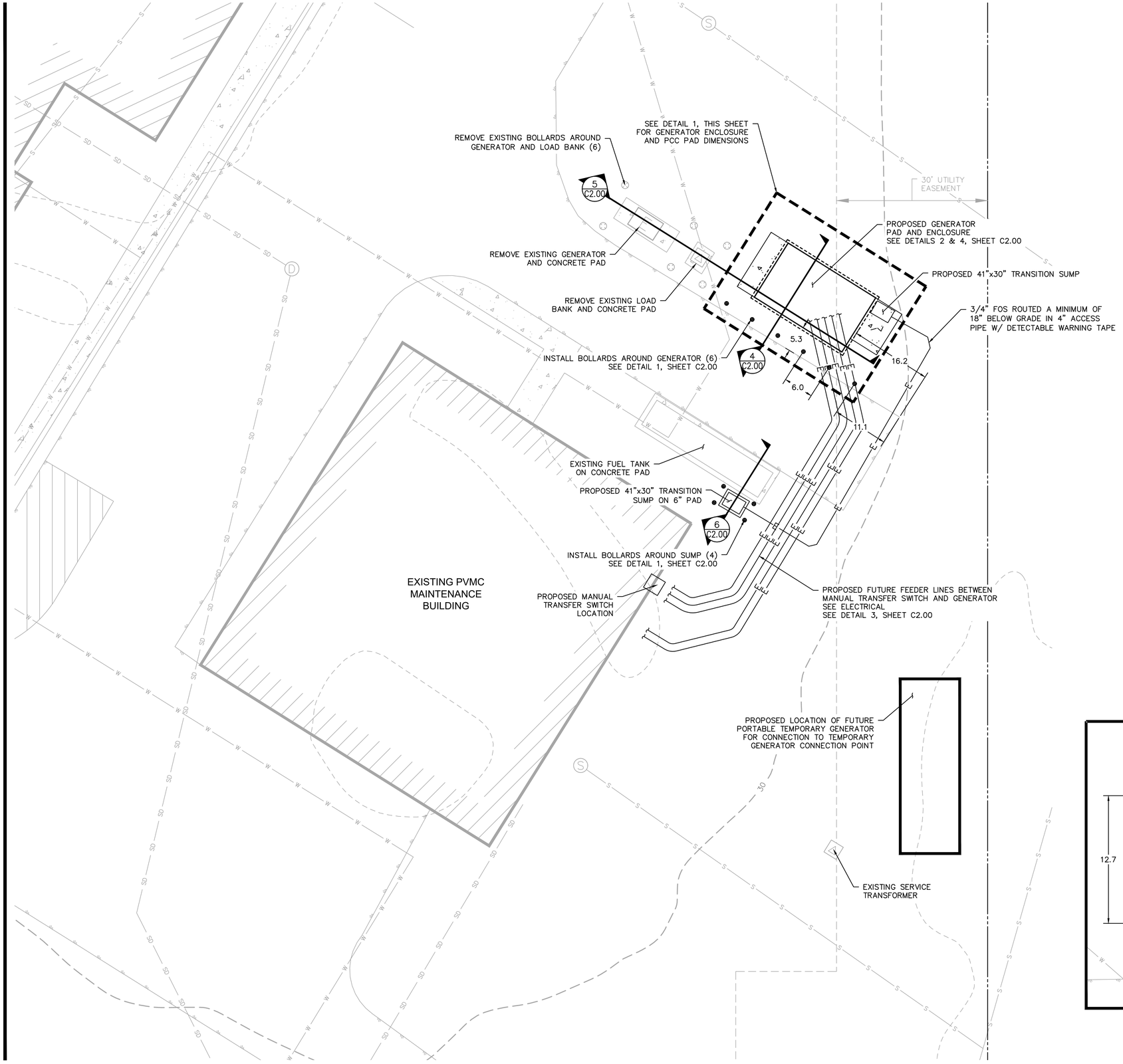
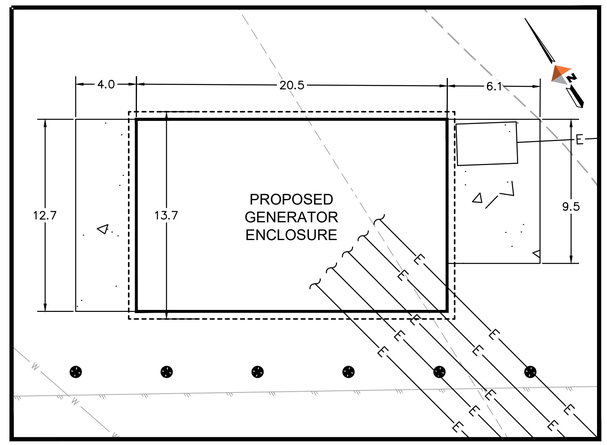


SITE PLAN NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF VALDEZ STANDARD SPECIFICATIONS AS CURRENTLY AMENDED, AND THE PROJECT SPECIAL PROVISIONS, UNLESS OTHERWISE NOTED.
2. GRADE GENERATOR ENCLOSURE AREA TO DRAIN AWAY FROM CONCRETE PAD.
3. THE CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATIONS OF ALL UTILITIES PRIOR TO AND DURING CONSTRUCTION. LOCATIONS AND CHANGES TO UTILITIES SHALL BE APPROVED BY THE OWNER AND RECORDED IN SURVEY NOTES AND RECORD DRAWINGS SUBMITTED TO THE OWNER,
4. RESTORE ALL DISTURBED PROPERTY OUTSIDE OF WORK LIMITS TO ORIGINAL CONDITIONS.
5. DEWATERING SHALL BE REQUIRED FOR ALL EXCAVATIONS THAT PENETRATE GROUNDWATER SURFACE.
6. ALL EXCESS EXCAVATION MATERIAL, INCLUDING UNUSABLE MATERIAL (I.E., ORGANICS, DEBRIS, MUCK, CONTAMINATED SOIL) SHALL BE DISPOSED OF AT AN APPROVED CONTRACTOR PROVIDED DISPOSAL SITE.

LEGEND

PROPOSED	EXISTING	
▬▬▬	▬▬▬	BUILDING
- - - - - -		ROOF OVERHANG
	SD	STORM DRAIN
	W	WATERLINE
	S	SANITARY SEWER LINE
E	E	ELECTRICAL LINE
	30	MAJOR CONTOUR
	28	MINOR CONTOUR
	△	TRANSFORMER
●	○	BOLLARD
		PROPERTY LINE
		EASEMENT
		CONCRETE



1 C1.00 GENERATOR BUILDING DIMENSIONS
SCALE: 1" = 5'

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Date: 12/6/2023
Project Phase: 100% CONSTRUCTION DOCUMENTS
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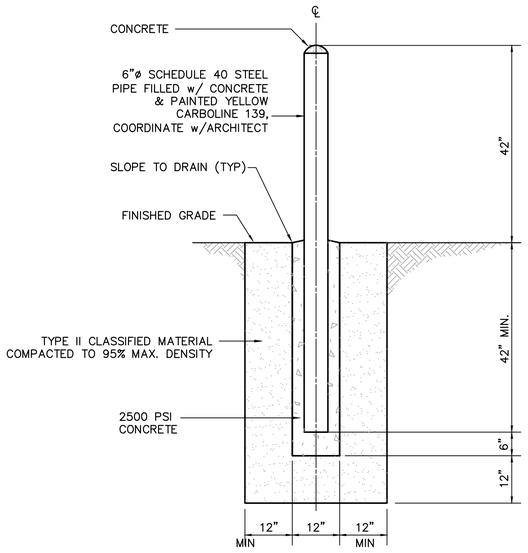
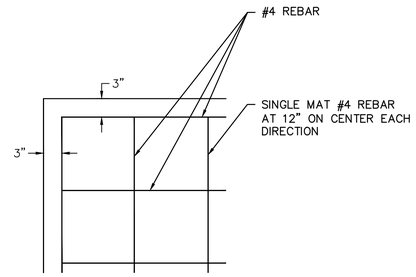


NOTE:
POSTS SHALL BE PRIMED AND RECEIVE TWO COATS MINIMUM OF PAINT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

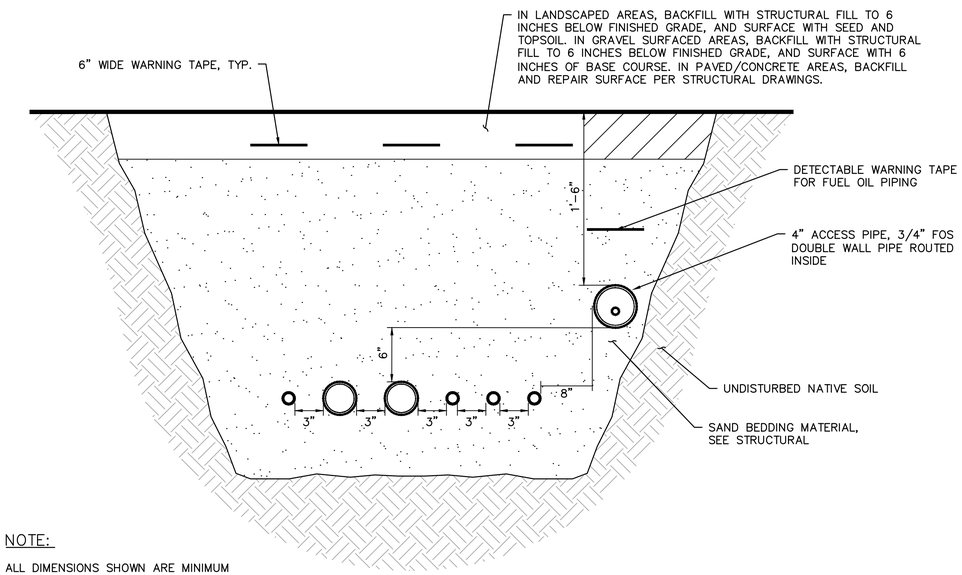
1 C2.00 CONCRETE BOLLARD DETAIL
NTS



NOTES:

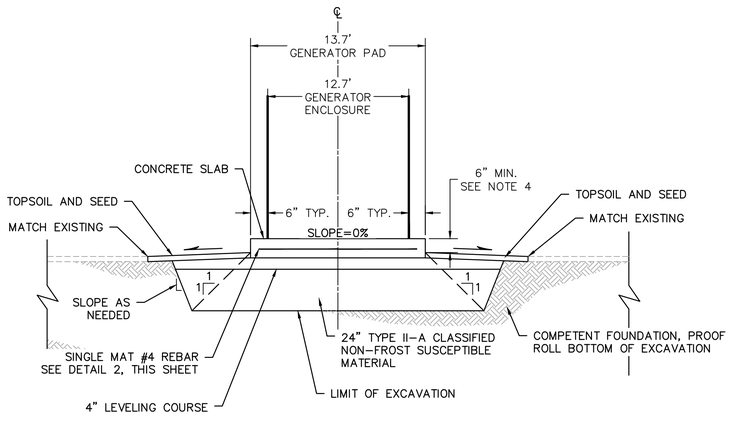
1. CONCRETE SHALL MEET ASTM C33, MINIMUM COMPRESSION STRENGTH SHALL BE 4000 PSI DESIGNED FOR COLD WEATHER.
2. PAD THICKNESS SHALL BE 1.5 TIMES THE ANCHOR BOLT EMBEDMENT DEPTH.

2 C2.00 SINGLE MAT #4 REBAR DETAIL
NTS



NOTE:
ALL DIMENSIONS SHOWN ARE MINIMUM

3 C2.00 CONDUIT TRENCH DETAIL
NTS



4 C2.00 CONCRETE SLAB SECTION 1
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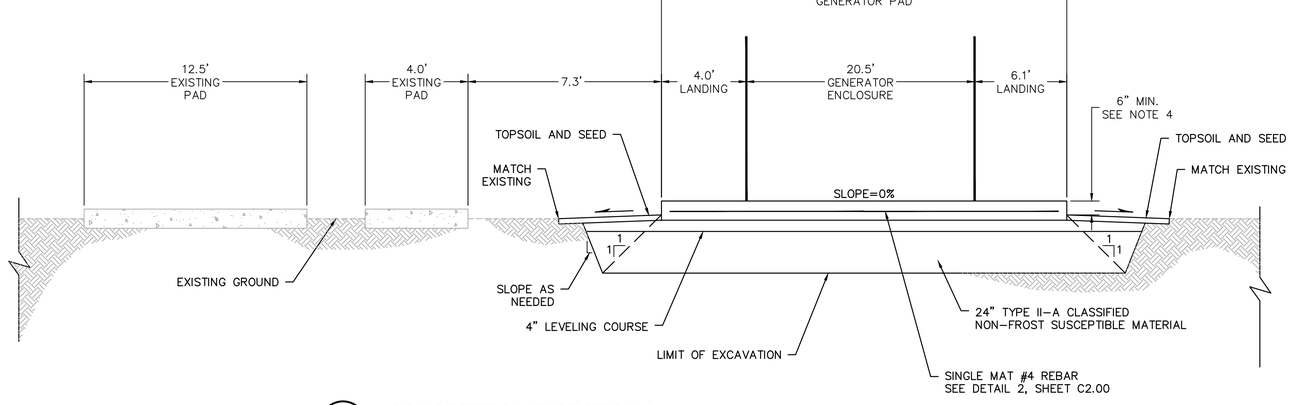
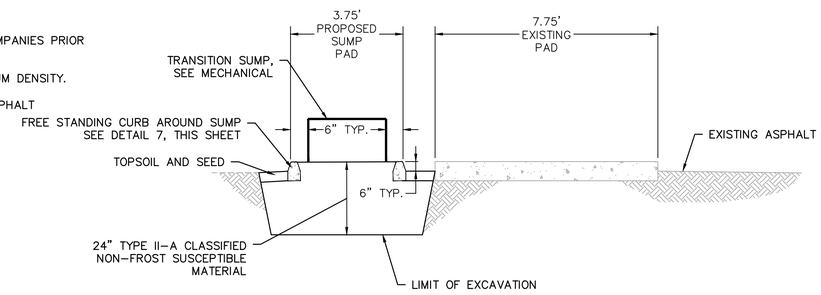


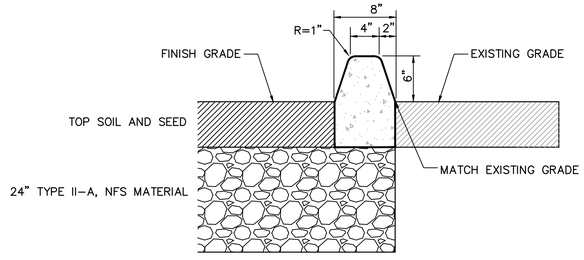
5 C2.00 CONCRETE SLAB SECTION 2
NTS

SECTION NOTES:

1. THE CONTRACTOR SHALL NOTIFY ALL AREA UTILITY COMPANIES PRIOR TO COMMENCEMENT OF EXCAVATION.
2. COMPACT ALL BACKFILL TO A MINIMUM OF 95% MAXIMUM DENSITY.
3. SET SLAB ELEVATION 6" ABOVE HIGHEST ADJACENT ASPHALT ELEVATION.



6 C2.00 TRANSITION SUMP PAD SECTION
NTS



7 C2.00 STAND ALONE CURB DETAIL
NTS

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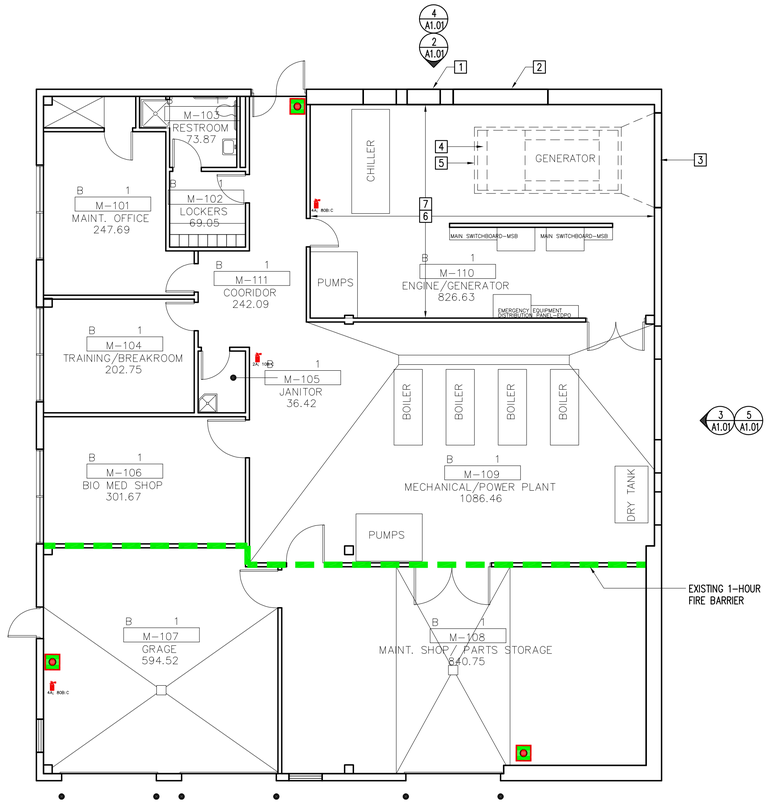


1 A1.01 FLOOR PLAN
1/8"=1'-0"

0 2' 4' 8'

GENERAL NOTES

A. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE MOST RECENTLY ADOPTED EDITION OF THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), INTERNATIONAL BUILDING CODE (IBC), INTERNATIONAL MECHANICAL CODE (IMC), UNIFORM PLUMBING CODE (UPC), NATIONAL ELECTRIC CODE (NEC), INTERNATIONAL FIRE CODE (IFC), AND ALL OTHER APPLICABLE FEDERAL, STATE, AND LOCAL LAWS, CODES, REGULATIONS, ORDINANCES, AND AMENDMENTS.

B. DRAWINGS ARE BASED OFF OWNER SUPPLIED DRAWINGS AND WALK-THROUGH OF THE SPACE. CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN FIELD AND NOTIFY ARCHITECT IF DISCREPANCIES ARE FOUND.

C. ALL WALL ASSEMBLIES SHALL MEET THE REQUIREMENTS OF CHAPTER 8 OF THE INTERNATIONAL BUILDING CODE (IBC) 2021 EDITION.

D. FIREPROOFING OF STRUCTURAL MEMBERS TO BE MAINTAINED, PATCH WHERE DISRUPTED BY DEMOLITION OR CONSTRUCTION.

E. FINISHES ARE TO MATCH EXISTING, EXISTING PRODUCT INFORMATION HAS BEEN PROVIDED WHERE AVAILABLE.

F. PENETRATIONS THROUGH RATED ASSEMBLIES SHALL BE PROTECTED WITH AN APPROVED THROUGH-PENETRATION FIRESTOP SYSTEM.

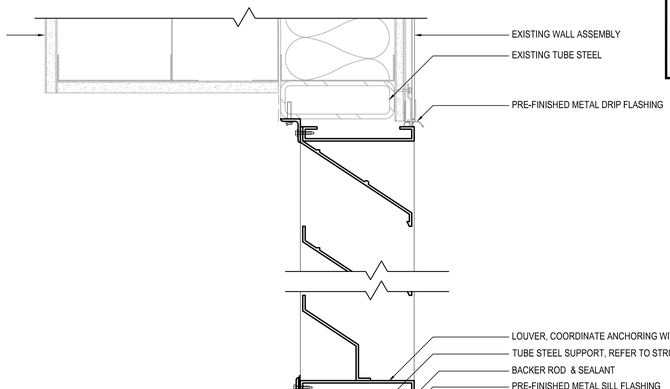
G. HAZARDOUS MATERIALS: IT IS NOT EXPECTED THAT HAZARDOUS MATERIALS MATERIALS WILL BE ENCOUNTERED IN THE WORK. IF MATERIALS ARE SUSPECTED OF CONTAINING HAZARDOUS MATERIALS ARE ENCOUNTERED, DO NOT DISTURB; IMMEDIATELY NOTIFY ARCHITECT AND OWNER. HAZARDOUS MATERIAL WILL REMOVED BY OWNER UNDER A SEPARATE CONTRACT.

SHEET NOTES

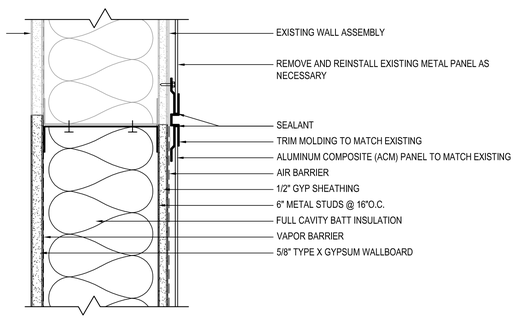
1. REMOVE EXISTING EXHAUST STACKS, REFER TO MECHANICAL. PATCH WALL AND REPLACE METAL PANEL TO MATCH EXISTING.
2. REMOVE EXISTING LOUVERS. INSTALL NEW LOUVER, REFER TO MECHANICAL. INFILL WALL BELOW NEW LOUVER TO MATCH EXISTING.
3. REMOVE EXISTING LOUVERS. INFILL WALL TO MATCH EXISTING.
4. REMOVE GENERATOR, REFER TO MECHANICAL.
5. DEMOLISH CONCRETE HOUSEKEEPING SLAB DOWN TO FINISHED FLOOR HEIGHT. PATCH OR REPLACE AS NECESSARY TO PROVIDE SMOOTH FINISH.
6. CONCRETE FLOOR TO BE FINISHED WITH EPOXY PAINT, CS SHERWIN WILLIAMS TREADPLEX, "DECK GRAY".
7. PAINT WALLS, COLOR MATCH EXISTING

LEGEND

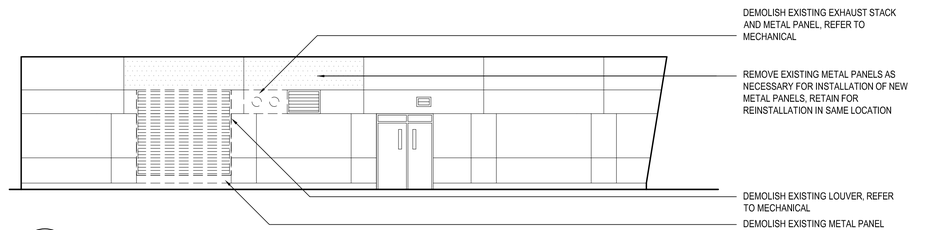
- EXISTING FIRE ALARM PULL STATION
- EXISTING FIRE EXTINGUISHER
- EXISTING 1-HOUR FIRE BARRIER



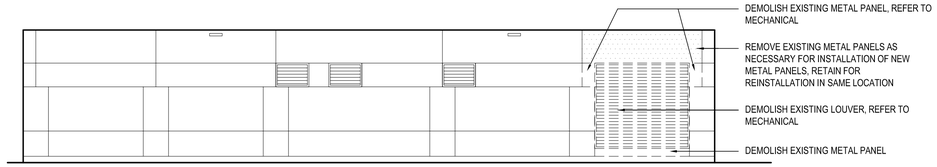
6 A1.01 NEW LOUVER AND INFILL DETAIL
3"=1'-0"



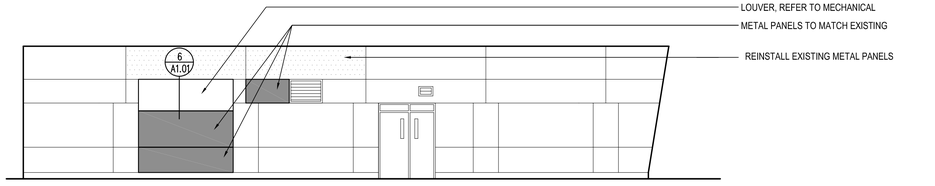
6 A1.01 TYPICAL LOUVER INFILL HEAD (JAMB SIMILAR)
3"=1'-0"



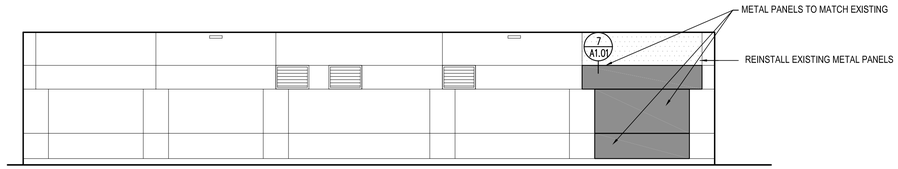
2 A1.01 DEMO NORTH ELEVATION
1/8"=1'-0"



3 A1.01 DEMO EAST ELEVATION
1/8"=1'-0"



4 A1.01 NORTH ELEVATION
1/8"=1'-0"



5 A1.01 EAST ELEVATION
1/8"=1'-0"

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PROVIDENCE VALDEZ MEDICAL CENTER PORTABLE GENERATOR CONNECTION

Revisions

No.	Date	Description

1 INCH AT FULL SIZE
1" ACTUAL
IF NOT 1 INCH, SCALE ACCORDINGLY

Designed by:	DAH
Checked by:	DLM
AMC Project:	23305
Date:	12/08/2023

Project Phase
100% CONSTRUCTION DOCUMENTS

Sheet Title
FLOOR PLAN, ELEVATIONS, DETAILS

Sheet Number
A1.01

FILE NAME: W:\2023\23057.01 AMC PVMC Generator Replacement\DWG\23057-A101.dwg
PLOTTED: dmead 12/11/2023 12:03 PM

Division 10 – Standard General Provisions

Division 07 – Thermal and Moisture Protection

1. 07 2100 - Thermal Insulation
2. 07 2500 - Weather Barriers
3. 07 4213.23 - Metal Composite Material Wall Panels

Division 09 - Finishes

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Division 20 – Mechanical Support

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25. 26 5000 - Lighting Fixtures

SECTION 07 2100 - THERMAL INSULATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Batt insulation and vapor retarder in exterior wall, ceiling, and roof construction.

B. Batt insulation for filling perimeter window and door shim spaces and crevices in exterior wall and roof.

1.2 RELATED REQUIREMENTS

A. Section 072700 - Air Barriers: Separate air barrier materials.

1.3 DEFINITIONS

A. Mineral Fiber Material Composition: Insulation referred to as mineral fiber block, board, and blanket insulation is composed of fibers from mineral based substances such as rock, slag, or glass and processed from the molten state into fibrous form.
   1. Based on type of insulation substance, the material will be referred to as a mineral fiber when having a rock or slag base, and glass fiber with a glass or silica sand base, also considered a mineral.
   2. Insulation blankets are flexible units consisting of felted, bonded, or unbonded fibers formed into rolls or flat cut pieces referred to as batts; rolls are simply longer versions of batts.
   3. For additional information about mineral fiber and the various classification types, refer to the following reference standards; ASTM C553, ASTM C612, ASTM C665, and ASTM C726.

1.4 REFERENCE STANDARDS

A. ASTM C553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications 2013 (Reapproved 2019).

B. ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation 2014 (Reapproved 2019).

C. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing 2023.

D. ASTM C726 - Standard Specification for Mineral Wool Roof Insulation Board 2017.

E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2023b. - Page 1 of 4

F. ASTM E136 - Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750 °C 2022.

1.5 SUBMITTALS

A. Product Data: Provide data on product characteristics, performance criteria, and product limitations.

1.6 FIELD CONDITIONS

A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

PART 2 - PRODUCTS

2.1 APPLICATIONS

A. Insulation in Metal Framed Walls: Batt insulation with separate vapor retarder.

2.2 MINERAL FIBER BLANKET INSULATION MATERIALS

A. Flexible Glass Fiber Blanket Thermal Insulation: Preformed insulation, complying with ASTM C665; friction fit.
   1. Flame Spread Index: 75 or less, when tested in accordance with ASTM E84.
   2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
   3. Combustibility: Non-combustible, when tested in accordance with ASTM E136, except for facing, if any.
   4. Formaldehyde Content: Zero.
   5. Thermal Resistance: R-value (RSI-value) of 21.
   6. Thickness: 6 inch (152 mm).

B. Mineral Wool Blanket Thermal Insulation: Flexible or semi-rigid preformed insulation, complying with ASTM C665.
   1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
   2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
   3. Thermal Resistance: R-value (RSI-value) of 24 .
   4. Thickness: 6 inch (152 mm).

2.3 ACCESSORIES

A. Sheet Vapor Retarder: Black polyethylene film for above grade application, 10 mil, 0.010 inch (0.25 mm) thick.

B. Tape: Reinforced polyethylene film with acrylic pressure sensitive adhesive.
   1. Application: Sealing of interior circular penetrations, such as pipes or cables.

2. Width: Are required for application.
3. Temperature Resistance: Range of minus 40 to 212 degrees F (minus 40 to 100 degrees C).

C. Self-Adhered Transition Flashing: Multipurpose, self-adhered flashing with modified butyl adhesive, polyester fiber top sheet, and polypropylene interlayer.
1. Application: Primerless adhesion for use as through-wall flashings and wall transitions to roof and below-grade systems.
2. Thickness: 45 mil, 0.045 inch (1.14 mm), nominal.
3. Size: 6 inches (152 mm) wide, in rolls 75 feet (23 m) long.

D. Flashing Tape: Special reinforced film with high performance adhesive.
1. Application: Window and door opening flashing tape.
2. Width: As required for application.
3. Primer: Tape manufacturer's recommended product.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.

B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.2 BATT INSTALLATION

A. Install insulation and vapor retarder in accordance with manufacturer's instructions.

B. Install in exterior wall and roof spaces without gaps or voids. Do not compress insulation.

C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.

D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.

E. At metal framing, place vapor retarder on warm side of insulation; lap and seal sheet retarder joints over face of member

F. Tape seal tears or cuts in vapor retarder.

G. Extend vapor retarder tightly to full perimeter of adjacent window and door frames and other items interrupting the plane of the membrane; tape seal in place.

3.3 PROTECTION

A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION 71 2100

SECTION 07 2500 - WEATHER BARRIERS

PART 1 - GENERAL

1.1 DEFINITIONS

A. Weather Barriers: Assemblies that form either water-resistive barriers, air barriers, or vapor retarders.

B. Water-Resistive Barrier: A material behind an exterior wall covering that is intended to resist liquid water that has penetrated behind the exterior covering from further intruding into the exterior wall assembly.

1.2 REFERENCE STANDARDS

A. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection 2021.

D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2023b.

E. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials 2022a, with Editorial Revision (2023).

F. ASTM E2178 - Standard Test Method for Determining Air Leakage Rate and Calculation of Air Permeance of Building Materials 2021a.

G. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components 2023.

1.3 FIELD CONDITIONS

H. Maintain temperature and humidity recommended by materials manufacturers before, during, and after installation.

PART 2 - PRODUCTS

2.1 WATER-RESISTIVE BARRIER MATERIALS

A. Water-Resistive Barrier: For use in Construction Types I, II, III, and IV on buildings greater than 40 feet (12.2 m) in height.
   1. Comply with NFPA 285 wall assembly requirements in accordance with local building code and authorities having jurisdiction (AHJ).

B. Water-Resistive and Air Barrier, Multilayers: Outer layers of nonwoven, spunbonded polypropylene with vapor permeable, watertight polymeric middle layer.
   1. Air Permeance: 0.0011 cfm/sq ft (0.0058 L/(s sq m)), maximum, when tested in accordance with ASTM E2178.
   2. Water Vapor Permeance: 54 perms (3,078 ng/(Pa s sq m)), minimum, when tested in accordance with ASTM E96/E96M using Procedure A - Desiccant Method, at 73.4 degrees F (23 degrees C).
   3. Ultraviolet (UV) and Weathering Resistance: Approved by manufacturer for up to 3 months of weather exposure.
   4. Surface Burning Characteristics: Flame spread index of 25 or less, smoke developed index of 450 or less, Class A when tested in accordance with ASTM E84.
   5. Seam and Perimeter Tape: As recommended by sheet manufacturer.

2.2 ACCESSORIES

A. Sealants, Tapes, and Accessories Used for Sealing Water-Resistive Barrier and Adjacent Substrates: As indicated or complying with water-resistive barrier manufacturer's installation instructions.

B. Flexible Flashing: Self-adhesive sheet flashing complying with ASTM D1970/D1970M, except slip resistance requirement is waived if not installed on a roof.
   1. Width: 4 inches (102 mm).
   2. Ultraviolet (UV) and Weathering Resistance: Approved by manufacturer for up to 30 days of weather exposure.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that surfaces and conditions comply with requirements of this section.

3.2 PREPARATION

A. Remove projections, protruding fasteners, and loose or foreign matter that might interfere with proper installation.

B. Clean and prime substrate surfaces to receive adhesives and sealants in accordance with manufacturer's installation instructions.

3.3 INSTALLATION

A. Install materials in accordance with manufacturer's installation instructions.

B. Water-Resistive Barriers: Install continuous water-resistive barrier over surfaces indicated, with sheets lapped to shed water but with seams not sealed.

C. Mechanically Fastened Exterior Sheets:
   1. Install sheets shingle-fashion to shed water, with seams aligned horizontal.
   2. Overlap seams as recommended by manufacturer, 6 inches (152 mm), minimum.
   3. Overlap at outside and inside corners as recommended by manufacturer, 12 inches (305 mm), minimum.
   4. Install water-resistive barrier over jamb flashings.
   5. Install head flashings under water-resistive barrier.
   6. At framed openings with frames having nailing flanges, extend sheet into opening and over flanges; at head of opening, seal sheet over flange and flashing.

D. Self-Adhered Sheets:
   1. Prepare substrate in accordance with sheet manufacturer's installation instructions; fill and tape joints in substrate and between dissimilar materials.
   2. Lap sheets shingle-fashion to shed water and seal laps airtight.
   3. Upon placement of sheets, firmly press onto substrate with resilient hand roller; ensure that laps are firmly adhered with no gaps or fishmouths.
   4. Use same material, or other material approved by sheet manufacturer, to seal sheets to adjacent substrates, and as flashing.
   5. At expansion joints, provide transition to joint assemblies approved by sheet manufacturer.

E. Openings and Penetrations in Exterior Water-Resistive Barriers:
   1. Install flashing over sills, covering entire sill framing member, and extend at least 5 inches (127 mm) onto water-resistive barrier and at least 6 inches (152 mm) up jambs; mechanically fasten stretched edges.
   2. At openings filled with frames having nailing flanges, seal head and jamb flanges using a continuous bead of sealant compressed by flange and cover flanges with sealing tape at least 4 inches (100 mm) wide; do not seal sill flange.
   3. At openings filled with nonflanged frames, seal water-resistive barrier to each side of framing at opening using flashing at least 9 inches (230 mm) wide, and covering entire depth of framing.
   4. At head of openings, install flashing under water-resistive barrier extending at least 2 inches (50 mm) beyond face of jambs; seal water-resistive barrier to flashing.
   5. At interior face of openings, seal gaps between window and door frames and rough framing using appropriate joint sealant over backer rod.
   6. Service and Other Penetrations: Form flashing around penetrating items and seal to surface of water-resistive barrier.

3.4 PROTECTION

A. Do not leave materials exposed to weather longer than recommended by manufacturer.

END OF SECTION 07 2500

SECTION 07 4213.23 - METAL COMPOSITE MATERIAL WALL PANELS

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

A. Section 05 4000 - Cold-Formed Metal Framing: Panel support framing.

B. Section 07 2500 - Weather Barriers: Water-resistive barrier behind wall panel system.

C. Section 07 6200 - Sheet Metal Flashing and Trim: Metal flashing components integrated with this wall system.

1.2 REFERENCE STANDARDS

A. ASTM C920 - Standard Specification for Elastomeric Joint Sealants 2018.

B. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen 2019.

C. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference 2014 (Reapproved 2021).

D. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference 2000 (Reapproved 2023).

1.3 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data - MCM Sheets: Manufacturer's data sheets on each product to be used, including thickness, physical characteristics, and finish, and:
   1. Finish manufacturer's data sheet showing physical and performance characteristics.
   2. Storage and handling requirements and recommendations.
   3. Fabrication instructions and recommendations.
   4. Specimen warranty for finish, as specified herein.

C. Product Data - Wall System: Manufacturer's data sheets on each product to be used, including:
   1. Physical characteristics of components shown on shop drawings.
   2. Storage and handling requirements and recommendations.
   3. Installation instructions and recommendations.
   4. Specimen warranty for wall system, as specified herein.

D. Shop Drawings: Show layout and elevations, dimensions and thickness of panels, connections, details and location of joints, sealants and gaskets, method of anchorage, support clips, exposed fasteners, number of anchors, supports, reinforcement, trim, flashings, and accessories.
   1. Indicate panel numbering system.
   2. Differentiate between shop and field fabrication.
   3. Indicate substrates and adjacent work with which the wall system must be coordinated.
   4. Include large-scale details of anchorages and connecting elements.
   5. Include large-scale details or schematic, exploded or isometric diagrams to fully explain flashing at a scale of not less than 1-1/2 inches per 12 inches (1:10).

E. Test Report: Submit report of full-size mock-up tests for air infiltration, water penetration, and wind performance.

F. Testing agency's qualification statement.

G. Maintenance Data: Care of finishes and warranty requirements.

1.4 QUALITY ASSURANCE

A. Field Measurements: Verify actual dimensions by field measurement before fabrication; show recorded measurements on shop drawings.

B. Testing Agency Qualifications: Independent agency experienced in testing assemblies of the type required for this project and having the necessary facilities for full-size mock-up testing of the type specified.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver products in manufacturer's original, unopened, undamaged containers with identification labels intact.
   1. Protect finishes by applying heavy-duty removable plastic film during production.
   2. Package for protection against transportation damage.
   3. Provide markings to identify components consistently with drawings.
   4. Exercise care in unloading, storing, and installing panels to prevent bending, warping, twisting, and surface damage.

B. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
   1. Store in well-ventilated space out of direct sunlight.
   2. Protect from moisture and condensation with tarpaulins or other suitable weathertight covering installed to provide ventilation.
   3. Store at a slope to ensure positive drainage of accumulated water.
   4. Do not store in enclosed space where ambient temperature can exceed 120 degrees F (49 degrees C).

5. Avoid contact with other materials that might cause staining, denting, or other surface damage.

1.6 FIELD CONDITIONS

A. Do not install panels when air temperature or relative humidity are outside manufacturer's limits.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Metal Composite Material (MCM) Sheet Manufacturers:
   1. ALUCOBOND by 3A Composites USA; ALUCOBOND PLUS: www.alucobondusa.com/#sle.

2.2 WALL PANEL SYSTEM

A. Wall Panel System: MCM wall panels, fasteners, reveal mouldings, sealants, and anchors designed to be supported by framing or other substrate provided by others; provide installed panel system capable of maintaining specified performance without defects, damage, or failure.
   1. Moulding profile: Match existing (1/2" reveal with 1-1/8" legs)
   2. Panel Thickness: 0.157 inch (4mm)
   3. Panel Finish: Match existing (Alcan Composites Inc.; Alucabond #A3001-DXLE Silver Metallic PVDF fluoropolymer)
   4. Anchor panels to supporting framing without exposed fasteners.

2.3 PERFORMANCE REQUIREMENTS

A. Thermal Movement: Provide for free and noiseless vertical and horizontal thermal movement due to expansion and contraction under material temperature range of minus 20 degrees F (minus 29 degrees C) to 180 degrees F (82 degrees C) without buckling, opening of joints, undue stress on fasteners, or other detrimental effects; allow for ambient temperature at time of fabrication, assembly, and erection procedures.
   1. Wind Performance: Provide system tested in accordance with ASTM E330/E330M without permanent deformation or failures of structural members under the following conditions:
   2. Design Wind Pressure: In accordance with local building code.

B. Air Leakage: 0.10 cfm/sq ft (0.50 L/sec sq m) maximum leakage when tested at 1.57 psf (75 Pa) pressure difference in accordance with ASTM E283/E283M.

C. Water Penetration: No water penetration under static pressure when tested in accordance with ASTM E331 at a differential of 10 percent of inward acting design load, 6.27 psf (300 Pa) minimum, after 15 minutes.

1. Water penetration is defined as the appearance of uncontrolled water on the interior face of the wall.
2. Design to drain leakage and condensation to the exterior face of the wall.

2.4 ACCESSORIES

A. Flashing: Sheet aluminum; 0.040 inch (1.0 mm) thick, minimum; finish and color to match MCM sheet; see Section 07 6200 for additional requirements.

B. Fasteners:
1. Exposed Fasteners: Stainless steel; permitted only where absolutely unavoidable and subject to prior approval of the Architect.
2. Screws: Self-drilling or self-tapping Type 410 stainless steel or zinc-alloy steel hex washer head, with EPDM or PVC washer under heads of fasteners bearing on weather side of metal wall panels.
3. Bolts: Stainless steel.
4. Fasteners for Flashing and Trim: Blind fasteners of high-strength aluminum or stainless steel.

C. Joint Sealer: Provide color to match wall panels silicone sealant of type approved by MCM sheet manufacturer, and in compliance with ASTM C920.

D. Provide panel system manufacturer's and installer’s standard corrosion resistant accessories, including fasteners, clips, anchorage devices, and attachments.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine dimensions, tolerances, and interfaces with other work.
1. Verify that weather barrier system is properly installed; see Section 07 2500 for requirements.

B. Examine substrate on-site to determine that conditions are acceptable for product installation in accordance with manufacturer's written instructions.

C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

D. Notify Architect in writing of conditions detrimental to proper and timely completion of work, and do not proceed with erection until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Protect adjacent work areas and finish surfaces from damage during installation.

3.3 INSTALLATION

A. Do not install products that are defective, including warped, bowed, dented, and broken members, and members with damaged finishes.

B. Comply with instructions and recommendations of MCM sheet manufacturer and wall system manufacturer, as well as with approved shop drawings.

C. Install wall system securely allowing for necessary thermal and structural movement; comply with wall system manufacturer's instructions for installation of concealed fasteners.

D. Do not handle or tool products during erection in manner that damages finish, decreases strength, or results in visual imperfection or failure in performance. Return component parts that require alteration to shop for refabrication, if possible, or for replacement with new parts.

E. Do not form panels in field unless required by wall system manufacturer and approved by the Architect; comply with MCM sheet manufacturer's instructions and recommendations for field forming.

F. Separate dissimilar metals; use gasket fasteners, isolation shims, or isolation tape where needed to eliminate possibility of electrolytic action between metals.

G. Install flashings as indicated on shop drawings. At flashing butt joints, provide a lap strap under flashing and seal lapped surfaces with a full bed of non-hardening sealant.

H. Install square, plumb, straight, and true, accurately fitted, with tight joints and intersections maintaining the following installation tolerances:
   1. Variation From Plane or Location: 1/2 inch in 30 feet (10 mm in 10 m) of length and up to 3/4 inch in 300 feet (20 mm in 100 m), maximum.
   2. Deviation of Vertical Member From True Line: 0.1 inch in 25 feet (3 mm in 9 m) run, maximum.
   3. Deviation of Horizontal Member From True Line: 0.1 inch in 25 feet (3 mm in 9 m) run, maximum.
   4. Offset From True Alignment Between Two Adjacent Members Abutting End To End, In Line: 0.03 inch (0.75 mm), maximum.

I. Replace damaged products.

3.4 CLEANING

A. Ensure weep holes and drainage channels are unobstructed and free of dirt and sealants.

B. Remove protective film after installation of joint sealers, after cleaning of adjacent materials, and immediately prior to completion of work.

C. Remove temporary coverings and protection of adjacent work areas.

D. Clean installed products in accordance with manufacturer's instructions.

3.5 PROTECTION

A. Protect installed panel system from damage until Date of Substantial Completion.

END OF SECTION 07 4213.23

SECTION 09 2116 - GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Performance criteria for gypsum board assemblies.

B. Metal stud wall framing.

C. Gypsum sheathing.

D. Gypsum wallboard.

E. Joint treatment and accessories.

1.2 RELATED REQUIREMENTS

A. Section 072100 - Thermal Insulation: Acoustic insulation.

1.3 REFERENCE STANDARDS

A. AISI S220 - North American Standard for Cold-Formed Steel Nonstructural Framing 2020.

B. AISI S240 - North American Standard for Cold-Formed Steel Structural Framing 2015, with Errata (2020).

C. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures Most Recent Edition Cited by Referring Code or Reference Standard.

D. ASTM A1003/A1003M - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members 2015.

E. ASTM C1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories 2020.

F. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board 2017 (Reapproved 2022).

G. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products 2020.

H. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board 2020.

I. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness 2022.

J. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base 2019.

K. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing 2017.

L. ASTM C1278/C1278M - Standard Specification for Fiber-Reinforced Gypsum Panel 2017.

M. ASTM C1280 - Standard Specification for Application of Exterior Gypsum Panel Products for Use as Sheathing 2018 (Reapproved 2023).

N. ASTM C1396/C1396M - Standard Specification for Gypsum Board 2017.

O. GA-216 - Application and Finishing of Gypsum Panel Products 2021.

1.4 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.

B. Product Data:
   1. Provide data on metal framing, gypsum board, accessories, and joint finishing system.

C. Steel Framing Industry Association (SFIA) Certification:
   1. Submit documentation that metal studs and connectors used on project meet or exceed requirements of International Building Code.

1.5 QUALITY ASSURANCE

A. Designer Qualifications: Perform design under direct supervision of a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

B. SFIA Code Compliance Certification Program: www.CFSteel.org/#sle: Use metal studs and connectors certified for compliance with International Building Code.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store gypsum products and accessories indoors and keep above freezing. Elevate boards above floor, on nonwicking supports, in accordance with manufacturer's recommendations.

B. Store metal products to prevent corrosion.

PART 2 - PRODUCTS

2.1 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies complying with ASTM C840 and GA-216.

B. Seismic Performance: Ceiling systems designed to withstand the effects of earthquake motions in accordance with ASCE 7 for Seismic Design Category D, E, or F and complying with the following:
   1. Local authorities having jurisdiction.

2.2 METAL FRAMING MATERIALS

A. Steel Sheet: ASTM A1003/A1003M, subject to the ductility limitations indicated in AISI S220 or equivalent.
   1. Structural Grade: As required to meet design criteria.
   2. Corrosion Protection Coating Designation: G40, or equivalent in accordance with AISI S220.

B. Manufacturers - Metal Framing, Connectors, and Accessories:
   1. ClarkDietrich; ____: www.clarkdietrich.com/#sle.
   2. SCAFCO Corporation; _____: www.scafco.com/#sle.

C. Structural Steel Framing for Application of Gypsum Board: See Section 054000.

D. Nonstructural Framing System Components: AISI S220; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/120 at 5 psf (L/120 at 240 Pa).
   1. Studs: C-shaped with knurled or embossed faces.
   2. Runners: U shaped, sized to match studs.

2.3 BOARD MATERIALS

A. Manufacturers - Gypsum-Based Board:

B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
   1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
   2. Unfaced fiber-reinforced gypsum panels as defined in ASTM C1278/C1278M, suitable for paint finish, of the same core type and thickness may be substituted for paper-faced board.
   3. At Assemblies Indicated with Fire-Resistance Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
   4. Thickness:

a. Vertical Surfaces: 5/8 inch (16 mm).
5. Paper-Faced Products:

C. Gypsum Sheathing Board: Sizes to minimize joints in place; ends square cut.
1. Application: Exterior sheathing, unless otherwise indicated.
2. Glass Mat Faced Sheathing: Glass mat faced gypsum substrate as defined in ASTM C1177/C1177M.
3. At Assemblies Indicated with Fire-Resistance Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
4. Core Type: Type X, as indicated.
5. Type X Thickness: 5/8 inch (16 mm).
6. Regular Board Thickness: 1/2 inch (13 mm).
7. Edges: Square.

2.4 GYPSUM BOARD ACCESSORIES

A. Water-Resistive Barrier: See Section 072500.

B. Finishing Accessories: ASTM C1047, extruded aluminum alloy (6063 T5) or galvanized steel sheet ASTM A924/A924M G90, unless noted otherwise.
1. Types: As detailed or required for finished appearance.

C. Beads, Joint Accessories, and Other Trim: ASTM C1047, , unless noted otherwise.
1. Corner Beads: Low profile, for 90 degree outside corners.
2. Splayed Corner Beads with Paper Face: ____ degree outside corner.

D. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.

E. Screws for Fastening of Gypsum Panel Products to Steel Members from 0.033 to 0.112 inch (0.84 to 2.84 mm) in Thickness: ASTM C954; steel drill screws, corrosion-resistant.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

3.2 FRAMING INSTALLATION

A. Metal Framing: Install in accordance with ASTM C1007AISI S220 and manufacturer's instructions.

B. Studs: Space studs at 16 inches on center (at 406 mm on center).
1. Extend partition framing to structure where indicated and to ceiling in other locations.

2. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.

3.3 BOARD INSTALLATION

A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Single-Layer Nonrated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
   1. Exception: Tapered edges to receive joint treatment at right angles to framing.

C. Exterior Sheathing: Comply with ASTM C1280. Install sheathing vertically, with edges butted tight and ends occurring over firm bearing.
   1. Seal joints, cut edges, and holes with water-resistant sealant.
   2. Paper-Faced Sheathing: Immediately after installation, protect from weather by application of water-resistive barrier.

D. Installation on Metal Framing: Use screws for attachment of gypsum board except face layer of nonrated double-layer assemblies, which may be installed by means of adhesive lamination.

3.4 INSTALLATION OF TRIM AND ACCESSORIES

A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.

B. Corner Beads: Install at external corners, using longest practical lengths.

3.5 JOINT TREATMENT

A. Glass Mat Faced Gypsum Board and Exterior Glass Mat Faced Sheathing: Use fiberglass joint tape, embed and finish with setting type joint compound.

B. Paper Faced Gypsum Board: Use paper joint tape, embed with drying type joint compound and finish with drying type joint compound.

C. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
   1. Level 2: In utility areas, behind cabinetry, and on backing board to receive tile finish.
   2. Level 1: Fire-resistance-rated wall areas above finished ceilings, whether or not accessible in the completed construction.

D. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
   1. Feather coats of joint compound so that camber is maximum 1/32 inch (0.8 mm).

3.6 TOLERANCES

A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet (3 mm in 3 m) in any direction.

3.7 PROTECTION

A. - Page 6 of 6Protect installed gypsum board assemblies from subsequent construction operations.

END OF SECTION 09 2116

SECTION 09 9123 - INTERIOR PAINTING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.

D. Do Not Paint or Finish the Following Items:
   1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
   5. Floors, unless specifically indicated.
   6. Glass.
   7. Concealed pipes, ducts, and conduits.

1.2 REFERENCE STANDARDS

A. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials 2020.

B. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual Current Edition.

C. SSPC-SP 1 - Solvent Cleaning 2015, with Editorial Revision (2016).

D. SSPC-SP 6 - Commercial Blast Cleaning 2007.

1.3 SUBMITTALS

A. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g., "alkyd enamel").
   2. MPI product number (e.g., MPI #47).
   3. Cross-reference to specified paint system products to be used in project; include description of each system.

B. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. Extra Paint and Finish Materials: 1 gal (4 L) of each color; from the same product run, store where directed.
   2. Label each container with color in addition to the manufacturer's label.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in ventilated area, and as required by manufacturer's instructions.

1.5 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Provide lighting level of 80 fc (860 lux) measured mid-height at substrate surface.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Paints:
   1. PPG Paints: www.ppgpaints.com/#sle.
   2. Sherwin-Williams Company: www.sherwin-williams.com/#sle.

B. Primer Sealers: Same manufacturer as top coats.

2.2 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready-mixed, unless intended to be a field-catalyzed paint.
   1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
   2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

3. Supply each paint material in quantity required to complete entire project's work from a single production run.
4. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

2.3 PAINT SYSTEMS - INTERIOR

A. Interior Surfaces to be Painted, Unless Otherwise Indicated: Including gypsum board, concrete, uncoated steel, shop primed steel, and galvanized steel.
   1. Two top coats and one coat primer.

B. Concrete Floors to be Painted.
   1. Two top coats and one coat primer.
   2. Top Coat(s): Latex Floor Paint, Low Gloss; MPI #60.
      a. Products:
         1) Sherwin-Williams Tread-Plex Acrylic Floor Coating. (MPI #60)
   3. Top Coat Sheen:
      a. Eggshell: MPI gloss level 3; use this sheen at all locations.
   4. Primer: As recommended by top coat manufacturer for specific substrate.

2.4 PRIMERS

A. Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

C. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces is below the following maximums:
   1. Gypsum Wallboard: 12 percent.
   2. Plaster and Stucco: 12 percent.
   3. Masonry, Concrete, and Concrete Masonry Units: 12 percent.
   4. Interior Wood: 15 percent, measured in accordance with ASTM D4442.
   5. Concrete Floors and Traffic Surfaces: 8 percent.

3.2 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

D. Seal surfaces that might cause bleed through or staining of topcoat.

E. Concrete Floors and Traffic Surfaces: Remove contamination, acid etch and rinse floors with clear water. Verify required acid-alkali balance is achieved. Allow to dry.

F. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.

3.3 APPLICATION

A. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

C. Apply each coat to uniform appearance in thicknesses specified by manufacturer.

D. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

E. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.4 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.5 PROTECTION

A. Protect finishes until completion of project.

B. Touch-up damaged finishes after Substantial Completion.

END OF SECTION 09 9123

SECTION 20 0000 - MECHANICAL GENERAL REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Supplemental requirements in addition to Division 10 - General Requirements applicable to all Divisions 20, 23, 25 - Mechanical specification sections.

B. Related Sections:
1. 20 0000 - Mechanical General Requirements
2. 20 0505 - Mechanical Demolition
3. 20 0529 - Mechanical Hangers and Supports
4. 20 0553 - Mechanical Identification
5. 23 1113 - Fuel Oil Piping and Specialties
6. 23 3700 - Air Outlets and Inlets
7. 25 5000 - Building Automation System

1.2 REFERENCES

A. Codes and Standards:
1. Perform work in accordance with the legally enacted editions of applicable international, state, and local codes with locally accepted amendments to include:
   a. 2021 International Building Code (IBC).
   b. 2021 International Existing Building Code (IEBC).
   c. 2021 International Mechanical Code (IMC).
   d. 2018 Uniform Plumbing Code (UPC).
   e. 2021 International Fire Code (IFC).
   f. 2020 NFPA 70, National Electric Code (NEC).
   g. ASCE 7-16, Minimum Design Loads and Associated Criteria for Buildings and Other Structures.
2. Standards: Reference to the following standards infers that installation, equipment and material shall be within the limits for which it was designed, tested and approved, in conformance with the current publications and standards of the following organizations:
   a. American National Standards Institute - ANSI.
   b. American Society of Heating Refrigerating and Air Conditioning Engineers - ASHRAE.
   c. American Society of Mechanical Engineers - ASME.
   d. American Society for Testing and Materials - ASTM.
   e. National Electrical Manufacturers' Association - NEMA.
   f. National Fire Protection Association - NFPA.
   g. Sheet Metal and Air Conditioning Contractors National Association, Inc. - SMACNA.

B. Definitions:
1. “Accessible” means arranged so that an appropriately dressed man 6'-2" tall, weighing 250 pounds, may approach the area in question with the tools and products necessary for the work intended; and may then position himself to

properly perform the task to be accomplished, without disassembly or damage to the surrounding installation.

2. “Authority Having Jurisdiction” is the individual official, board, department, or agency established and authorized by the political subdivision created by law to administer and enforce the provisions of the Code as adopted or amended.
3. “As Specified” denotes a product, system, or installation that:
   a. Includes salient characteristics identified in the Drawings and Specifications.
   b. Meets the requirements of the “Basis of Design”.
   c. Is produced by a manufacturer listed as acceptable on the Drawings or in the Specifications.
4. “Basis of Design” refers to products around which the design was prepared. Some or all of the particular characteristics of Basis of Design products may be critical to the fit or performance of the completed installation. Such characteristics are often subtle. Where substitutions are made to products that are the Basis of Design, the Contractor is alerted that nominally acceptable substitutions may produce undesirable side effects such as products that no longer fit the space due to increased product dimensions. The Contractor is responsible for resolving impacts of substitutions. Approval of a substitution request does not relieve the Contractor of complying with the design intent and applicable Codes. Reference to a specific manufacturer’s product (even as “Basis of Design”) does not necessarily establish acceptability of that product without regard to compliance with other provisions of these specifications.
5. “Contracting Agency” is the Owner as defined in the General Conditions of the Contract.
6. “Demolish” means to permanently remove a component, equipment, or system and it's appurtenances with no intent for reuse and to properly disposal of it.
7. “Furnish” means to purchase material as shown and specified, and cart the material to an approved location at the site or elsewhere, as noted or agreed, to be installed by supporting crafts.
8. “Install” means to set in place and connect, ready for use and in complete and properly operating finished condition, material that has been furnished.
9. “Product” is a generic term that includes materials, equipment, fixtures and any physical item used on the project.
10. “Provide” means furnish products, labor, subcontracts, and appurtenances required and install to a complete and properly operating, finished condition.
11. “Remove” means to remove a component, equipment, or system and its appurtenances and either store it for re-installation/reuse, or turn it over to the Contracting Agency.
12. “Rough-in and Connect” means provide an appropriate system connection such as water services with stops, continuous wastes with traps, shutoff valves, and piping connections, testing, etc., for proper operation, ready for furnished products to be installed. Equipment furnished is received, uncrated, assembled and set in place by supporting crafts unless prior arrangements are made to hire the rough-in installer for this work.
13. “Serviceable” means arranged so that the component or product in question may be properly removed and replaced without disassembly, destruction or damage to the surrounding installation. "Serviceable" components shall be "accessible".
14. “Shop Drawings” are dimensioned working construction drawings drawn to scale to show an entire area of work in sufficient detail to demonstrate service and maintenance clearances and coordination of all trades.

15. “Substitution” is a product, system or installation that is not by a listed manufacturer or does not conform to all salient characteristics identified in the Project Manual, but that the Contractor warrants meets specific requirements listed in the Project Manual.
16. “System Drawing” is a diagrammatic engineered drawing that shows the interconnection and relationship between products to demonstrate how the products interact to accomplish the function intended. Examples of system drawings include plumbing diagrams, control and instrumentation diagrams, and wiring diagrams. Some drawings, such as dimensioned and complete Fire Suppression Drawings may be both System Drawings and Shop Drawings.

1.3 SYSTEM DESCRIPTION

A. Performance Requirements:
1. Provide labor, products and services required for the complete installation, checkout, and startup of mechanical systems shown and specified. Coordinate related work, including the work of other crafts, to provide each system complete and in proper operating order.
2. Cooperate with others involved in the project; with due regard to their work, to promote rapid completion of the entire project.
3. Become thoroughly familiar with the local conditions under which the work is to be performed. Schedule work with regard to seasons, weather, climatic conditions, and other local conditions that may affect the progress and quality of the work.
4. Coordinate and perform demolition in support of the project whether or not such requirements are described on the Drawings. Restore systems that are to remain but that are affected in any way by demolition work. Conduct a site visit prior to bid to determine Scope.
5. In general, the mechanical, electrical, and building automation systems are interrelated. Coordinate the interface and operation of systems so that interrelated systems operate in proper synchronization and balance.
6. Provide labor, materials, and equipment to facilitate the commissioning process of systems and equipment within this scope of work. Perform tests and verification procedures required for the commissioning process as requested by the Contracting Agency.
7. Work and materials shall be in accordance with requirements of the applicable State and local Codes, regulations and ordinances, and the rules and regulations of other Authorities Having Jurisdiction. Nothing in drawings and specifications shall be construed to permit work not in conformance with applicable codes, rules, and regulations.
8. Where drawings or specifications call for a material or construction of a better quality or larger sizes than required by the above-mentioned Codes, rules and regulations, the provision of the specifications shall take precedence.
9. Furnish without any extra charge any additional material and labor when required for compliance with the listed codes, rules, and regulations, even though the work may not be mentioned in the specifications or shown on the drawings. It is the responsibility of the successful bidder to bid in accordance with the minimum requirements of the applicable codes, rules, and regulations.

1.4 PRE-INSTALLATION MEETINGS

A. Meet with and coordinate Divisions 20, 23, 25 work with the interrelated work of other trades including Architectural, Civil, Structural, Mechanical and Electrical to identify and resolve potential conflicts.

B. Prior to installation of any Division 20, 23, and 25 component, coordinate installation with trades responsible for portions of other related sections of the Project Manual.

1.5 SUBMITTALS

A. Refer to Division 10 for general submittal requirements for the items listed below, supplemented with the additional requirements listed. In addition, prepare Divisions 20, 23, 25 submittals in accordance with the following, to include any supplemental requirements listed in the specific specification section:

B. General:
   1. The Contracting Agency's obligation to review submittals and to return them in a timely manner is conditioned upon the prior review and approval of the submittals by the Contractor as required by the Construction Contract.
   2. Submittal review is for general design and arrangement only and does not relieve the Contractor from any of the requirements of the Project Manual.
      a. Submittals will not be checked for quantity, dimension, fit, or for proper technical design of manufactured equipment.
      b. Provision of a complete and satisfactory working installation is the responsibility of the Contractor.
   3. Furnish suppliers with the applicable portions of the Project Manual and review and verify that the suppliers' submittals clearly represent products which comply with the Project Manual.
   4. Master Submittal Log]
      a. Create and maintain a master submittal log for items submitted in Divisions 20, 23, 25, including test results, certifications, record drawings, etc.
      b. Submit master submittal log, independent of other submittals, as the first submittal for review and approval by the Contracting Agency.
      c. Update submittal log with each submittal action.
      d. Share an electronic copy with Contracting Agency and Engineer at two week intervals, or as requested by the Contracting Agency.

C. Coordination:
   1. Prior to a submittal's submission for approval, hold a meeting of all construction trades to review shop drawings and submittals. Each trade shall cross-check shop drawings and submittals for conflicts, clearances, physical space allocation and routing, discrepancies, dimensional errors, omissions, contradictions, departures from the Contract requirements, correct electrical/mechanical services and connections, and provisions for commissioning.
   2. Review, revise, correct, and appropriately annotate submittals prior to submission for approval.
   3. Keep a current copy of approved submittals and the submittal log at the job site.

D. Electronic Submittals:

1. Provide electronic submittals in PDF format in addition to hard copy submittal. Maximum file size to be coordinated with Contracting Agency.
2. Follow the organization and formatting required for paper submittals.
3. Provide electronic bookmarks within the PDF document in place of tabs and sub-tabs.
4. If individual PDF files are provided for a product or shop drawing sheet(s), organize files into folders and name files and folders to correspond with applicable specification sections or drawing titles.
5. Create PDF documents without security, to be searchable, and to allow copy and paste. For scanned documents, run the optical character recognition (OCR) function to ensure the document is searchable and can be copied and pasted.
6. Reduce PDF file size by removing data and file creation elements not needed for final file presentation.

E. Product Data:
   1. General:
      a. This section describes in detail the preparation of mechanical product submittals. Submittals not provided as described shall be rejected without review. This procedure is designed to accelerate and improve the accuracy of the technical review process, as well as, simplify the preparation of the Installation, Operation, and Maintenance Manuals (IO&Ms).
      b. Product data for each specification section shall be submitted in one complete package, except as noted in this section.
   2. Submittal Organization:
      a. Organize product submittal information in the same order as the products are specified. Provide a separate tabbed divider for each Divisions 20, 23, 25 specification section. Provide the typed section number on each tab.
      b. Within each section, organize product information in the same order as products are specified in Part 2 of each applicable specification section. Provide sub-tabs within each section for each separate product article. Provide the typed product article number on each tab.
      c. Provide product submittal information for each product specified in 8-1/2” x 11” format. Fold-out 11” x 17” format is also acceptable.
      d. If a particular specified product is being omitted from the product submittal or will not be used for the project, provide a single sheet within the article tab identifying the product and annotated with a brief reason why the product is not being submitted, for example: “NOT USED,” NO SUBMITTAL REQUIRED,” “TO BE SUBMITTED BY (PROVIDE DATE),” etc. This will inform the reviewer that the product was not overlooked.
      e. Partial submittals from individual subcontractors may be provided which cover a particular sub-contractor’s scope of work. In this case, arrange partial submittals by system classification such as: PLUMBING, HEATING, FIRE SUPPRESSION, VENTILATION, BUILDING AUTOMATION SYSTEM, etc. Within each system classification, arrange product submittals by specification section, as described, such that each specification section can easily be reorganized into a master set of Divisions 20, 23, 25 product submittals organized by specification section. This will greatly simplify the preparation of IO&M manuals as described below.
      f. Bind product submittal information in identical 3 inch wide, hard-backed, loose-leaf, 3 ring binders with clear front and spine insert pockets. Divide

information into multiple volumes so that the pages in each binder rest naturally on one side of rings.

g. Provide a master table of contents at the front of each volume which lists the Divisions 20, 23, 25 specification sections and indicates which sections are located within each volume.
h. Provide a table of contents within each section which lists the Part 2 products for that section in the same order as the applicable specification section.
i. Provide identical cover and spine inserts for each product submittal volume, to include the following typed information:
   1). The Contracting Agency Name.
   2). Project Name.
   3). Contractor Name.
   4). Subcontractor Name preparing the submittal.
   5). Date that the submittal or resubmittal was initiated.
   6). “Mechanical Product Submittals” or “Plumbing Product Submittals” etc. as appropriate.
   7). “Volume 1 of X, Volume 2 of X,” etc.

3. Product Information:
   a. Indicate manufacturer's name and address, and local supplier's name, address, phone number.
   b. Indicate each product as “Basis of Design”, “Specified Equal” or “Proposed Substitution.”
   c. Identify catalog designation and/or model number.
   d. Provide manufacturer’s product literature. Neatly annotate to indicate specified salient features, appurtenances and performance criteria for each product specified to demonstrate compliance with the Project Manual to include scheduled information, drawing information and specified information.
   e. Indicate product deviations from the Project Manual and mark out non-applicable items on generic “cut-sheets.”
   f. Include manufacturer provided dimensioned equipment drawings with rough-in mechanical and electrical connections.
   g. Include operation characteristics, performance curves and rated capacities.
   h. Include motor characteristics and wiring diagrams.
   i. Include weight of equipment. Including accessories.
   j. Provide basic manufacturer’s installation instructions.
4. Product Substitutions:
   a. Clearly indicate both in the section table of contents and on the individual product submittal information each proposed substitution, deviation or change from the product as described in the Project Manual.
   b. Submittal approval does not include substitutions, deviations or changes from the requirements of the Project Manual unless they are specifically itemized and approved. The term “No Exceptions Taken” will not apply to substitutions, deviations or changes not clearly identified.
   c. Provision of a satisfactory working installation of equal quality to the system as described in the Project Manual shall be the responsibility of the Contractor.
   d. Correct unapproved deviations from the Project Manual discovered in the field as directed by and at no additional cost to the Contracting Agency.
   e. Cost of any design modifications as a result of proposed product substitutions shall be borne by the Contractor.

F. System Drawings:

1. Submit System Drawings for dynamic elements/systems of the project which are performance specified to include but not limited to: Fire Suppression Systems, Building Automation Systems and stand-alone packaged equipment.
2. Prepare system drawings on full sized sheets of the same size as the original construction drawings.
3. Include with each system a sequence of operation narrative which describes each mode of system operation in sufficient detail to demonstrate compliance with the Project Manual to the satisfaction of the Contracting Agency.

G. Shop Drawings:
   1. General:
      a. The Project Manual documents are not intended for nor are they suitable for use as shop drawings. Project Manual documents shall not be utilized for the actual fabrication or installation of products or equipment.
      b. The Drawings are partly diagrammatic and do not show all offsets in piping or ducts, and may not show in minute detail all features of the installation; however, provide systems complete and in proper operating order.
      c. Locations of products are approximate unless dimensioned.
      d. Divisions 20, 23, 25 products and systems shall not be installed without shop drawings approved by the Contracting Agency.
      e. Rework, changes, or additional engineering support required as a result of the installation of products and systems prior to the approval of applicable shop drawings by the Contracting Agency shall be provided at the Contractor's expense.
      f. Drawing symbols used for basic materials, equipment and methods are commonly used by the industry. Special items are identified by a supplementary list of graphical illustrations, or identified on the drawings or specifications.
   2. Preparation:
      a. Review each Divisions 20, 23, 25 specification section and identify the shop drawing requirements.
      b. Combine the shop drawing requirements first by system (i.e. ventilation system, heating system, plumbing system, etc.) and then by area (i.e. fan room, boiler room, etc.).
      c. Prepare shop drawings on full sized sheets of the same size as the original construction drawings.
      d. Arrange shop drawings to scale, showing dimensions where accuracy of location is necessary for coordination or communication purposes.
      e. Incorporate the actual dimensions and configurations of the products and systems approved through the product submittal process into the shop drawings.
      f. Provide dimensioned maintenance clearance areas around each product as recommended by the manufacturer.
      g. Coordinate Divisions 20, 23, 25 work with the interrelated work of other trades including Architectural, Civil, Structural, and Electrical.
      h. Identify and provide recommendations to resolve major conflicts which may impact the design of the systems as shown. Such conflicts will be resolved during the shop drawing review process.
      i. Identify locations where field coordination between various trades is necessary to avoid conflicts.

j. Indicate elevation of piping, ductwork and equipment above or below finished floor at various locations and in sufficient detail to demonstrate clearance from structural elements and the work of other trades.
k. Coordinate placement of openings and holes through structure, walls, floors, ceilings, and roof with Structural and Architectural.

3. Submittal:
   a. Submit dimensioned shop drawings as specified to demonstrate proper planning and sequencing of the applicable trades for the installation and arrangement of Divisions 20, 23, 25 with respect to other interrelated work.
   b. Partial shop drawings submittals (i.e. heating system only) will be rejected without review, as the interrelationship with other related work and overall system fit cannot be evaluated.
   c. It is assumed that shop drawings submitted for review have been thoroughly prepared and coordinated and that the products and systems can and shall be installed as shown. Conflicts which are not clearly identified and annotated on the submitted shop drawings are assumed not to exist.
   d. Installation conflicts arising from the failure to properly coordinate the work of related trades shall be provided at the Contractor's expense.

H. Certificates:
1. Review the submittal requirements for Certificates for each Divisions 20, 23, 25 specification section.
2. Submit copies of certificates as specified. This information may be included within the Installation, Operations and Maintenance (IO&M) Manuals as determined by the Contracting Agency.

I. Test and Evaluation Reports:
1. Review the submittal requirements for Test and Evaluation Reports for each Divisions 20, 23, 25 specification section.
2. Submit copies of reports as specified. Also include these reports within the Installation, Operations and Maintenance (IO&M) Manuals as determined by the Contracting Agency.

J. Installation, Operations and Maintenance (IO&M) Manuals:
1. Review the submittal requirements for IO&M manuals for each Divisions 20, 23, 25 specification section.
2. Begin the preparation of the mechanical IO&M manuals with a complete and fully approved set of mechanical product data submittals organized, annotated and with the product information as indicated within the "Product Data" submittals article above and in each Divisions 20, 23, 25 section.
3. Next, augment each individual product submittal with the written installation, operations and maintenance information for each approved product. This type of information is not applicable (or available) for bulk commodity or simplistic products such as copper pipe, basic pipe hangers or equipment tags, etc.
4. Annotate the installation, operations, and maintenance information to indicate applicable information for the specific equipment model(s) installed.
5. Maintenance information shall include:
   a. Preventive maintenance requirements for each product, including the recommended frequency of performing each preventive maintenance task.
   b. Instructions for troubleshooting, minor repair and adjustments required for preventive maintenance routines, limited to repairs and adjustments that may

be performed without special tools or test equipment and that require no extensive special training or skills.
   c. Information of a maintenance nature covering warranty items, etc., that have not been discussed in the manufacturers' literature.
   d. Information on the spare and replacement parts for each product and system. Properly identify each part by part number and manufacturer.
   e. Recommended spare parts list.
6. Organize the IO&M manual information by specification section (not by sub-contractor) with a tabbed divider separating each section. Provide the typed section number on each tab.
7. Within each section, organize the product information in the same order as the products are specified in Part 2 of each applicable section. Provide sub-tabs within each section for each product. Provide the typed product article number on each tab.
8. Bind the information in identical 3 inch wide; hard-backed, loose-leaf, 3 ring binders with clear front and spine insert pockets. Divide information into multiple volumes so that the pages in each binder rest naturally on one side of rings.
9. Provide a master table of contents at the front of each volume which lists the Divisions 20, 23, 25 specification sections and indicates which sections are located within each volume.
10. Provide a table of contents within each section which lists the Part 2 products for that section in the same order as the applicable specification section.
11. Provide identical cover and spine inserts for each IO&M manual volume, to include the following typed information:
   a. The Contracting Agency Name.
   b. Project Name.
   c. "Mechanical Installation, Operations and Maintenance Manual".
   d. "Volume 1 of X, Volume 2 of X," etc.
12. Submit copies of Operation and Maintenance Manuals in electronic format (Adobe PDF).

1.6 CLOSEOUT SUBMITTALS

A. Warranty Documentation:
   1. Review the manufacturer's warranty requirements for each Divisions 20, 23, 25 specification section. Unless stated otherwise, provide 1-year warranty.
   2. Submit required warranty documentation to the applicable Manufacturer's Representative to validate standard manufacturer's warranty for each required product. Obtain written confirmation of receipt from each applicable Manufacturer's Representative.
   3. Provide Contracting Agency one copy of submitted warranty documentation and written confirmation of receipt for each applicable Manufacturer's Representative. This information may be included within the Operations and Maintenance (IO&M) Manuals as determined by the Contracting Agency.
   4. Provide statement of Contractor's warranty of workmanship, labor, and materials, as described under Article 1.12 Warranty below.

B. Record Documentation:
   1. General: As the Work progresses, neatly annotate a designated and otherwise unused set of Divisions 20, 23, 25 Contract Drawings to show the actual locations

and routing of Divisions 20, 23, 25 Work and the terminal connection points to related Work. As a minimum, include the following:

a. Annotate record drawings to incorporate each applicable addendum.
b. Annotate record drawings as directed by each applicable Request for Information (RFI) and accepted Change Order Proposal.
c. Modify record drawings to show actual equipment sizes and locations and pipe and duct routing. Revise pipe and duct sizes as appropriate.
d. Provide dimensioned locations for permanently concealed piping and ductwork (i.e. piping cast in concrete or buried underground/underslab).
e. Show the actual locations of system isolation valves, especially valves which are concealed above ceilings and behind access panels.

2. Preparation:
   a. Neatly annotate record drawings to provide clear interpretation to support electronic drafting by a third party.
   b. Tape electronic sketches from addendums and/or RFIs directly to the record drawings as overlays.
   c. Annotate the record drawings in colored pencil using the same symbols and abbreviations as indicated in the Divisions 20, 23, 25 legends and schedules of the Contract Drawings.
      1). Red to add information.
      2). Green to delete information.
      3). Blue to provide additional clarifying information which is not to be drafted.
   d. After submittal to the Contracting Agency, provide additional clarification, information, or rework as necessary to support the accurate interpretation and electronic drafting of the record drawings.
3. Submittals:
   a. Provide record drawings to the Contracting Agency prior to the final completion of the project.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Spare Parts:
   1. Furnish spare parts for systems and equipment as listed in applicable sections of Divisions 20, 23, 25.
   2. Clearly label each part with name, manufacturer’s part number, system and/or equipment where used and location.
   3. Deliver parts to location and person designated by the Contracting Agency, in durable storage boxes.
   4. Group cartons containing smaller items by system or application and deliver in an appropriate number of storage boxes.

B. Extra Stock Materials:
   1. Furnish extra stock as listed in applicable sections of Divisions 20, 23, 25.
   2. Clearly label with name, manufacturer’s part number, system and/or equipment where used and location.
   3. Deliver to location and person designated by the Contracting Agency, in durable storage boxes.

C. Tools: Provide three sets of special tools and testing and monitoring equipment as listed in applicable sections of Divisions 20, 23, 25.

1.8 QUALITY ASSURANCE

A. Qualifications:
   1. Manufacturers: Companies specializing in manufacturing the Products specified in the Divisions 20, 23, 25 sections with minimum 3 years documented experience.
   2. Fabricators: Companies specializing in fabricating the Products specified in the Divisions 20, 23, 25 sections with minimum 3 years documented experience.
   3. Installers: Perform the Work using qualified workmen that are experienced and usually employed in the trade.
   4. Testing Agencies: Products requiring electrical connection shall be listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and as indicated.

B. Product Testing and Certification:
   1. Nationally Recognized Testing Laboratory (NRTL) Labeling: Electrical equipment and conductors shall be “Approved,” “Certified,” “Identified,” or “Listed” and “Labeled” to establish that the electrical equipment is safe, free of electrical shock and fire hazard, and suitable for the purpose for which it is intended to be used. The manufacturer shall have the specific authorization of one of the Occupational Safety and Health Administration (OSHA) approved Nationally Recognized Testing Laboratories (NRTLs) in accordance with the applicable national standards to label the equipment as suitable.
   2. Where the words Listed, UL Listed, UL Labeled, Underwriters Laboratories, Inc., UL, or variations of this terminology, appear under this Division of the Specifications or the associated drawings, it is understood that a comparable testing agency as defined by NRTL above is acceptable.
   3. Such testing and certification is generally applicable to products within the following categories:
      a. Life safety and fire suppression.
      b. Fuel burning equipment, except certain classes of power or industrial equipment for which other recognized certification applies as well.
      c. Factory fabricated and wired electrical control panels and packaged equipment with factory installed electrical controls or panels.
      d. Components for life safety systems, fuel systems and medical gas systems.
   4. The listing under Paragraph ‘3’ above is provided for illustration of requirements and is not exclusive. Provide products that have been tested and listed for the intended application when such products are available unless the Contracting Agency has provided written exemption on an itemized basis.
   5. Provide electrical products listed and labeled by UL, FM, ETL or other approved NRTL. If listing and labeling is not available, stamp the submittal for these products by an Alaska Registered Professional Engineer approved by the Authority Having Jurisdiction, at no additional cost.
   6. Where interpretation is required, the Contracting Agency will provide direction and will be the sole judge in cases of compliance with this subsection.

1.9 DELIVERY, STORAGE AND HANDLING

A. Delivery and Acceptance Requirements:
   1. Verify products are new and delivered in original factory packaging/crating and are free from damage and corrosion.

2. Replace products delivered to job site that does not comply with above requirements at no expense to Owner.
3. Remove damaged, or otherwise unacceptable, products from the project site when directed by the Contracting Agency.

B. Storage and Handling Requirements:
1. Store products in covered storage area protected from the elements, outside the general construction area until installed. Maintain ambient conditions required by manufacturer of each product.
2. Store products in original factory packaging until actual installation.
3. Handle items carefully to avoid breaking, chipping, denting, scratching, or other damage.
4. Replace damaged items with same item in new condition.

1.10 SITE CONDITIONS

A. The hospital is considered an essential facility. Equipment seismic importance factor shall be 1.5 unless noted otherwise.

1.11 WARRANTY

A. See Division 10 for general warranty requirements.

B. Warranty workmanship, labor, and materials for a period of one year from the date of final acceptance, without limitation, except where longer warranty periods are specified in a specific Section under this Division, or in the General Conditions of the Contract. Promptly coordinate and perform Warranty work at the Contractor's sole expense.

C. Submit necessary documentation to each appropriate Manufacturer's Representative to validate manufacturer's warranty.

D. Provide one copy of warranty documentation and confirmation receipt from the Manufacturer's Representative.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.1 PREPARATION

A. Protection of In-Place Conditions:
1. Cover and protect open ends and individual components of the ventilation and piping systems during construction when dust, dirt, debris, overspray, or other potential construction contaminates could enter the air distribution system or elements (ducts, fans, VAV boxes, silencers, etc.).

B. Demolition/Removal:
1. Examination:
a. Drawings involving existing conditions are based on building record drawings and limited field observation.

b. Conduct a site inspection prior to submission of Bid to become thoroughly familiar with the Scope of Work.
c. Report discrepancies to the Contracting Agency before disturbing existing installation.
d. Verify field measurements, locations, sizes, and routing arrangements and site conditions.
e. Commencement of demolition implies Contractor accepts existing conditions.

2. Preparation:
   a. In buildings that will remain occupied during construction, coordinate with the Contracting Agency in advance before scheduling disruption of services.
   b. This facility will remain occupied during construction. Coordinate with the Contracting Agency in advance before scheduling disruption of services.
   c. Accommodate the Contracting Agency's normal business schedule to the maximum extent possible.
   d. Provide temporary mechanical systems to maintain existing systems in service during construction. Submit plan for providing temporary services for approval.
   e. Cover and protect open ends and individual components of the ventilation and piping systems during construction when dust, dirt, debris, overspray, or other potential construction contaminates could enter the air distribution system or elements (ducts, fans, VAV boxes, silencers, etc.).
   f. Provide temporary construction filters over return air openings and at air handling unit return air dampers.
   g. When work must be performed on operating equipment or systems, use personnel experienced in the operation of the specific equipment affected.
   h. Submit work plan and schedule for approval prior to beginning work.
   i. Notify the Contracting Agency and the Fire Department Agencies at least 24 hours before partially or completely disabling Fire Suppression, Alarm, or Notification Systems.
   j. Notify the Facility at least 24 hours before beginning welding or other 'hot' work.
3. Execution:
   a. Remove, relocate, and extend existing installations to accommodate new construction as shown and as required for phasing or final systems operations.
   b. Disconnect and remove abandoned fixtures, terminal units and other products. Remove abandoned controls and associated wiring to source of signal and supply.
   c. Remove abandoned piping and ductwork back to source of supply or other point as shown, and cap tight to accept normal system test pressures.
   d. Remove exposed abandoned or indicated for demolition controls, equipment, pipes, ducts, and including abandoned items above ceiling finishes. Cut concealed pipes and ducts flush with walls and floors. Remove brackets, stems, hangers, and other accessories. Fill and repair surfaces to match surrounding finish work.
   e. Repair damaged surfaces, insulation, ceiling tiles, and fireproofing. Plug, patch, repair holes, and surfaces. Repair assemblies to match existing fire, temperature, and/or smoke ratings. Refinish surface to match surrounding finish work.
   f. Seal room penetrations to maintain pressure relationships to adjacent spaces.

g. Maintain access to existing mechanical and electrical installations that remain active. Modify installation or provide access panels as appropriate; coordinate with the Contracting Agency.
h. Turn salvaged items over to the Contracting Agency as noted on the Drawings. Dispose of items that the Contracting Agency does not desire to retain at a legal disposal site.

3.2 INSTALLATION

A. Special Techniques:
1. Provide temporary fuel oil to boiler day tanks for duration of fuel oil system shutdown.

B. Interface with Other Work:
1. Electrical Work:
a. Coordinate with Division 26.
b. Contractor is responsible to provide heating, ventilating, and plumbing equipment motors, and controls, including fire suppression controls. Coordinate work between subcontractors.

* Provide starters in accordance with the Electrical Division of these Specifications. Note that a thermal overload relay in each phase is required for each starter (packaged equipment included).

3.3 REPAIR/RESTORATION

A. Touch-up, repair or replace product components broken during installation or startup with new replacement parts supplied by the product manufacturer.

B. Substitute replacement parts from other manufacturers are not acceptable.

C. Clean and repair existing identification tags/labels, hangers, supports, insulation, materials, instrumentation, and equipment that remain or are to be reused or are affected by this work. Materials and equipment which require major repair may be replaced at the Contractor's option.

D. Plug, patch and repair surfaces, adjacent construction, and finishes damaged during demolition and new work. Restore to original condition or better including fire, smoke or temperature ratings or listings. Retexture surfaces to match surrounding surfaces. Repaint affected surfaces, with extent of paint to include adjacent surfaces to next wall or other clean break to avoid mismatched finish. Replace cracked or damaged ceiling tiles. Repair fire proofing, assembly fire ratings, and construction resistant to the passage of smoke.

3.4 SITE QUALITY CONTROL

A. Site Tests and Inspections:
1. The Contracting Agency may inspect and approve sample installation of systems and equipment prior to general installation of units.
2. Schedule, obtain, and pay for fees and/or services required by the local Authorities Having Jurisdiction and by these specifications, to test the mechanical systems.

3. Notify the Contracting Agency a minimum of 24 hours in advance of tests. Certify in writing that specified tests have been made in accordance with the specifications.
4. Immediately correct deficiencies that are discovered 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.
5. Under the direction of the Contractor and in the presence of the Contracting Agency, place the entire mechanical installation and/or any portion thereof in operation to demonstrate satisfactory operation.
6. Arrange for the Contracting Agency to witness tests. The Contracting Agency may waive witnessing any specific test at its discretion.

B. Non-Conforming Work:
1. Expediently remove and provide new for work not conforming to the Project Manual upon discovery; including warranty and discovery periods.
2. Warranty period shall start over for replaced equipment and installation from the date of accepted by the Contracting Agency.

C. Manufacturer Services:
1. Authorized manufacturer's representative shall be on-site for testing, start-up, functional check-out, and commissioning of equipment and systems.
2. Procurement, installation, start-up, and warranty services to be provided by manufacturer's authorized representative and service company.
3. Equipment, devices, hardware, and software to be approved for application, and of current production. Original manufacturer's parts, hardware, software, and support to be available for ten years after installation.

3.5 CLEANING

A. Upon completion of installation and prior to initial operation, remove debris, and clean and wipe down equipment, piping, ductwork, and floor to eliminate dust and dirt.

3.6 CLOSEOUT ACTIVITIES

A. Demonstration: Provide demonstration, conducted by authorized factory start-up personnel, to the Contracting Agencies authorized personnel as listed in each individual specification section.

B. Training: In addition to training specified in each individual specification section, provide 2 additional hours of operational instruction conducted by qualified personnel, covering any of the mechanical systems and installation requested by the Contracting Agency to its authorized maintenance personnel.

END OF SECTION 20 0000

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SECTION 20 0505 - MECHANICAL DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Demolition and removal of selected mechanical systems, equipment and selected components.

B. See Division 10 for general demolition requirements and disposal of demolished materials.
   1. Coordinate the demolition and disposal of materials and equipment with Contracting Agency.
   2. Provide Contracting Agency with the first right of refusal for the salvage of demolished equipment and materials.

C. Related Sections:
   1. 20 0000 - Mechanical General Requirements
   2. 25 5000 - Building Automation System

1.2 REFERENCES

A. See Section 20 0000 - Mechanical General Requirements.

1.3 DEFINITIONS

A. Demolish: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Detach items from existing construction and deliver them to Owner ready for reuse.

C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 SUBMITTALS

A. See Section 20 0000 - Mechanical General Requirements.

B. Submit a demolition and construction plan for review by the Contracting Agency prior to beginning work. Describe procedures that will be used to protect and maintain cleanliness of the adjacent building areas/systems during construction.

1.5 QUALITY ASSURANCE

A. See Section 20 0000 - Mechanical General Requirements.

B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

C. Standards: Comply with ANSI A10.6 - Safety and Health Program Requirements for Demolition Operations, and NFPA 241 - Standard For Safeguarding Construction, Alteration, And Demolition Operations.

D. Pre-demolition Meetings: Conduct coordination meetings prior to demolition as required by Division 10.

1.6 PROJECT CONDITIONS

A. Adjacent portions of the building will remain partially occupied during selective demolition. Conduct demolition such that Owner's operations will not be disrupted.

B. Drawings and specifications involving existing conditions are based on building record drawings and limited field observation. Provide field verification. Addition building record drawings are available from the Owner with a written request.

C. Notify Contracting Agency of discrepancies between existing conditions and the Contract Documents before proceeding with demolition.

D. Hazardous Materials: The existing roof construction, to include the existing mechanical penetrations through the roof is likely to include materials which contain asbestos. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Contracting Agency and coordinate the demolition of such hazardous materials in accordance with the hazardous materials abatement procedures specified in Division 10.

E. Maintain existing utilities to the maximum extent possible. Coordinate outages, if necessary, in accordance with Division 10.

F. Maintain fire-protection systems in service during mechanical demolition operations.

G. Storage or sale of removed items or materials on-site is not permitted.

1.7 WARRANTY

A. See Section 20 0000 - Mechanical General Requirements.

B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.1 EXAMINATION

A. Drawings and specifications involving existing conditions are based on building record drawings and limited field observation.

B. Conduct a site inspection prior to submission of Bid to become thoroughly familiarized with the Scope of Work. Review actual site conditions and compare with the Contract Documents mechanical demolition drawings. Obtain direction from Contracting Agency for identified conflicts.

C. Inventory and record the condition of items to be removed, removed and reinstalled or removed and salvaged. Provide Contracting Agency with first right of refusal for the salvage of demolished equipment and materials.

D. Verify field measurements, locations, sizes, and routing arrangements and site conditions.

E. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate, and measure the nature and extent of conflict. Promptly submit a written report to Contracting Agency for direction.

F. Commencement of demolition implies Contractor accepts existing conditions.

3.2 PREPARATION

A. Maintain existing utilities in operation to the maximum extent possible during the selective demolition of mechanical systems. When utility outages are necessary, coordinate outages and their duration with Contracting Agency in accordance with Division 10. Arrange to shut off indicated utilities with utility companies.

B. “Tag” equipment and systems to be demolished. Identify the extent to which each system will be demolished.

C. Locate, identify, isolate, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.

D. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.

E. Coordinate with the Contracting Agency to provide a central staging area for the temporary storage of demolished equipment and systems.

F. Identify hazardous materials which will be demolished (i.e. mercury thermostats, etc.). Provide and designate a segregated temporary storage area for demolished hazardous materials organized by hazard type.

3.3 DEMOLITION - GENERAL

A. General:
1. Demolish and remove existing mechanical equipment and systems only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
2. Terminate ductwork and piping back to branch connections and replace tees and fittings with straight couplings. Terminate electrical circuits back to panel (See Divisions 26, 27, and 28). Remove unused ductwork, piping, conduit and associated hangers and other support devices.
3. Abandonment in place of unused equipment and systems affected by the remodel is not allowed.
4. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
5. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
6. Coordinate with facility for hot work permit.
7. Promptly transport and dispose of demolished equipment, systems, and material at the closest, approved dump site.

B. Controls:
1. Sequence limited demolition of the controls system.
2. Limited schedules outages are acceptable for system cross-over.
3. Coordinate outages with Contracting Authority 24 hours in advance of the scheduled outage.

C. Indoor Air Quality:
1. Maintain cleanliness and indoor air quality in areas adjacent to construction areas.
2. Submit a demolition and construction plan for review by the Contracting Agency prior to beginning work.

D. Fire Protection: Notify the Contracting Agency and the Fire Department Agencies at least 24 hours before partially or completely disabling Fire Protection Systems.

E. Removed and Salvaged Items:
1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Contracting Agency.
4. Transport items to Contracting Agency designated on-site storage area.
5. Protect items from damage during transport and storage.

F. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.

4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

G. Existing items to Remain:
   1. Protect construction indicated to remain against damage and soiling during selective demolition.
   2. When permitted by Contracting Agency, items may be removed to a suitable, protected storage location during demolition and cleaned and reinstalled in their original locations after demolition operations are complete.

3.4 CLEANING AND REPAIRS

A. Plug, patch, and repair surfaces, adjacent construction, and finishes damaged during demolition and new work. Restore to original condition or better. Retexture surfaces to match surrounding surfaces. Repaint affected surfaces, with extent of paint to include adjacent surfaces to next wall or other clean break to avoid mismatched finish. Repair fire proofing.

B. Clean construction areas after completion of the project. Wipe down new and existing surfaces including but not limited to walls, floors, ductwork, piping and equipment. Clean adjacent equipment and systems to remain and building surfaces of dust, dirt, and debris caused by demolition operations.

C. Return adjacent areas to the condition existing before demolition operations began.

END OF SECTION 20 0505

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SECTION 20 0529 - MECHANICAL HANGERS AND SUPPORTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Hanger, support and anchoring requirements for plumbing and mechanical appliances, equipment, and related distribution systems.
2. Building wall, floor, and roof penetration methods for the routing of plumbing and mechanical distributions systems (e.g., sleeving and sealants).

B. Related Sections:
1. 20 0000 - Mechanical General Requirements
2. 20 0553 - Mechanical Identification
3. 23 1113 - Fuel Oil Piping and Specialties
4. 23 2700 - Air Outlets and Inlets
5. 26 3213 - Engine Generator (Diesel)

1.2 RELATED WORK

A. The building structure shall be designed to support the weight of plumbing and mechanical appliances, equipment, and distribution systems (non-structural components), as well as related seismic and wind forces in accordance with ASCE/SEI 7.

B. See civil drawings for equipment concrete pad material, construction, and attachment. Actual pad locations, dimensions and through penetrations shall be coordinated with approved equipment base dimensions, weights, and anchoring requirements using the product submittal and shop drawing process.

1.3 REFERENCES

A. Codes and Standards:
1. Refer to Section 20 0000 - Mechanical General Requirements for general Code and Standard references.
2. MSS SP 58 - Pipe Hangers and Supports – Materials Design and Manufacture, Selection, Application, and Installation.
3. ASCE/SEI 7-16 Minimum Design Loads for Buildings and Other Structures - Chapter 13 (Anchorage Requirements) and Chapter 29 (Wind Load Requirements).

B. Abbreviations, Acronyms and Definitions:
1. See Section 20 0000 - Mechanical General Requirements for general abbreviations, acronyms, and definitions.
2. See Mechanical Drawings (Legend and Abbreviations).

1.4 DESCRIPTION

A. This section applies to Division 20, 23, 25 equipment and systems:

1. Support mechanical system piping, appliances, and equipment in accordance with this section and International Mechanical Code (IMC) requirements as applicable, whichever is more restrictive. In case of conflicts, follow IMC criteria.
2. Provide additional seismic restraint as required for mechanical and plumbing appliances, equipment, and related distribution systems.

B. Design Requirements:
   1. Appliance, equipment, and related distribution system support:
      a. Select and apply pipe hangers and supports using stock or production parts whenever possible.
      b. Design support spacing such that free span of piping does not exceed code or MSS SP69 criteria, whichever is most restrictive.
      c. Calculate required supporting force at each hanger location to confirm hanger type and hanger rod diameter selection.
      d. Provide hangers such that equipment connection points do not carry connected piping load.
      e. When possible, adjust hanger spacing, hanger rod length/diameter to meet the seismic design exclusion criteria of ASCE/SEI 7 to minimize the need for additional seismic restraint.
   2. Vibration and seismic restraint systems: If the exclusion criteria of ASCE/SEI 7 cannot be met, provide additional seismic support as required for mechanical and plumbing appliances, equipment, and related distribution systems.
   3. Building Design Criteria:
      This project is designated as an essential facility.
      Wind design data: 100 MPH winds with 130 MPH gusts. Obtained from City of Valdez.
      Seismic design data: Seismic Zone IV category (D). Obtained from City of Valdez.
      Component Importance Factors, Ip:
         Fire suppression systems: Ip = 1.5
         Fuel oil system: Ip =1.5
         Piping Importance Factor: Ip =1.5
         All other components: Ip = 1.5

C. General Performance Requirements:
   1. Provide additional hangers, expansion loops, pipe anchors and pipe guide assemblies as required based on actual (as-built) distribution system layout/routing.
   2. Coordinate hanger and support anchor locations and methods with structural.
   3. Provide hangers and supports that allow for the free expansion and contraction of system piping without transferring tensile and compressive stresses to adjacent supports or connected equipment.

D. Equipment and Systems Subject to Wind Loading: Provide equipment anchorage and additional support in accordance with the manufactures recommended installation requirements, as well as ASCE/SEI 7 anchorage and wind load requirements (e.g., roof mounted equipment).

1.5 SUBMITTALS

A. See Section 20 0000 - Mechanical General Requirements for general submittal requirements for the items listed below, supplemented with the additional requirements listed.

B. Product Data:
   1. Provide manufacturer's catalog data, including load capacity and anchor embedment requirements.
   2. Manufacturer's Installation Instructions: Indicate special tools, procedures, and assembly of components.

C. Shop Drawings:
   1. Submit dimensioned shop drawings for housekeeping pads and roof curbs (with dimensioned penetration locations).
   2. Submit shop drawings for field fabricated support systems.
   3. For plumbing and mechanical distributions system shop drawings:
      a. Overlay locations and types of hangers and supports to be provided.
      b. Include details for each hanger and support type with anchorage requirements.
      c. Dimension expansion loops and alignment guide locations and offsets.

1.6 CLOSEOUT SUBMITTALS

A. Record Documentation:
   1. Indicate installed hanger locations, supports and expansion control assemblies on applicable contractor as-built drawings.
   2. Provide Operating and Maintenance Data (installation and adjustment instructions) for non-commodity products.

1.7 QUALITY ASSURANCE

A. Qualifications:
   1. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum 3 years documented experience.
   2. Installers: Minimum 3 years' experience.
   3. Provide piping and support systems designed and manufactured per MSS SP69.

1.8 DELIVERY, STORAGE, AND HANDLING

A. See Section 20 0000 - Mechanical General Requirements.

1.9 WARRANTY

A. See Section 20 0000 - Mechanical General Requirements.

PART 2 - PRODUCTS

2.1 PIPE HANGERS AND SUPPORTS

A. General:

1. Piping and support systems materials: Malleable iron, steel, or copper.
2. Hot dipped galvanized ferrous hangers and supports installed outdoors or in unheated spaces.
3. Select and apply pipe hangers and supports per MSS SP69. Use stock or production parts when possible.
4. Fabricate and install pipe hangers and supports per MSS SP69 recommended practices.
5. Hangers shall securely lock using a mechanical fastener. Hangers and supports using gravity type locking are not acceptable. For example, adjustable swivel ring Type 6 is not allowed.
6. Pre-engineered support systems (e.g., Unistrut, Super-Strut, B-Line) may be used in accordance with manufacturer's load limits.
7. Manufacturers: Grinnell, M-CO Michigan Hanger Company, Kin Line or equal.

B. Fuel Oil Piping:
1. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Adjustable swivel ring; split ring.
2. Wall Supports: Welded steel bracket and wrought steel clamp.
3. Floor Supports: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and steel support.

2.2 DUCTWORK, FLUES, STACKS, AND BREECHINGS HANGERS AND SUPPORTS

A. Provide spring vibration isolation hangers for generator engine exhaust system including engine exhaust silencer and connecting exhaust piping system.

2.3 ACCESSORIES

A. Hanger Rods: Mild steel, threaded both ends, threaded one end, or continuous threaded.

B. Escutcheons: Nickel or chrome plate with screws or springs for holding plate in position.

C. Pipe Protection Saddles: Shop fabricate or purchase specially manufactured saddles specifically designed for the intended use. Provide saddles where roller type support is used, or where the pipe hanger is installed outside the insulation for protection of insulating jacket.

D. Outdoor applications: Metal components shall be galvanized or stainless steel.

2.4 PRE-ENGINEERED SUPPORT SYSTEMS

A. Manufacturers:
1. Unistrut.
2. Super-Strut.
3. B-Line.
4. K-Line.
5. Erico.
6. Approved equal.

B. Materials and Finish:

1. Heated Indoor Applications:
   a. Carbon steel with pre-galvanized zinc (PG) finish.
   b. Carbon steel with plain (PL), paintable galvanized, or phosphatized and primed when welding or painting will be required.
2. Outdoor Applications:
   a. Carbon steel with hot dipped galvanized zinc (HG) finish. Coat field cuts with zinc rich paint provide by the support system manufacturer.
   b. Stainless steel (Type 304) where specifically specified for use in damp, corrosive, or marine environments.

C. Special Finishes:
1. Surface metal raceways: High performance epoxy coating (e.g., Unistrut Perma-Green III).

D. Channel:
1. Standard Size: 1-5/8 inch x 1-5/8 inch. Gauge thickness as required for attached load.
2. Standard Hole Pattern: Slotted. Provide solid channel in exposed public areas.

E. Fittings: Match channel material and finish.

F. Nuts and Hardware:
1. Channel nuts: Hardened steel (ASTM-A675 and ASTM A36).
2. Bolts, screws, and nuts: Hardened steel (ASTM-A307, ASTM A563 and SAE J429).
3. Material and Finish:
   a. Heated indoor applications: Electro-galvanized (EG).
   b. Outdoor applications:
      1). Hot-dipped galvanized (HG).
      2). Stainless steel (Type 304) for use in damp, corrosive, or marine environments.

G. Mechanical Accessories: Provide accessories from the support system manufacturer designed for the specific equipment to be supported, to include but not limited to:
1. Pre-insulated pipe hanger inserts to permit continuous insulation at the pipe clamps: Unistrut model PUX, Armaflex model IPPH.
2. Splice and gusset plates.
3. Corner angles.
4. Specialized support brackets.
5. Beam clamps with restraints.
6. Column supports.
7. Strut pipe clamps.
8. Straps.
9. Brackets.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Visually inspect appliances, equipment and distribution systems requiring anchorage/attachment to structure for installation location tolerance, interference and other conditions affecting installation.

B. Verify actual locations of cast-in-place anchors, structure reinforcements and other required attachments prior to installation.

C. Document and correct deficiencies or submit proposed design modifications for approval prior to the installation.

3.2 PREPARATION

A. Prior to installation, prepare detailed shop drawings of the planned installation of hanger and support products specified by this section. Coordinate the location, type and size of hangers and supports, housekeeping pads (thickness/perimeter overhang dimensions) and roof curbs with Architectural and Structural elements using the shop drawing review process.

B. Submit shop drawings required by this section coordinated with the additional seismic design as required.

C. Do not install hangers and supports without approved shop drawings.

3.3 INSTALLATION

A. Attachment:
   1. Structural steel: Beam clamps which engage both sides of structural member or have retaining clips or other approved means for positive engagement.
   2. Metal surfaces: Machine screws, bolts, or welding.
   3. Plastic screw inserts and caulked lead inserts are prohibited, except for mounting instructions and control diagrams.

B. Pipe Hangers and Supports:
   1. Install hangers and supports in accordance with manufacturer’s instructions, applicable code requirements and approved shop drawings.
   2. Independently support piping at equipment, such that the equipment supports no weight.
   3. Design rods and cross members to support three times the weight of pipes and contents plus 250 pounds.
   4. Install hangers to provide minimum 1/2-inch space between finished covering and adjacent work.
   5. Place hangers within 12 inches of each horizontal elbow.
   6. Use hangers with 1-1/2 inch minimum vertical adjustment.
   7. Support riser piping independent of connected horizontal piping.

C. Piping Requiring Vibration Isolation:

1. Support main risers less than 20 feet in height only at mid-level, with riser guides at other levels.
2. Do not support vibration isolated piping along with non-isolated piping on a common trapeze.
3. Rigidly mount steel spring hanger boxes to the supporting structure. Do not locate in the middle of the hanger rod.
4. Rigid pipe anchors are not permitted in vibration isolated piping circuits.

D. Equipment Bases and Supports:
1. Construct field fabricated equipment bases and supports from steel members and/or pre-engineered support systems. Prime and paint bases and supports gray or black.
2. Pre-engineered support systems, which are factory coated, are not required to be painted.

E. Equipment and Systems Subject to Wind Loads:
1. Provide equipment anchorage and additional support in accordance with the manufactures recommended installation requirements, as well as ASCE/SEI 7 anchorage and wind load requirements.
2. As applicable, provide wind restraint systems (e.g., guy wires, etc.) in compliance with the manufacturer's written instructions, and certified and approved application engineering installation details.
3. Install wind restraints to not stress or misalign equipment, piping, and ductwork.

F. Penetrations:
1. Coordinate mechanical penetrations at utility building with Architectural construction details prior to installation.
2. Provide compatible materials, fasteners, adhesives, sealants, and other products required for proper installation.
3. Provide penetrations through roof, exterior walls, and floors (See floor penetration seals) to be weather and water tight.
4. Wall Penetration Seals:
   a. Provide pre-engineered wall penetration water seal systems for exterior wall penetrations.
   b. Select appropriate wall penetration sealing systems based on pipe/conduit material and nominal pipe/conduit size in accordance with the manufacturer's selection charts.
   c. Install piping/conduit and sealing system prior to waterproofing the wall. Grout void between water seal and outside face of foundation wall to provide continuous bearing surface for waterproofing fabric.
5. Roof Flashing: Provide roof penetration flashing as an integral part of the enclosure roofing system.

3.4 INTERFACE WITH OTHER WORK

A. Coordinate and sequence installation of hangers and supports with trades responsible for portions of this and other related sections of the Project Manual.

3.5 REPAIR/RESTORATION

A. Repair any product components broken during installation or startup with replacement parts supplied by the product manufacturer.

B. Substitute replacement parts from other manufacturers are not acceptable.

3.6 SITE QUALITY CONTROL

A. Non-Conforming Work: Rework required as a result of failure to follow the manufacturer's written installation instructions or to properly coordinate with related Work shall be completed at no additional expense to the Owner.

3.7 CLEANING

A. Waste Management: After construction is completed, clean and wipe down exposed surfaces.

END OF SECTION 20 0529

SECTION 20 0553 - MECHANICAL IDENTIFICATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:
1. Equipment Nameplates.
2. Valve Tags.
3. Valve and Equipment Directories.
4. Pipe Identification.
5. Painting of bare and insulated piping systems.

B. Related Sections:
1. 20 0000 - Mechanical General Requirements
2. 23 1113 - Fuel Oil Piping and Specialties
3. 26 3213 - Engine Generator (Diesel)

1.2 REFERENCES

A. Codes and Standards:
1. See Section 20 0000 - Mechanical General Requirements.
2. ANSI/ASME A13.1-2015 (American Society of Mechanical Engineers) - Scheme for the Identification of Piping Systems.
3. ANSI Z535.1-2017 - Safety Colors.

B. Abbreviations, Acronyms and Definitions:
1. Refer to Division 10 for general abbreviations, acronyms, and definitions.
2. Refer to Section 20 0000 - Mechanical General Requirements for general mechanical related definitions.
3. Refer to Mechanical Drawings legend sheet for general mechanical related abbreviations.

1.3 SYSTEM DESCRIPTION

A. Design Requirements:
1. Provide equipment nameplates, valve tags and labels for the mechanical systems provided under this contract.
2. Provide labels for piping. Paint exposed piping and pipe insulation in utility and mechanical rooms.

1.4 SUBMITTALS

A. Refer to Section 20 0000 - Mechanical General Requirements for general submittal requirements for the items listed below, supplemented with the additional requirements listed.

B. Product Data:
1. Equipment Directories: Submit proposed “Equipment Directories” for enclosure that includes the equipment located within the applicable space. Include system name, fluid or medium type, and normal operating properties and ranges.

2. Valve Directories: Submit proposed “Valve Directories” for enclosure. Include valve designations, a brief description and normal position (open (NO), closed (NC), balanced to X GPM). For Example:

Valve Designator	Description	Normal Position
H-101	BLR-1 Supply Isolation	NO
H-102	BLR-1 Return Isolation	NO
H-103	BLR-1 Flow Balance	150 GPM
P-100	Domestic Water Service Isolation	NO
P-201	Supply Strainer Flush Valve	NC
ETC.		

C. Installation, Operation and Maintenance (IO&M) Manuals:
1. Provide completed, typed “Equipment Directories.”
2. Provide completed, typed “Valve Directories.”

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Marking Services Incorporated (MSI).

B. Seton Identification Products.

C. Craftmark.

D. Approved equal.

2.2 EQUIPMENT NAMEPLATES

A. Plastic Engraved Equipment Nameplates:
1. Minimum letter height: 3/4 inch.
2. Tag size: Minimum 2 inches high, length to fit equipment tag lettering requirements. Provide uniform size for similar types of equipment.
3. Plastic thickness: 1/16 inch minimum.
4. Fastening method:
a. Mounting holes.
b. Adhesive backing may be provided for labeling equipment where drilling holes is not feasible, with the pre-approval of the Contracting Agency.
5. Color coding: As designated by the Contracting Agency. If specific direction is not provided, select white letters on black background.
6. Legend: As designated by the Contracting Agency. If specific direction not provided, match scheduled equipment symbols.

2.3 VALVE TAGS

A. General:

1. Small equipment, such as in-line pumps may be identified with tags in lieu of nameplates if inadequate room is available.
2. Provide service indicator on top line of tag, using system abbreviations provided in Part 3 Pipe Identification Table.
3. Provide valve number on bottom line of tag. Start valve numbering with “001” for each legend series/service indicator. Assign valve numbers in a logical sequence from the source (i.e. service water entry point, gas meter service isolation) or heat source (boiler or water heater supply) and continue numbering outward to the most remote terminal connection point.

B. Plastic Engraved Tags:
1. Round, 1-1/2 inches diameter, engraved plastic.
2. Text stamped and filled black:
   a. 1/4 inch service indicator on top.
   b. 1/2 inch valve number below.
3. Beaded chain tag fasteners.
4. Provide tag color coding to match pipe marker coding or as designated by the Contracting Agency.

C. Brass Stamped Tags:
1. Round, 1-1/2 inches diameter, brass with smooth edges.
2. Text stamped and filled black:
   a. 1/4 inch service indicator on top.
   b. 1/2 inch valve number below.
3. Beaded chain tag fasteners.

2.4 VALVE AND EQUIPMENT DIRECTORIES

A. Equipment and Valve Directory Frame:
1. 8-1/2” x 11” aluminum frame with plastic lens.
2. Provide multiple frames as required.

2.5 PIPE IDENTIFICATION, MARKING

A. Identify both service and flow direction.

B. Colors and Lettering: Conform to ANSI/ASME A13.1; see tables under Article 3.2E below.

C. Plastic Pipe Labels:
1. Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering.
2. Larger sizes may have maximum sheet size with plastic nylon ties or straps.

D. Plastic Tape Pipe Labels: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.

PART 3 - EXECUTION

3.1 PREPARATION

A. Degrease and clean surfaces to be painted or directly receive adhesive labels.

B. Install identifying devices after completion of coverings and painting.

3.2 INSTALLATION

A. Do not install identifying devices over factory installed equipment labels.

B. Locate identifying devices in clear view for simple identification.

C. Tag automatic controls, instruments, and relays. Key these to control system schematic drawings.

D. Frame and install approved equipment and valve directories in each mechanical room, at a location designated by the Contracting Agency.

E. Pipe Identification:
1. Identify piping, concealed or exposed, using ANSI A13.1 compliant pipe labels. Identify both service and flow direction in accordance with the following table.

Abbreviation	Legend	Color (Letters/Background)
FOS	Fuel Oil Supply	White/Brown
FOR	Fuel Oil Return	White/Brown

2. Pipe label letters shall be a minimum of 1/2" high.
3. Install labels in unobstructed view and aligned with horizontal or vertical axis of piping as appropriate. For piping located above the normal line of vision, place labels below the horizontal centerline of the pipe for clear unobstructed view from below.
4. Install labels not to exceed 20 foot intervals along straight piping runs (including risers and drops), close to valves, adjacent to changes in direction and branches, on each side of pipe penetrations through walls or floors, and at each access panel.

END OF SECTION 20 0553

SECTION 23 1113 - FUEL OIL PIPING AND SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Fuel Piping, Fittings and Accessories.
   2. Transition Sumps.
   3. Electronic Leak Detection System.
   4. Remote Fuel Oil Pump Package.

B. Related Sections:
   1. 20 0000 - Mechanical General Requirements
   2. 20 0529 - Mechanical Hangers and Supports
   3. 20 0553 - Mechanical Identification
   4. 26 3213 - Engine Generator (Diesel)

1.2 REFERENCES

A. Codes and Standards:
   1. See Section 20 0000 - Mechanical General Requirements.
   2. Underwriters Laboratories (UL) Standards:
      a. UL 107: Glass Fiber Reinforced Plastic Pipe and Fittings for Flammable Liquids.
      b. UL 567: Pipe Connectors for Flammable and Combustible and LP Gas.
      c. UL 971: UL-Listed Non-Metal Pipe.
      d. NFPA 30 - 2018: Flammable and Combustible Liquids Code.
      e. NFPA 31 - 2016: Installation of Oil Burning Equipment.
      f. PEI/RP-100-90: Recommended Practices for Installation of Underground Liquid Systems.
      g. State of Alaska Department of Environmental Conservation:

1.3 SYSTEM DESCRIPTION

A. The work includes provision of the fuel oil distribution system from the main fuel storage tank connections, through the remote fuel transfer pumps to the day tanks, and from the day tanks to the oil burning equipment connections. In general, oil burning equipment is specified elsewhere.

1.4 PRE-INSTALLATION MEETINGS

A. See Section 20 0000 - Mechanical General Requirements.

1.5 COMMISSIONING

A. Provide support for formal third party commissioning services for the equipment and systems provided by this section in accordance with 20 0000 – General Mechanical Requirements.

1.6 SUBMITTALS

A. See Section 20 0000 - Mechanical General Requirements for general submittal requirements for the items listed below, supplemented with the additional requirements listed.

B. Product Data: Provide manufacturers' product literature, clearly annotated to indicate specified salient features and performance criteria for each product specified.

C. Shop Drawings:
   1. Provide scaled shop drawings.
   2. Incorporate the following installation information:
      a. Storage tank, day tank and fuel burning equipment locations and pipe connection points.
      b. Fuel pipe routing, elevations, and slope to drain indication.
      c. Fuel piping isolation valve locations and accessories.

D. Quality Assurance/Control Submittals:
   1. Design Data, Test Reports: Field test reports.
   2. Certificates, Manufacturer's Instructions, and Manufacturer's Field Reports:
      a. Provide a complete manufacturer's written installation, operation and maintenance manual for each type of installed equipment. Clearly annotate the manual to indicate applicable information for the specific equipment model(s) installed.
      b. Included with the manual one copy of the completed start-up and operation checklist. The checklist shall include:
         1). Printed names and signatures of the installers.
         2). Documentation from Manufacturer's representative and Contracting Agency that the equipment has been properly installed and is fully operational, thus validating the equipment warranty.
      c. Include with the checklist a list of applicable programmable control setpoints with their current programmed settings.

E. Operation and Maintenance (IO&M) Manuals:
   1. Provide copies of approved submittal information for inclusion within the project IO&M Manual.
   2. Refer to Section 20 0000 - Mechanical General Requirements, for IO&M Manual formatting requirements and number of copies required.

1.7 CLOSEOUT SUBMITTALS

A. See Section 20 0000 - Mechanical General Requirements.

1.8 QUALITY ASSURANCE

A. See Section 20 0000 - Mechanical General Requirements.

B. Regulatory Requirements: Products Requiring Electrical Connection shall be listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

1.9 DELIVERY, STORAGE, AND HANDLING

A. See Section 20 0000 - Mechanical General Requirements.

1.10 WARRANTY

A. Manufacturer Warranty: See Section 20 0000 - Mechanical General Requirements, for general mechanical warranty requirements.

PART 2 - PRODUCTS

2.1 FUEL PIPING AND FITTINGS

A. Above grade:
   1. Carbon Steel Product Line Pipe and Fittings:
      a. Schedule 40 black steel.
      b. 3000 lb forged steel socket weld couplings or schedule 40 butt weld fittings.
   2. Vent Piping and Fittings:
      a. Schedule 40 galvanized steel.
      b. Galvanized malleable iron threaded fittings.

B. Buried:
   1. Double-Walled Flexible Product Line Piping Systems:
      a. Description: Piping shall be UL listed for underground piping of flammable and combustible liquids. The double-walled primary piping system shall consist of a flexible Kynar® PVDF inner barrier pipe contained within a flexible Kynar® PVDF outer barrier pipe. The inner and outer barrier pipes shall be fully-bonded to a coaxial Kynar® thermal plastic layer which includes stand-off ribs to create a small interstitial space allowing for fuel migration to transition to sump, continuous monitoring, and period testing.
      b. The double-walled primary piping system shall be installed in a dual layer corrugated flexible access pipe to permit future replacement of the primary piping. The dual layer access pipe shall have a semi-smooth inner liner for ease of primary pipe installation and replacement. The access pipe shall be crush resistant and capable to withstand H-20 loading when installed in accordance with manufacturer recommendations.
      c. The primary pipe and access pipe runs shall be continuous below grade, whereby there shall be no fittings or piping connections, for either the primary pipe or access pipe, which are not visible or accessible from the access / transition sumps. The access piping system shall provide watertight containment of the primary piping.
      d. Primary pipe termination joints precision swaged to simulate factory made assemblies. UL listed termination/adaptor fittings stainless steel construction with Viton gasket seals. Termination joints shall be located within transition/access sumps. Utilize manufacturer’s recommended fittings and tools.
      e. Provide manufacturer’s accessories for initial and periodic air pressure testing of the piping system, including but not limited to: test boots, test gauges assemblies, air stems.

f. Provide manufacturer's double-flexible entry boot fittings with air stems for water-tight access pipe connections to transition/access sumps and to facilitate air testing.
g. Product compatibility: Components of the double-wall piping system shall be compatible with the products to be stored.
h. Corrosion resistance: Components of the double-wall piping system shall be made of noncorrosive materials, or if metallic, such as fittings and couplings, isolated from corrosion causing elements.
i. Monitoring capability: The design of the secondary containment system shall permit any leak in the primary piping system to flow from its source to a surface accessible containment sump which shall be fitted with an electronic leak detection system.
j. Double-walled primary pipe temperature and pressure ratings:
   1). Minus 20 deg F to 120 deg F.
   2). 75 psig maximum working pressure. Burst pressure minimum 5x working pressure.
   3). Suitable for suction systems and rated to 29 in Hg vacuum.
k. Manufacturer:
   1). OPW-Fuel Containment Systems FlexWorks, or approved equal.
      a) Primary double-wall access pipe: Model C075A (3/4" inch size).
      b) Dual layer access pipe: Model AXP40.

C. Fuel Oil Transition Sumps:
1. General: Use to transition sump between aboveground and underground piping systems. Provide fittings and accessories for a complete system as indicated on the drawings.
2. Sump: Single piece, non-corroding polyethylene container.
3. Top: Single piece, non-corroding polyethylene, with weatherproof lockable cover. Weatherproof boot fittings for pipe and conduit entry.
4. Exterior anchoring system.
5. Manufacturer's double-flexible entry boot fittings with air stems for sump wall penetrations.
6. Manufacturer: FlexWorks / OPW model PTS-4021, or approved equal.

D. Tracer Tape:
1. Underground tracer tape shall be a minimum of 6 inches wide and labeled, "CAUTION - BURIED FUEL LINE BELOW." Provide tracer tape for buried piping, except under building slabs. Tape shall be a maximum of 24 inches above top of buried pipe and run continuous along the length of pipe.
2. Tracer tape used for non-metallic lines shall be metalized to allow pipe location without excavation. Locate tape approximately 6 inches from surface grade.
3. Manufacturer: Calpico, Inc. Type II (detectable), or approved equal.

E. Flexible Connectors:
1. Corrugated 300 series stainless steel inner core.
2. Braided 300 series stainless steel outer core.
3. Schedule 40 carbon steel or stainless steel MPT ends.
4. Pressure range: 30 inches Hg vacuum to 500 PSIG.
5. Manufacturer: Flexicraft SB1, Metraflex SSTT, or equal.

2.2 THREAD SEALANT

A. Threaded connections are to be sealed with a UPC listed, lead-free, paste thread sealant compatible with the product and piping materials specified.

B. Threaded connections which must be disassembled for periodic maintenance shall be sealed with a UPC listed, lead-free, non-seizing type, paste thread sealant compatible with the product and piping materials specified.

C. Manufacturer: Real-Tuff™, Grrip™, or approved equal.

2.3 VALVES

A. Isolation Valves (Interior Use):
1. Size: 1/2 inch to 2 inch pipe size.
2. Ball type, carbon steel, full port, WOG rated.
3. Chrome plated ball and stem.
4. Blow-out proof, grounded stem.
5. PTFE resilient seats and seals.
6. Threaded connections.
7. Zinc plated handle with rubber handle cover.
8. 3,000 PSIG CWP and 150 PSIG SWP.
9. Manufacturer: Apollo 72-100 series, or approved equal.

B. Isolation Valves (Exterior Use):
1. Size: 1/2 inch to 2 inch pipe size.
2. Ball type, stainless steel, full port, WOG rated.
3. Stainless steel ball and stem.
4. Blow-out proof stem.
5. PTFE resilient seats and seals.
6. Threaded connections.
7. Stainless steel handle with rubber handle cover.
8. 1,000 PSIG CWP and 150 PSIG SWP.
9. Manufacturer: Apollo 76F-100-A series, or approved equal.

C. Check Valves:
1. Size: 1/2 inch to 2 inch pipe size.
2. Screwed cap, Y pattern, swing type, malleable iron body, WOG rated.
3. Vertical or horizontal installation.
4. Manufacturer: Crane No. 346-1/2, threaded, 300SWP/l000CWP or approved equal.

D. Fusible Valves:
1. UL listed.
2. Bronze body.
3. Automatic shutting at 165 degrees F.
4. Self-adjusting stuffing box.
5. Backseat feature.
6. Threaded, flared or combination fittings.
7. Manufacturer: Firomatic, Fusomatic, Morrison Brothers, or approved equal.

E. Anti-Siphon Valves:
1. Body constructed of stainless steel, aluminum, or ductile iron with corrosion resistant coating.
2. Stainless steel or aluminum trim.
3. Seals and seats compatible with fuel oil.
4. Internal relief valve for thermal expansion protection.
5. Threaded connections.
6. Coordinate valve selection with field conditions for proper head pressure range. Estimated height of anti-siphon valve to low point of the underground piping is approximately 12 feet.
7. Provide priming tees as required for system priming.
8. Manufacturer: Morrison Brothers, Franklin Fueling Systems, Clay and Bailey, or approved equal.

2.4 LEAK DETECTION SYSTEM

A. General: Provide gauging and leak detection alarm panel with transition sump leak detection sensor. Automatic monitoring of leak and liquid detection. Provide fittings and accessories for a complete system. System to include the following features:
1. Containment Sump Sensor: Non-discriminating float/magnetic reed switch operation, for liquid detection in sump. Activates if more than 1.84 inches of liquid is present. U.L. listed. Veeder-Root product 794380-208, or approved equal.
2. Capable of connection to building automation system (BAS).

B. System Manufacturer: Veeder-Root, or approved equal.

2.5 REMOTE FUEL OIL PUMP PACKAGE

A. Provide remote fuel oil duplex pump package with controls compatible with the generator belly tank.
1. NEMA-1 (indoor) prefabricated cabinet for pumping package.
2. Cast iron hydraulic, high lift, low sound, gear supply pump with the performance and electrical characteristics as scheduled. UL listed, with lip seal and TEFC motor.
3. Pump motor starter with overload relay.
4. Pump motor disconnect with door handle interlock.
5. Pump controls, including control panel disconnect switch, pump running indicator, pump “Run-Off-Automatic” mode selector switch, call for fuel input.
6. Control power transformer (as required).
7. Wye-strainers.
8. Pump inlet and outlet ball type shut-off valves.
9. Priming tee and check valve assembly.
10. Pressure relief valve.
11. Containment sump.
12. Containment leak alarm.

B. Manufacturer: Simplex SPS25-SD or approved equal.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Product Transfer Piping:
   1. Install piping as per drawings, coordinate with field conditions.
   2. Grade piping runs at a minimum slope of 1/8 inch per foot to drain back to main fuel storage tanks.

B. Tank Connections: Terminate fuel oil supply and return lines at threaded tank bosses as shown.

C. Above ground and interior fuel oil piping:
   1. Provide socket welded steel fuel piping routed as shown.
   2. Support piping (including trench mounted piping) with Unistrut or equal, pre-engineered mechanic support system. Provide rubber inserts provided by the manufacturer at each pipe clamp.
   3. Insulate interior fuel oil supply piping from fuel transfer pumps to belly tank with 1/2 inch thick (minimum) fiberglass pipe insulation with full vapor barrier to prevent condensation.

D. Below ground fuel oil piping: Install in accordance with manufacturer’s recommendations.

E. Label fuel oil piping with self-adhesive pre-manufactured labels. Labels shall read “FUEL OIL SUPPLY” and “FUEL OIL RETURN” as appropriate in black letters on a yellow background with flow direction arrows. Manufacturer: Marking Services Incorporated (MSI) or equal.

F. Generator Connections:
   1. Provide the final operating connection to fuel oil burning equipment in accordance with the specific equipment manufacturer's installation instructions.
   2. Provide leak tight, sheet metal drip pans with 4 inch raised and rolled rims under any location susceptible to fuel oil leakage.
   3. Coordinate work so that parts commonly supplied with the generator, such as filter assemblies and flexible connections are not unnecessarily ordered twice. Verify that suction lift of factory provided generator fuel pumps is adequate.

G. Electronic leak detection and monitoring systems:
   1. Route all wiring in conduit; coordinate with Division 26 requirements.
   2. Install sensors and monitoring system in accordance with manufacturer’s recommendations.

3.2 FIELD QUALITY CONTROL

A. Air Tightness Testing:
   1. To prevent storage tank over-pressurization during associated fuel pipe pressure testing:
      a. Disconnect product lines to be pressure tested at their storage tank connections and plug exposed tank openings with threaded plugs prior to connection of the pressure source.

b. Upon completion of the pressure test, de-pressurize product lines to ambient pressure, disconnect the pressure source and reassemble product pipes to their appropriate tank connections.

2. Fuel Pipe Testing: Upon completion of the transfer piping installation and prior to backfilling (for underground piping), subject fuel piping (except risers) to a 20 PSIG air tightness test, soaping joints and inspecting for bubbles. If lines have held product, or after backfilling, test lines hydrostatically to 110 percent of operating pressure, but not less than 20 PSIG and not to exceed 60 psig.
   a. Double-wall below grade piping interstitial space air testing: Once the primary pipe pressure stabilizes, apply air pressure into the interstitial space of the flexible piping line not to exceed 10 psig pressure for the interstitial space testing. Test duration shall be minimum 1-hour. Conduct testing in accordance with manufacturer's recommendations.

B. Transfer sump integrity testing: Hydrostatically test all sumps after installation and prior to backfill to check for proper sealing of joints and connections.

C. Documentation. Document field testing to include the following:
1. Test Date and time.
2. Company and Person(s) conducting the test.
3. Test pressure and duration.
4. Contracting Agency witnessing the test.
5. Legible signatures of all parties involved in the test certify that the test was satisfactorily completed as specified and in accordance with the manufacturer's written test procedures as applicable.
6. Submit test documentation in accordance with submittal requirements.

D. Electronic leak detections and monitoring systems:
1. Program and adjust fuel level monitoring and leak detection systems in accordance with manufacturer's recommendations.
2. Test leak detection system upon completion of system and leak sensor installation.

3.3 ADJUSTING

A. Adjust systems in accordance with the manufacturer's written operation instructions.

3.4 CLEANING

A. Clean inside transfer pump enclosures, secondary containment voids and any other accessible, covered spaces prior to initial fuel fill and again prior to substantial completion.

B. Clean exterior piping and equipment surfaces prior to substantial completion.

C. Paint new interior and exposed exterior fuel oil piping with one coat of a suitable rust-inhibiting primer and one final coat of heat-resistant black enamel paint to provide a uniform appearance. Paint piping prior to installing permanent piping clamps so that all piping surfaces are painted.

3.5 SYSTEM STARTUP

A. Startup fuel transfer system as part of generator startup in accordance with the manufacturer's written start-up procedures.

B. Program, calibrate, and startup electronic leak detection and monitoring systems in accordance with manufacturer recommendations.

END OF SECTION 23 1113

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SECTION 23 3700 - AIR OUTLETS AND INLETS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Stationary Louvers.

B. Related Sections:
   1. 20 0000 - Mechanical General Requirements
   2. 20 0529 - Mechanical Hangers and Supports

1.2 REFERENCES

A. Codes and Standards:
   1. See Section 20 0000 - Mechanical General Requirements.
   2. SMACNA HVAC Duct Construction Standards - Metal and Flexible Fourth Edition 2021.
   3. ARI Standard 890-2001 - Air Diffusers and Air Diffuser Assemblies.

1.3 SYSTEM DESCRIPTION

A. Performance Requirements: Provide product performance characteristics as specified or scheduled on drawings.

1.4 PRE-INSTALLATION MEETINGS

A. See Section 20 0000 - Mechanical General Requirements.

1.5 SUBMITTALS:

A. See Section 20 0000 - Mechanical General Requirements for general submittal requirements for the items listed below, supplemented with the additional requirements listed.

B. Product Data:
   1. Louver performance data at operating conditions.
   2. Submit color selections for louvers from manufacturer’s color selection chart.
   3. Submit color selections for louvers which match exterior architectural wall panels and existing to remain louvers.

C. Shop Drawings:
   1. This Section shop drawings to be submitted under Section 20 0000 - Mechanical General Requirements.
   2. Include the following information on scaled shop drawings:
      a. Louver locations with dimensions.
      b. Louver penetration detail which clearly shows wall type, louver frame type, duct connection method, sealant and or gasket locations and drainage path.

D. Test and Evaluation Reports:

1. Louver plenum water tightness test: Submit written certification that louver plenums have been satisfactorily tested and have been verified water-tight prior to insulating plenums.
2. Refer to louver test under Part 3 below.

E. Installation, Operation and Maintenance (IO&M) Manuals.

1.6 CLOSEOUT SUBMITTALS:

A. See Section 20 0000 - Mechanical General Requirements.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. See Section 20 0000 - Mechanical General Requirements.

1.8 QUALITY ASSURANCE:

A. See Section 20 0000 - Mechanical General Requirements.

1.9 DELIVERY, STORAGE AND HANDLING

A. See Section 20 0000 - Mechanical General Requirements.

1.10 WARRANTY

A. Manufacturer Warranty: See Section 20 0000 - Mechanical General Requirements, for general mechanical warranty requirements.

PART 2 - PRODUCTS

2.1 WALL LOUVERS

A. Manufacturers:
1. Ruskin.
2. Substitution request required.

B. Description:
1. General:
a. 6 inches deep, stationary wall louvers.
b. Horizontal drainable blades (37.5 degree blade angle) with integral downspouts incorporated into frame jamb and mullion design.
c. Frame style designed for installation into wall penetration construction type indicated. See Architectural penetration details to coordinate style types.
d. Louver frame with surfaces designed to accept exterior caulking.
2. Regulatory Requirements:
a. Louvers shall bear the AMCA Certified Ratings label for Water and Air Performance.
b. Manufacturer’s ratings based on testing in accordance with AMCA Publication 511.

C. Performance/Design Criteria:

1. Size and performance as scheduled.
2. Water penetration: 0.01 ounces of water per square foot of free area at 1000 FPM free area velocity.

D. Materials: Heavy gauge extruded aluminum.

E. Finishes:
1. Prime Coat.
2. Standard Finish: Baked enamel (fluoropolymer). Color selected by Architect.
3. Premium Finish: Epoxy. Color selected by Architect.
4. Premium Finish: Kynar®. Color selected by Architect.
5. Anodized Finish: Clear or color. Color selected by Architect.

F. Accessories:
1. Bird Screens: Flattened, expanded aluminum with 1/2 inch mesh pattern. Located on internal side of louver assembly.
2. Extended Sills: Extruded aluminum.

PART 3 - EXECUTION

3.1 PREPARATION

3.2 INSTALLATION

A. General:
1. Install products in compliance with the manufacturer's written installation instructions.
2. Connect air outlets, registers, grilles, and louvers to ventilation duct systems in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible.

B. Wall Louvers:
1. Install wall louvers at the locations shown and in accordance with manufacturer's written installation instructions and details for the specific wall type.
2. Coordinate louver locations, borders and mullion spacing with architectural panels.
3. Install louvers plumb, level, in plane of wall, and in alignment with adjacent work.
4. Seal louver penetrations watertight. Install, seal, and insulate louver ductwork (intake or exhaust/relief plenums) to interior louver frame to prevent condensation or entrained water that enters ductwork from leaking into building. Provide sleeves, special connections and sealant as required to accomplish this requirement.

3.3 REPAIR/RESTORATION

A. Refer to Section 20 0000 - Mechanical General Requirements for general repair/restoration requirements.

3.4 SITE QUALITY CONTROL

A. Site Tests and Inspections: Prior to insulating louver intake and exhaust/relief plenums, with applicable fans shutdown, lightly spray water into louver from building exterior such

that water enters plenums. Verify that the water readily drains out of louver drain holes without pooling and that no visible leakage is present. Repair and retest as necessary until performance requirements are met.

3.5 CLEANING

A. Clean exposed surfaces of air outlets and inlets, with water and mild soap or detergent not harmful to finish, to remove fingerprints and dirt.

END OF SECTION 23 3700

SECTION 25 5000 - BUILDING AUTOMATION SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: This section describes requirements, products, and methods of execution relating to the building automation controls system for the project.

B. Related Sections: Refer to related sections for other technical requirements, products, and methods of execution relating to the controls system for monitoring and control of mechanical systems.
   1. 20 0000 - Mechanical General Requirements
   2. 26 3213 - Engine Generator (Diesel)
   3. Divisions 26, 27 and 28 - Electrical

1.2 REFERENCES

A. Codes and Standards. Perform work in accordance with applicable national, state and local codes to include:
   1. See Section 20 0000 - Mechanical General Requirements.
   2. ANSI-C2, National Electrical Safety Code - NESC.
   3. Underwriters Laboratory (UL) or approved equal.
   4. Institute of Electrical and Electronics Engineers - IEEE.
   5. National Electrical Manufacturers' Association - NEMA.

B. Abbreviations and Acronyms:
   1. Building Automation System (BAS).
   2. Direct Digital Control (DDC).

C. Definitions:
   1. ASHRAE: The American Society of Heating, Refrigerating and Air-Conditioning Engineers.
   2. BACnet: A Data Communication Protocol for Building Automation and Control Networks, ANSI/ASHRAE Standard 135-current edition, developed under the auspices of ASHRAE.
   3. Bridge: A device that routes messages or isolates message traffic to a particular segment, sub-net or domain of the same physical communication media.
   4. Building Automation System (BAS): Collection of sensors, operators, controllers, and interconnecting wiring that control the operation of the building mechanical and electrical systems as described in these specifications.
   5. Field device or field control device: A physical component such as a temperature sensor, pressure sensor, contact, motor operated valve, and motor operated damper. Generally considered to bring only one point to a controller.
   6. Gateway: A hardware/software package that allows communication between dissimilar (“foreign”) systems and different protocols. Gateways are typically custom built, configured, and used only for transmitting and receiving data between different systems. System programming through gateways is not possible within the scope of this definition.
   7. LonTalk: An open protocol for communication developed privately by the Echelon Corporation in Palo Alto, California.

8. Operator workstation: The central personal computer for the user to implement day to day operation of the system.
9. Router: A device for connecting different local-area network segments within a network. Routers that are used between networks with different protocols are limited. Point mapping in this type of router is automatic and requires less than one hour to configure. This device is not capable of storing point map information.
10. TCP/IP (Transmission Control Protocol/Internet Protocol): The communication language or protocol that defines the Internet. TCP/IP can also be used as a communication protocol in private networks.
11. Terminal Unit Controller: A device to control very specific applications such as a VAV box, cabinet unit heater, fan terminal unit and the like. These units may have predefined operating sequences with limited custom programming available. (Also called an “application specific controller”).

1.3 SYSTEM DESCRIPTION

A. Design Requirements:
1. Work to be compatible with, and an extension of existing building automation system (BAS).
2. The completed system shall be integrated such that graphics, reports, and system interfaces from the Operators workstation appears as if there is one system.

B. Performance Requirements:
1. This section specifies the requirements for the BAS to be installed in conjunction with this project.
2. Materials and equipment used shall be standard components, regularly manufactured for this and/or other systems and not custom designed especially for this project. Systems and components shall have been thoroughly tested and proven in actual use for at least two years.
3. Wiring shall be done in accordance with Divisions 26, 27 and 28 of this specification and local and national codes.
4. The Work under this Section includes furnishing and installing wiring, conduit, connectors, terminal strips, and any other equipment required to interface each sensor or control point to the control system.
5. Providing sequences of operation and monitoring described on sheet M4.01.
6. Installation of control instrumentation and hardware necessary for a complete system of controls.
7. Integrating the controls under this Contract with the Owner's HVAC Supervisory System.
8. Commissioning support activities as required in 26 0800 – Electrical Commissioning, including requirements phased commissioning, installation examination and performance test activities, training, and IO&M requirements.
9. System functional requirements include, but are not limited to:
   a. BAS system shall provide all normal and off-normal control functionality without reliance upon PC file server or workstation.
   b. Programming information, graphics, databases, and other information required to restore the entire system in the event of equipment failure or malfunction or human error shall be protected with a centralized back-up system.
   c. Systems shall be designed to maximize multiple-vendor flexibility to replace or modify any portion of the system.

10. Software upgrades for PC and control network operating systems, the supervisory system, web browser, programming/binding tools, etc., without limitation shall be provided at no additional charge for a period of one year after Substantial Completion of the BAS.

1.4 PREINSTALLATION MEETINGS

A. Coordinate installation of the building automation system with trades responsible for portions of this and any other related sections of the Project Manual prior to installation of any components.

1.5 SUBMITTALS

A. Refer to Section 20 0000 - Mechanical General Requirements for general submittal requirements.

B. Product Data:
   1. Provide manufacturer's literature that demonstrates compliance with the manufacturing methods, appurtenances and salient features specified.
   2. Equipment tagging method specifically listing each device and the identification tag to be applied.
   3. Sequence of Operations.
   4. Control Diagrams.
   5. Panel layouts.
   6. Point Summary Report.

C. Shop Drawings:
   1. Control Diagrams.
   2. Panel layouts.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data. The O&M Manuals will consist of the following (Progression from Submittal to O&M Manual takes place using the same binders):
   1. Sequence of Operations.
   2. Riser Diagrams.
   3. Control Diagrams.
   4. Panel layouts.
   5. Point Summary Report.
   6. Enhanced Alarm Report.
   7. Product Data including items reused from existing control system as noted.

1.7 QUALITY ASSURANCE

A. Qualifications:
   1. Manufacturers: Companies specializing in manufacturing the products specified in this section with a minimum of three (3) years documented experience.
   2. Installers: Minimum three (3) years' experience in the installation, programming and start-up of building automaton systems.

3. Testing Agencies: Regulatory requirements for products requiring electrical connection – Listed and classified by Underwriters Laboratories Incorporated, or by a testing firm acceptable to the City of Valdez.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Delivery and Acceptance Requirements:
   1. Verify equipment and associated appurtenances are delivered in original factory packaging/crating and are free from damage and corrosion.
   2. Replace equipment delivered to job site that does not comply with above requirements at no expense to the Owner.

B. Storage and Handling Requirements:
   1. Store products in covered storage area, protected from the elements, outside the general construction area until installed.
   2. Handle items carefully to avoid breaking, chipping, denting, scratching, or other damage.
   3. Replace damaged items with same item in new condition.

1.9 WARRANTY

A. Manufacturer Warranty:
   1. Provide in accordance with Section 20 0000 - General Mechanical Requirements.
   2. Provide maximum 4 hour response time to service/warranty calls from the Owner during the warranty period.

B. Special Warranty:
   1. The warranty shall consist of a commitment by controls contractor to provide, at no cost to the Owner, parts and labor as required to repair or replace such parts of the control system that prove inoperative due to defective materials or installation practices.
   2. The warranty expressly excludes routine service such as instrument calibration.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. LONG Building Technologies (LONG), no substitutions.

2.2 OPERATOR WORKSTATION

A. Use existing.

2.3 PERSONAL COMPUTER OPERATOR WORKSTATION HARDWARE

A. Use existing.

2.4 WORKSTATION OPERATOR INTERFACE

A. Basic Interface Description:

1. Match existing. Coordinate with Owner and Engineer for review and approval of graphical interface screens new or modified under this project.

B. Dynamic Color Graphic Displays:
   1. Create color graphic display for generator enclosure. Point information to be displayed on the graphics shall be provided by the BAS contractor to optimize system performance and analysis and to speed alarm recognition.
   2. Dynamic temperature values, flow values and status indication shall be shown in their actual respective locations and shall automatically update to represent current conditions without operator intervention and without pre-defined screen refresh rates.
   3. Colors shall be used to indicate status and change as the status of the equipment changes. The state colors shall be user definable.

2.5 CONTROL PANELS

A. Terminal Equipment Controllers will be mounted in enclosed control panels with screwed, removable covers.

B. Control devices located in exposed areas subject to outside weather conditions or near circulator pumps (spray due to shaft seal failures) shall be mounted inside weatherproof enclosures. Location of each panel shall be convenient for adjustment service.

C. Nameplates shall be provided beneath each panel face mounted control device describing the function of each device. Nameplates shall have white letters engraved on blue Lamicoid, or approved equal.

D. Control panels shall bear a UL label compatible with the application.

E. Electrical devices within the panel shall be pre-wired to terminal strips, with inter-device wiring within the panel completed prior to installation of the system.

PART 3 - EXECUTION

3.1 INSTALLERS

A. LONG Building Technologies, no substitutions.

3.2 INSTALLATION

A. Special Techniques:
   1. Do not install control devices in locations where they are subject to damage or malfunction due to normally encountered ambient temperatures.
   2. Identification: Permanently tag controllers, switches, relays, thermostats, and actuators for identification using the tagging format shown on the BAS control drawings.
   3. Temperature Sensors:
      a. Temperature sensor assemblies shall be readily accessible and adaptable to each type of application in such manner as to allow for quick, easy replacement and servicing without special tools or skills.
      b. Wall Mounted Sensor and Thermostats:

1). Install wall mounted room sensors at a height of 44 inches above finish floor level.
2). Locate sensors as shown on the Drawings.
3). Provide insulated base for sensors mounted on sheet metal, steel columns or exterior walls. Wire penetrations shall be caulked airtight to prevent thermal convection.

4. Wiring:
   a. Install, connect and wire the items included under this Section. This work includes providing required conduit, wire, fittings, and related wiring accessories. Install wiring in exposed or inaccessible areas in EMT conduit. Plenum-rated cable may be used in concealed, accessible areas only.
   b. Provide wiring between thermostats and unit heater motors, and control and alarm wiring.
   c. Provide conduit and wiring between the BAS panels and the temperature, humidity, or pressure sensing elements, including low voltage control wiring in conduit or plenum-rated cable.
   d. Provide conduit and control wiring for devices specified in this Section.
   e. Provide conduit and signal wiring between motor starters in motor control centers and high and/or low temperature relay contacts and remote relays in BAS panels located in the vicinity of motor control centers.
   f. Provide conduit and wiring between the PC workstation, electrical panels, metering instrumentation, indicating devices, miscellaneous alarm points, remotely operated contactors, and BAS panels, as shown on the drawings or as specified.
   g. Wiring shall be compliant with the Divisions 26, 27 and 28 requirements and the NEC.
   h. Provide electrical wall boxes and conduit sleeves for wall-mounted devices.
   i. Ethernet drop at or near designated BAS control panel(s), and as needed.

B. Interface with Other Work:
   1. The Contractor is responsible to furnish and install complete and operational systems. Coordinate work between subcontractors.
   2. Recommended electrical contractor (Div. 26) provides:
      a. Wiring of power feeds through disconnect starters to electrical motors.
      b. Wiring of any remote start/stop switches and manual or automatic motor speed control devices not furnished by controls contractor.
      c. Stand-alone packaged controls and wiring of stand-alone packaged controls to their remote sensors and devices.

3.3 PROGRAMMING

A. Programming and graphics shall be included to implement the controls sequences on sheet M4.01, and to implement the systems and features included in Facility Services Divisions 20-28. It shall not be necessary for the Contracting Agency to further program the system.

B. Provide licensed copies of software tools and programming aids used to install, develop and troubleshoot the controls system to the Contracting Agency. Assist the Contracting Agency in registering the software in Contracting Agency’s name.

C. Implement the control sequences for the equipment on this project as contained on sheet M4.01.

D. Point identifiers shall be chosen for easy identification of the actual equipment being controlled or monitored. They shall include equipment tag identifiers shown on the drawings, and may include additional characters to identify floor, area, etc. Maintain a listing of identifiers used in this project, with their plain English names. Submit the listing for review and information.

3.4 GRAPHICS

A. Graphical Mechanical Displays: Create graphical displays of major mechanical equipment for this project and install graphics on the PC-based workstations. At a minimum, these graphical displays shall include building floor plans derived from architectural AutoCAD representations and graphical representations of the equipment controlled under this contract.
   1. Plans:
      a. Site Plan: Use existing.
      b. Floor Plans: Update existing floor plans for changes under this project.
   2. Generator Enclosure: Indicate the following information for the fuel oil supply pumps and generator:
      a. Put control points and adjustable set points on the screen.
      b. Define action of dampers and valves (N/O or N/C).
      c. Pumps.
      d. Generator.
      e. Outside air temperature.

B. Use approved designations for room names, spaces, equipment tags, etc.

3.5 SITE QUALITY CONTROL

A. Programming BAS to provide system operation and monitoring in accordance with Sequence of Operation on Drawings and other referenced sections.

3.6 CLOSEOUT ACTIVITIES

A. Demonstration:
   1. Demonstrate the proper operation and control of systems controlled and monitored by the BAS.
   2. The demonstration shall include, but not necessarily be limited to, the following:
      a. Review of the Trend Logs.
      b. Complete and proper operation of control systems including simulations.
      c. Access to devices for required maintenance.
      d. Review of associated graphics.

END OF SECTION 25 5000

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SECTION 26 0000 - ELECTRICAL GENERAL REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 10- Specifications Sections, apply to this Section.

B. This section describes specific requirements, products, and methods of execution, which are typical throughout the electrical work of this project. Additional requirements for the specific systems may modify these requirements.

C. This Section applies to all Division 26 specifications and is part of all other Divisions 26 Sections.

D. Index of Electrical Specifications:
1. 26 0000 - Electrical General Requirements
2. 26 0519 - Low Voltage Electrical Power Conductors and Cables
3. 26 0526 - Grounding and Bonding for Electrical Systems
4. 26 0529 - Hangers and Supports for Electrical Systems
5. 26 0533 - Raceway and Boxes for Electrical Systems
6. 26 0553 - Identification for Electrical Systems
7. 26 0800 - Electrical Commissioning
8. 26 2000 - Low Voltage Transformers
9. 26 2416 - Panelboards
10. 26 2726 - Wiring Devices
11. 26 2800 - Low Voltage Circuit Protective Devices
12. 26 3213 - Engine Generator
13. 26 5000 - Lighting Fixtures

1.2 SCOPE OF WORK

A. General project scope includes providing a replacement diesel fired, Level 1, Emergency Power System (EPS) generator in a sound attenuated, heated, full walk-in arctic enclosure for the Providence Valdez Medical Center (PVMC) which operates as a critical access hospital with normal, life safety, critical, equipment, and optional standby power systems in accordance with NEC Articles 517, 700, and 702. Provide a dry agent fire suppression system within the generator enclosure and fire alarm system signaling and notification devices. Connect the fire suppression system and devices to the existing hospital fire alarm system (Honeywell Notifier).

B. An owner furnished, contractor, installed (OFCI) temporary, portable generator will be utilized to function as a temporary Level 1, emergency power system (EPS) generator for the Providence Valdez Medical Center while the replacement generator is furnished and installed. This temporary, trailerable, generator will connect to an existing manual transfer switch that was recently installed for just this purpose and in accordance with NEC Article 700.3(f).

C. The existing generator will be removed from the maintenance building, its associated maintenance pad removed, and related walls patched and finished where louvers and exhaust stacks penetrate the exterior skin. Related equipment code required clearances will be met after existing generator demolition.

D. Remove the existing clinic generator and associated concrete pad. Intercept related equipment feeder conduit and connect to new generator.

E. The existing 208 Volt, clinic automatic transfer switch (ATS) will be replaced with a new 480-Volt ATS to be installed in the maintenance building. Intercept the normal feed will from existing transformer normal feed.

F. Provide a building automation system (BAS) panel within the generator enclosure, connections to new generator and associated equipment, integration with existing BAS, and required programming. Refer to Specification Section 26 3213.2.7.3.b.

G. Replace the existing generator remote annunciator panel with a new panel at the same location. Provide required conduit and cabling.

H. Electrical scope includes providing the replacement generator, generator enclosure, and other related equipment, other equipment as indicated on the drawings and conduit, conductors, and connections to provide a complete and functional replacement Level 1 EPS at PVMC.

I. A possible installation sequence of equipment provided under this contract is presented in the electrical drawings. The sequence is presented in an effort to minimize downtime and disruption to the hospital to the greatest extent practical. The contractor is encouraged to review and either approve the proposed sequence or he/she may design their own installation sequence and submit it for review and approval prior to construction.

J. The Level 1 Emergency Power Supply (EPS) provided under this contact shall be housed in a full walk-in, sound attenuated, insulated, heated, arctic enclosure as indicated in the drawings and as specified in specification section 26 3213 – engine generator. The enclosure need not be built exactly as depicted in the drawings, but all salient characteristics provided in these Specifications shall be met, and the enclosure shall be suitable for installation in an Alaska town (Valdez) that receives a heavy snow load, and it shall meet all Code requirements for a Level 1, Type 10, Class 96 (with adjacent above ground storage tank) EPS, suitable for a critical access hospital. Provide all required equipment, conduit, wiring, programming, and labor to furnish and install such a system.

1.3 REFERENCES

A. Codes: Perform work in strict accordance with applicable national, state and local codes; including, but not limited to the latest legally enacted editions of the following specifically noted requirements:
   1. NFPA 70, National Electrical Code - NEC.
   2. ANSI-C2, National Electrical Safety Code - NESC.
   3. International Building Code - IBC.
   4. International Fire Code - IFC.

5. Underwriters Laboratory (UL) or approved equal.

B. Standards: Reference to the following standards infers that installation, equipment and material shall be within the limits for which it was designed, tested and approved, in conformance with the current publications and standards of the following organizations:
   1. American National Standards Institute - ANSI.
   2. American Society for Testing and Materials - ASTM.
   3. American Society of Heating Refrigerating and Air Conditioning Engineers - ASHRAE.
   4. Institute of Electrical and Electronics Engineers - IEEE.
   5. Insulated Cable Engineers Association - ICEA.
   6. National Electrical Manufacturers' Association - NEMA.
   7. National Fire Protection Association - NFPA.

1.4 DEFINITIONS

A. "Accessible" means arranged so that an appropriately dressed man, 6 feet-2 inches tall, weighing 250 pounds, may approach the area in question with the tools and products necessary for the work intended and may then position himself to properly and safely perform the task to be accomplished, without disassembly or damage to the surrounding installation.

B. “Authority Having Jurisdiction” is the individual official, board, department, or agency established and authorized by the political subdivision created by law to administer and enforce the provisions of the Code as adopted or amended.

C. "As Specified" denotes a product, system, or installation that:
   1. Includes all the salient characteristics identified in the Drawings and Specifications.
   2. Meets all the requirements of the "Basis of Design"; and
   3. Is produced by a manufacturer listed as acceptable on the Drawings or in the Specifications.

D. "Basis of Design" refers to products around which the design was prepared. Some or all of the particular characteristics of Basis of Design products may be critical to the fit or performance of the completed installation. Such characteristics are often subtle. Where substitutions are made to products that are the Basis of Design, the Contractor is alerted that nominally acceptable substitutions may produce undesirable side effects such as switchboards that no longer fit the space due to increased product dimensions. The Contractor is responsible for resolving all impacts of substitutions. Approval of a substitution request does not relieve the Contractor of complying with the design intent and all Codes.

E. "Contracting Agency" is the City of Valdez as defined in the General Conditions of the Contract.

F. “Demolish” means to permanently remove a component, equipment, or system and it's appurtenances with no intent for reuse and to properly dispose of it.

G. "Furnish" means to purchase material as shown and specified and cart the material to an approved location at the site or elsewhere as noted or agreed to be installed by supporting crafts.

H. "Install" means to set in place and connect, ready for use and in complete and properly operating finished condition, material that has been furnished.

I. “Product” is a generic term that includes materials, equipment, fixtures and any physical item used on the project.

J. "Provide" means furnish all products, labor, subcontracts, and appurtenances required and install to a complete and properly operating, finished condition.

K. “Remove” means to remove a component, equipment, or system and it's appurtenances and either store it for re-installation, reuse, or turn it over to the Contracting Agency.

L. "Rough-in and Connect" means provide an appropriate system connection such as conduit with junction boxes, wiring, switches, disconnects, etc., and wiring connections. Equipment furnished is received, uncrated, assembled, and set in place under the Division in which it is specified.

M. "Serviceable" means arranged so that the component or product in question may be properly removed, and replaced without disassembly, destruction or damage to the surrounding installation. "Serviceable" components shall be "accessible".

N. "Shop Drawings" are dimensioned working construction drawings drawn to scale to show an entire area of work in sufficient detail to demonstrate service and maintenance clearances and complete coordination of all trades.

O. "Substitution" is a product, system or installation that is not by a listed manufacturer or does not conform to all salient characteristics identified in the Contract Documents, but which the Contractor warrants meets all specific requirements listed in the Contract Documents.

P. "System Drawing" is a diagrammatic engineered drawing that shows the interconnection and relationship between products to demonstrate how the products interact to accomplish the function intended. Examples of system drawings include control and instrumentation diagrams, and wiring diagrams. Some drawings, such as dimensioned and complete Fire Suppression Drawings may be both System Drawings and Shop Drawings.

1.5 PERFORMANCE REQUIREMENTS

A. Provide labor, products and services required for the complete installation, checkout and startup of electrical systems shown and specified. Where the work of several crafts is involved, coordinate related work to provide each system in complete and in proper operating order.

B. Lay out the work in advance and avoid conflict with other work in progress. Physical dimensions shall be determined from existing conditions. Verify locations for junction boxes; disconnect switches, stub-ups, etc., for connection to equipment furnished by others, or in other Divisions of this Work.

C. Refer to the “Suggested Coordination Schedule” in Section 20 0000 - Mechanical General Requirements.

D. Cooperate with others involved in the project, with due regard to their work, to promote rapid completion of the entire project.

E. Coordinate installation of panels, equipment, system components, and other products to provide proper service areas and access for items requiring periodic maintenance inspection or replacement.

F. Reference to a specific manufacturer’s product (even as “Basis of Design”) does not necessarily establish acceptability of that product without regard to compliance with all other provisions of these specifications.

G. Local Conditions: The Contractor shall thoroughly familiarize himself with the work as well as the local conditions under which the work is to be performed. Schedule work with regard to seasons, weather, climatic conditions and other local conditions which may affect the progress and quality of the work.

H. Utility Coordination: Coordinate work with the serving utilities (electrical, telephone, cable television, etc.) and provide equipment and installation in accordance with the respective utility requirements. Meet with the serving utilities and coordinate the installation and location of the services. Provide a written statement of approval from each serving utility. Provide trenching from telephone and television stub out locations to property line in accordance with respective utility requirements.

I. Demolition: Coordinate related demolition in support of the project. Restore circuits and systems, which are to remain, but which are affected in any way by demolition Work. Conduct a site visit prior to bid to determine Scope. Refer to Part 3 of this Section for execution requirements.

1.6 SUBMITTALS

A. Refer to Division 10 for general submittal, closeout submittal and product substitution requirements. In addition, prepare Divisions 26 in accordance with the following.

B. Specification section drawings, calculations, and products shall be complete and submitted together in one package.

C. General:
1. The Contracting Agency’s obligation to review submittals and to return them in a timely manner is conditioned upon the prior review and approval of the submittals by the Contractor as required by the Construction Contract.
2. Streamlining: in many instances, the products, reference standards, and other itemized specifications have been listed without verbiage. In these cases, it is implied that the Contractor shall provide the products and perform in accordance with the references listed.
3. Submittal review is for general design and arrangement only and does not relieve the Contractor from any of the requirements of the Contract Documents.
4. Submittals will not be checked for quantity.

5. Submittals will not be exhaustively checked for dimension or fit, or for proper technical design of manufactured equipment. Provision of a complete and satisfactory working installation is the responsibility of the Contractor.
6. Furnish suppliers with the applicable portions of the Contract Documents and review and verify that the suppliers' submittals clearly represent products which comply with the Contract Documents.
7. Provide electronic submittals. Hard copy submittals will not be permitted except for the final O&M Manual(s) and one (1) hard copy submittal that will be maintained on site during the course of construction.

D. Electronic Submittals:
   1. Provide electronic submittals in PDF format, unless noted otherwise. Maximum file size to be coordinated with the Contracting Agency.
      a. Electronic submittals shall follow the organization and formatting required for paper submittals.
         1). Provide electronic bookmarks within the PDF document in place of tabs and sub-tabs.
         2). If individual PDF files are provided for each product or shop drawing sheet, organize files into folders and name files and folders to correspond with applicable specification sections or drawing titles.
      b. Create PDF documents without security, to be searchable, and to allow copy and paste. For scanned documents, run the optical character recognition (OCR) function to ensure the document is searchable and can be copied and pasted.
      c. Electronic submittals may be transmitted via Email or download from a Contracting Agency approved project or construction Website.

E. Coordination:
   1. Create and maintain a master submittal log for all items submitted in Divisions 26. Submit master submittal log with first submittal.
   2. Prior to submission for approval hold a meeting of all trades to review all shop drawings and submittals. All trades shall cross-check all shop drawings and submittals for conflicts, clearances, physical space allocation and routing, discrepancies, dimensional errors, omissions, contradictions, departures from the Contract requirements, correct electrical/mechanical services and connections, and provisions for commissioning.
   3. Revise, correct, and appropriately annotate submittals prior to submission for approval.
   4. A current copy of approved submittals and the submittal log shall be kept at the job site.

F. Product Submittals
   1. General: This section describes in detail the preparation of electrical product submittals. Submittals not provided as described shall be rejected without review. This procedure is designed to accelerate and improve the accuracy of the technical review process, as well as simplify the preparation of the Installation, Operation, and Maintenance Manuals (IO&Ms) during project closeout.
   2. Submittal Organization:
      a. Organize product submittal information in the same order as the products are specified to simplify the technical review process. Provide a separate tabbed

divider for each Divisions 26 specification section. Provide the typed section number on each tab.

b. Within each section, organize the product information in the same order as the products are specified in Part 2 of each applicable specification section. Provide sub-tabs within each section for each separate product article. Provide the typed product article number on each tab.
c. Provide product submittal information for each product specified in 8-1/2" x 11" format. Fold-out 11" x 17" format is also acceptable.
d. If a particular specified product is being omitted from the product submittal or will not be used for the project, provide a single sheet within the article tab identifying the product and annotated with a brief reason why the product is not being submitted, for example: "NOT USED," NO SUBMITTAL REQUIRED," "TO BE SUBMITTED BY (PROVIDE DATE)," etc. This will inform the reviewer that the product was not overlooked.
e. Partial submittals from individual subcontractors may be provided which cover a particular sub-contractor's scope of work. In this case, arrange partial submittals by system classification such as: LIGHTING, POWER DISTRIBUTION, FIRE ALARM, ACCESS CONTROL SYSTEM, etc. Within each system classification, arrange product submittals by specification section, as described, such that each specification section can easily be reorganized into a master set of Divisions 26 product submittals organized by specification section. This will greatly simplify the preparation of IO&M manuals as described below.
f. Bind product submittal information in 3 inch wide, hard backed, loose leaf, 3 ring binders with clear front and spine insert pockets. Divide information into multiple volumes such that the pages in each binder rest naturally on one side of rings.
g. Provide a master table of contents at the front of each volume which lists the Divisions 26 specification sections and indicates which sections are located within each volume.
h. Provide a table of contents within each section which lists the Part 2 products for that section in the same order as the applicable specification section.
i. Provide identical cover and spine inserts for each product submittal volume.
j. For multiple volumes, label each volume. Include the following typed information on the front cover and spine inserts of each volume:
    1). The Contracting Agency Name
    2). Project Name
    3). Contractor Name
    4). Subcontractor Name preparing the submittal.
    5). Date that the submittal or resubmittal was initiated.
    6). "Electrical Product Submittals", etc. as appropriate.
    7). "Volume 1 of X, Volume 2 of X," etc.

3. Product Information:
    a. Indicate manufacturer's name and address, and local supplier's name, address, phone number.
    b. Indicate each product as "Basis of Design", "As Specified" or as "Proposed Substitution."
    c. Identify Catalog designation and/or model number.
    d. Neatly annotate each salient characteristic and design options of the product to demonstrate compliance with the Contract Documents to include: Scheduled information, drawing information and specified information. Clearly

indicate product deviations from the Contract Documents and mark out non-applicable items on generic “cut-sheets.”
e. Include manufacturer provided dimensioned equipment drawings with mechanical and electrical rough-in connections.
f. Include operation characteristics, performance curves and rated capacities.
g. Include motor characteristics and wiring diagrams for the specific system.
h. Provide basic manufacturer’s installation instructions.
4. Provide coordination data to check protective devices.
5. Provide information required to verify compliance with the short circuit withstand and interrupting ratings, as shown on the Drawings or further stated in these Specifications.
6. Provide certification that all data shown on the Drawings or further stated in these Specifications concerning available short-circuit currents has been confirmed with the serving Electric Utility.
7. Product Substitutions:
a. Clearly indicate both in the section table of contents and on the individual product submittal information each proposed substitution, deviation or change from the product as described in the Contract Documents.
b. Submittal approval does not include substitutions, deviations or changes from the requirements of the Contract Documents unless they are specifically itemized and approved. The term “No Exceptions Taken” will not apply to substitutions, deviations or changes not clearly identified.
c. Provision of a satisfactory working installation of equal quality to the system as described in the Contract Documents shall be the responsibility of the Contractor.
d. Correct unapproved deviations from the Contract Documents discovered in the field as directed by the Contracting Agency at no additional cost to the Owner.

G. System Drawings:
1. Submit System Drawings for dynamic elements/systems of the project which are performance specified to include but not limited to: Fire Alarm Systems, Lightning Protection Systems and stand-alone packaged equipment.
2. Prepare system drawings on full sized sheets of the same size as the original construction drawings.
3. Include with each system a sequence of operation narrative which describes each mode of system operation in sufficient detail to demonstrate compliance with the Contract Documents to the satisfaction of the Contracting Agency.

H. Shop Drawings:
1. General:
a. The Contract Documents are not intended for nor are they suitable for use as shop drawings. Do not use Contract Drawings for direct fabrication or installation of products or equipment.
b. Divisions 26 products and systems shall not be installed without shop drawings approved by the Contracting Agency.
c. Rework, changes, or additional engineering support required as a result of the installation of products and systems prior to the approval of applicable shop drawings by the Contracting Agency shall be provided at the Contractor’s expense.
2. Preparation:

a. Review each Divisions 26 specification section and identify the project's shop drawing requirements.
b. Prepare shop drawings on full sized sheets of the same size as the original construction drawings.
c. Arrange shop drawings to scale, showing dimensions where accuracy of location is necessary for coordination or communication purposes.
d. Incorporate the actual dimensions and configurations of the products and systems approved through the product submittal process into the shop drawings.
e. Provide dimensioned maintenance clearance areas around each product as recommended by the manufacturer.
f. Meet with and coordinate Divisions 26 work with the interrelated work of other trades including Architectural, Civil, Structural, and Mechanical to identify and resolve potential conflicts.
g. Clearly identify and provide recommendations to resolve major conflicts which may impact the design of the systems as shown. Resolve such conflicts during the shop drawing review process.
h. In cases where one or more equipment items in a mechanical or electrical room or space differ in dimensions or configuration from Basis of Design equipment, the working drawing shall show the entire area. The drawing shall be dimensioned to indicate that required aisle ways and maintenance clearances are being maintained to at least the degree shown on the Contract Drawings.
i. Provide shop drawings for all products, systems, system components, and special supports that are not a standard catalog product and which may be fabricated for the Contractor or by the Contractor. In addition, provide shop drawings for:
    1). Electrical and telecommunications rooms and spaces, including all equipment. Demonstrate all required clearances and working spaces are provided.
    2). Routing and interdisciplinary coordination of groups of conduits numbering more than one and over two-inch trade size.
    3). Busways.
    4). Where noted on the drawings.
    5). Where noted in other Divisions 26 sections.
j. Prepare shop drawings using the latest release of AutoCAD.
k. Record Shop Drawings: Provide a copy of the final, corrected, approved shop drawings for the project, updated to show as-built conditions. Drawings shall indicate exact device locations and conduit and wire routing. Prepare drawings using the latest release of AutoCAD and deliver files to the Contracting Agency. Refer to other specification sections for additional system specific requirements.

3. Shop Drawing Submittal:
    a. Submit dimensioned shop drawings as specified to demonstrate proper planning and sequencing of the applicable trades for the installation and arrangement of Divisions 26 with respect to other interrelated work.
    b. Installation conflicts arising from the failure to properly coordinate the work of related trades shall be resolved at the Contractor's expense.

I. Record Drawings

1. General: As the Work progresses, neatly annotate a designated and otherwise unused, set of Division 26 Contract Drawings to show the actual locations and routing of Divisions 26 Work and the terminal connection points to related Work. As a minimum, include the following:
   a. Annotate record drawings to incorporate each applicable addendum.
   b. Annotate record drawings as directed by each applicable Request for Information (RFI) and accepted Change Order Proposal.
   c. Modify record drawings to show actual equipment sizes and locations.
   d. Provide fully dimensioned locations for permanently concealed conduits (i.e. conduit cast in concrete or buried underground/underslab).
   e. Show routing of work in permanently concealed blind spaces within the building.
   f. Maintain drawings in an up-to-date fashion in conjunction with the actual progress of installation. Accurate progress mark-ups shall be always available on-site for examination by the Contracting Agency or his representative.
2. Preparation:
   a. Neatly annotate record drawings to provide clear interpretation to support electronic drafting by a third party.
   b. Tape electronic sketches from addendums and/or RFIs directly to the record drawings as overlays.
   c. Annotate the record drawings in colored pencil using the same symbols and abbreviations as indicated in the Divisions 26 legends and schedules of the Contract Drawings.
      1). Red to add information.
      2). Green to delete information.
      3). Blue to provide additional clarifying information which is not to be drafted.
   d. After submittal to the Contracting Agency, provide additional clarification, information or rework as necessary to support the accurate interpretation and electronic drafting of the record drawings.
3. Submittals:
   a. Provide dimensioned underslab record drawings to the Contracting Agency prior to pouring the slab. For slabs poured in multiple sections, provide record drawings for the applicable slab sections to the Contracting Agency prior to each pour.
   b. Provide complete record drawings for concealed areas (i.e. above lay-in and hard ceilings and inside walls) to the Contracting Agency prior to concealment.
   c. Provide the remaining portion of the record drawings for exposed areas to the Contracting Agency prior to the final completion of the project.
   d. Prepare wiring diagrams for individual special systems as installed. Identify components and show wire and terminal numbers and connections. Include diagrams from the shop drawings and submittals, updated to show as-built condition.

J. Test Certificates:
   1. Review the submittal requirements for Quality Assurance/Control Submittals for each specification section.
   2. Submit copies of design data, test reports, certificates, manufacturer's instructions and field test reports as specified. This information may be included within the Operations and Maintenance (IO&M) Manuals as determined by the Contracting Agency.

K. Operations and Maintenance (IO&M) Manuals:
   1. Provide specific product IO&M information for each section as detailed within each Divisions 26 section.
   2. Begin the preparation of the electrical Operation and Maintenance Manuals with a complete and fully approved set of electrical product submittals organized, annotated and with the product information as indicated within the “Product Submittals” article for each specification section.
   3. Next, augment each individual product submittal with the written installation, operations and maintenance information for each specific product. Obviously, this type of information is not applicable (or available) for bulk commodity or simplistic products such as conduit or equipment tags, etc.
   4. Maintenance information shall include:
      a. Preventive maintenance requirements for each product, including the recommended frequency of performance of each preventive maintenance task.
      b. Instructions for troubleshooting, minor repair and adjustments required for preventive maintenance routines, limited to repairs and adjustments that may be performed without special tools or test equipment and that require no extensive special training or skills.
      c. Information of a maintenance nature covering warranty items, etc., that have not been discussed in the manufacturers’ literature.
      d. Information data for spare and replacement parts for each product and system. Properly identify each part by part number and manufacturer.
      e. Recommended spare parts list.
   5. Organize the Operation and Maintenance Manual information by specification section (not by sub-contractor) with a tabbed divider separating each section. Provide the typed section number on each tab.
   6. Within each section, organize the product information in the same order as the products are specified in Part 2 of each applicable section. Provide sub-tabs within each section for each product. Provide the typed product article number on each tab.
   7. Bind the information in identical, 3 inch wide; hard backed loose leaf 3 ring binders with clear front and spine insert pockets. Divide information into multiple volumes so that the pages in each binder rest naturally on one side of rings.
   8. Provide a master table of contents at the front of each volume which lists the Divisions 26 specification sections and indicates which sections are located within each volume.
   9. Provide a table of contents within each section which lists the Part 2 products for that section in the same order as the applicable specification section.
   10. Provide identical cover and spine inserts for each IO&M manual volume.
   11. For multiple volumes, label each volume.
   12. Include the following typed information on the front cover and spine inserts of each volume:
      a. The Contracting Agency Name.
      b. Project Name.
      c. “Electrical Operations and Maintenance Manual”.
      d. “Volume 1 of X, Volume 2 of X,” etc.
   13. Submit copies of all Operation and Maintenance Manuals in electronic format (Adobe PDF).

1.7 QUALITY ASSURANCE

A. Qualifications: Perform the Work using qualified workmen that are experienced and usually employed in the trade.

B. Product Testing and Certification:
   1. Nationally Recognized Testing Laboratory (NRTL) Labeling: Electrical equipment and conductors shall be “Approved,” “Certified,” “Identified,” or “Listed” and “Labeled” to establish that the electrical equipment is safe, free of electrical shock and fire hazard, and suitable for the purpose for which it is intended to be used. The manufacturer shall have the specific authorization of one of the Occupational Safety and Health Administration (OSHA) approved Nationally Recognized Testing Laboratories (NRTLs) in accordance with the applicable national standards to label the equipment as suitable.
   2. Further details on the specific NRTLs, as well as the product standards that they are specifically recognized to evaluate equipment in accordance with, can be found on the OSHA Web site: http://www.osha.gov/dts/otpca/nrtl/

C. Drawings and Specifications:
   1. The Drawings and specifications are complementary. Do not scale the Drawings. Locations of devices, fixtures, and equipment are approximate unless dimensioned.
   2. The Drawings are partly diagrammatic and do not show precise routing of conduits or exact location of all products, and may not show in minute detail all features of the installation; however, provide all systems complete and in proper operating order.
   3. Drawing symbols used for basic materials, equipment and methods are commonly used by the industry. Special items are identified by a supplementary list of graphical illustrations, or called for on the Drawings or in the specifications.

D. Tests and Inspections:
   1. Schedule, obtain, and pay for permits and fees required by local authorities and by these specifications.
   2. Request for Tests: Notify the Contracting Agency a minimum of two (2) weeks in advance of tests. In the event the Contracting Agency does not witness the test, certify in writing that all specified tests have been made in accordance with the specifications.
   3. Deficiencies: Immediately correct deficiencies that are evidenced during the tests and repeat tests until system is approved. Do not cover or conceal electrical installations until satisfactory tests are made and approved.
   4. Operating Tests: Upon request from the Contracting Agency, place the entire electrical installation and/or any portion thereof, in operation to demonstrate satisfactory operation.
   5. The Contracting Agency may inspect and approve sample installation of systems and equipment prior to general installation of units.
   6. Test Witness: Arrange for the Contracting Agency to witness tests. The Contracting Agency may waive witnessing any specific test at its discretion.
   7. Tests: During final inspection, conduct operating tests for approval. Demonstrate installation to operate satisfactorily in accordance with requirements of Contract Documents. Should any portion of installation fail to meet requirements of Contract Documents, repair or replace items failing to meet requirements until

items can be demonstrated to comply. Have instruments available for measuring light intensities, voltage, and current values and for the demonstration of continuity, grounds, or open circuit conditions. Furnish personnel to assist in taking measurements and making tests. In the event that systems are not complete and fully operational at the time of final inspection, all costs of any subsequent inspections shall be borne by the Contractor at no additional cost to the Owner.

8. Certificate of Completion: Submit at time of request for final inspection, a complete letter in the following format:
   I,_____(Name), of_____(Firm), certify that the electrical work is complete in accordance with Contract Plans and Specifications, and authorized change orders (copies of which are attached hereto) and will be ready for final inspection as of_____(Date). I further certify that the following Specifications requirements have been fulfilled:
   a. Megger readings performed, ____ copies of logs attached.
   b. Operating manuals completed and instruction of operating personnel performed,
      _____ (Date) _____(Signed)
      Owner's Representative
   c. Record document drawings up-to-date, accurate, and ready to deliver to Contracting Agency.
   d. Emergency systems tested and fully operational.
   e. Fire Alarm System tested and fully operational.
   f. Generation System and controls tested and fully operational.
   g. Ground-fault system performance test complete, copies of logs attached.
   h. Other tests required by Specifications have been performed.
   i. Specified Owner training complete.
   j. Systems are fully operational. Project is ready for final inspection.

      SIGNED:_____DATE:_____
      TITLE:_____

1.8 WARRANTY

A. Warranty work shall be promptly coordinated and performed at the Contractor's sole expense. Workmanship, labor and materials (without limitation) in this Division shall be warranted for the longer of the following:
   1. As called for in the General Conditions of the Contract.
   2. For a minimum period of one year from the date of final acceptance.
   3. For the extended warranty period specified in a specific Section under this Division.

B. Where a specific product carries a longer warranty as a standard offering of its manufacturer, extended warranty coverage beyond these requirements shall be retained by the Owner. The Owner will have recourse back to the manufacturer only in these cases, when the warranty as specified in A above has expired.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT FURNISHED IN DIVISION 26

A. Materials furnished and installed in permanent construction shall be American made, new, full-weight, standard in every way, and in first class condition.

B. Materials shall conform to the standards of an organization acceptable to the Authority Having Jurisdiction and concerned with product evaluation that maintains periodic inspection of labeled equipment or materials and by who's labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner. Only materials designed for the purpose employed shall be used.

C. Materials shall be identical with apparatus or equipment that has been in successful operation for at least two years. Materials of similar class or service shall be of one manufacturer.

D. Capacities, sizes, and dimensions given are minimums unless otherwise indicated. Systems, materials and equipment proposed for use on this project shall be subject to review for adequacy and compliance with Contract Documents.

2.2 MATERIALS AND EQUIPMENT FURNISHED IN OTHER DIVISIONS

A. Controls, including conduit, wiring, and control devices required for the operation of systems furnished in other Divisions shall be provided complete under the Division of the Specifications in which the equipment is specified, unless otherwise noted or specified.

B. Work on the project that falls under the jurisdiction of the electrical trade shall be performed by Licensed Electricians in conformance with the electrical specifications.

C. Provide complete power connections to equipment including but not limited to feeders, connections, disconnects and motor running overcurrent protection. Where starters are provided as part of packaged equipment, overcurrent heaters shall be provided under Division 26.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Skilled craftsmen shall install materials and equipment. The norms for execution of the work shall be in conformity with NEC Chapter 3 and the National Electrical Contractors' Association "National Electrical Installation Standards", which herewith is made part of these specifications.

B. Repair surfaces and furnish all required material and labor to maintain fireproof, airtight and waterproof characteristics of the construction.

C. Installation of equipment shall be in accordance with manufacturers' instructions.

3.2 MOUNTING HEIGHTS

A. Mounting height shall be to center of box above finished floor (AFF) as noted below unless otherwise shown or indicated. Other mounting heights are indicated on the Drawings by detail. Specific dimensions AFF are shown adjacent to the symbol. Where devices are shown on architectural elevations, the elevation height shall govern.

Lighting switches	44 inches
Convenience outlets and similar devices	18 inches (see note below)
Convenience outlets in mechanical, boiler rooms and workrooms	44 inches
Panelboards	76 inches to top
Exterior WP convenience outlets	24 inches AFG
Telecommunications Outlets	18 inches (see note below)
Push Button Controls	44 inches
Wall mounted audible and/or visual appliances such as bells, horns, strobes, speakers, and similar signal devices	90 inches (or 6 inches below ceiling height for ceiling heights less than 96 inches)
Manual fire alarm box	44 inches

B. NOTE: In locations where baseboard-heating enclosures are to be installed, outlet-mounting height shall be raised to 6 inches above top of enclosure unless otherwise noted on drawings.

3.3 CUTTING & PATCHING

A. Obtain written permission of the Contracting Agency before cutting or piercing structural members.

B. Wall and floor penetrations shall be in accordance with Section 26 0529 - Hangers and Supports.

C. Holes through existing concrete shall be core drilled. X-ray concrete before core drilling. Do not cut rebar without specific authorization from the Contracting Agency. Seal openings with UL Listed fire resistant resilient sealant.

3.4 VAPOR RETARDER/BARRIER PENETRATIONS

A. Provide solid blocking installed flat at all vapor retarder penetrations. Provide flat blocking at the interior face of the exterior stud wall. Blocking shall be a minimum of 4 inches larger than the penetration. Locate the penetration at the centerline of the flat blocking. Secure vapor retarder to blocking.

B. Seal the interior of raceways penetrating the vapor retarder inside the building. Between point of sealing inside of raceway (typically at junction box or condulet) and vapor retarder penetration, seal conduit joints (connectors and couplings) with vapor retarder tape, paint on sealer or approved means acceptable to Contracting Agency.

C. To reduce thermal transfer and ensure sealing of raceway, PVC or equivalent conduit shall be used where penetrations of building envelope are made above ground where installation of PVC is allowed by NEC.

D. Penetrations of the building vapor retarder/barrier caused by the electrical installation shall be minimized, and where they are required, the opening in the vapor retarder/barrier shall be cut smaller than the penetrating object, so that the penetration

will be a stretch fit. The penetration shall then be securely sealed with vapor barrier tape or an adhesive or caulk compatible with the surfaces being sealed.

E. Boxes (electrical boxes, outlet boxes and telecommunication boxes, etc) penetrating walls with vapor retarder/barriers shall be sealed airtight using STI Series SSP Firestop Putty Pads. Mold putty pads around electrical junction boxes and conduits and behind vapor retarder/barrier to form an airtight seal in accordance with manufacturer's installation instructions.

3.5 FIRE RESISTIVE CONSTRUCTION

A. Where electrical raceways or other features penetrate fire rated building surfaces, they shall maintain the integrity of the building surface being penetrated. This shall be accomplished with either of the following methods:
   1. Sealing the penetration with an approved fire rated caulk or putty.
      a. Fire rated caulk or putty: 3M Fire Barrier Caulk No. CP25, 3M Fire Barrier Moldable Putty, or as approved.
   2. A fire rated assembly enclosing the penetration.
      a. Fire rated assembly: STI EZ Path, or as approved.
   3. Firestopping shall be applied according to the manufacturer's recommendations, and in a manner that is listed by a nationally recognized independent testing agency (such as UL) as preserving the fire time rating of the construction.

3.6 PROTECTIVE FINISHES

A. Take care not to scratch or deface factory finish of electrical apparatus and devices. Repaint all marred or scratched surfaces.

B. Provide hot dip galvanized components for ferrous materials exposed to the weather.

3.7 SEPARATION OF SYSTEMS

A. Conductors and equipment of different voltage levels, frequency, current characteristics (AC & DC) or functions (normal vs. emergency, etc.) shall not share the same raceways or enclosures unless specifically shown on the Drawings or approved by the Contracting Agency, or inherently necessary for correct system function (i.e., at transfer switches, transformers, etc.)

3.8 TESTING

A. Prior to final test, switches, panelboards, devices and fixtures shall be in place.

B. Test electrical systems. They shall be free from short circuits and unintentional grounds.

C. Make changes necessary to balance the actual electrical loads on the complete system. Arrange for balanced conditions of circuits under connected load demands, as contemplated by the normal working conditions. Final load and balance test shall be demonstrated in the presence of the Contracting Agency.

D. Feeder cables and branch circuit cables larger than #4 AWG shall be megger tested prior to final termination. If conductor fails test, replace wiring or correct defect and retest. Perform a 1,000 volt megohm meter test between the following circuit cables in each raceway:
   1. A phase and B phase conductors
   2. A phase and C phase conductors
   3. B phase and C phase conductors
   4. A phase and Grounded (Neutral) conductors
   5. B phase and Grounded (Neutral) conductors
   6. C phase and Grounded (Neutral) conductors
   7. A phase and Equipment Grounding conductors
   8. B phase and Equipment Grounding conductors
   9. C phase and Equipment Grounding conductors
   10. Grounded (Neutral) and Equipment Grounding conductors

E. Feeder cables shall be megger tested prior to final termination. If conductor fails test, replace wiring or correct defect and retest. Perform a 1,000 volt megohm meter test on each circuit cable rated 600 volts between the conductor and ground. Submit logs of megger readings. The insulation resistance between conductors shall not be less than 100 Megohms.

F. Furnish one (1) copy of certified test results to the Contracting Agency prior to final inspection.

3.9 STORAGE AND HANDLING

A. Items shall be delivered and stored in original containers, which shall indicate manufacturer's name, the brand, and the identifying number. Items subject to moisture and/or thermal damage shall be stored in a dry, heated place. Items shall be covered and protected against dirt, water, chemical, ultraviolet (UV) and/or mechanical damage.

3.10 PROTECTION OF MATERIAL AND EQUIPMENT

A. The Contractor shall be responsible for materials and equipment to be installed under this Contract. The Contractor shall make good at his own cost any injury or damage which said materials or equipment may sustain from any source or cause whatsoever before final acceptance.

B. Cover and protect electrical equipment during construction from dust, dirt, debris, overspray, or other construction contaminates.

3.11 CLEANING AND REPAIR

A. Throughout the work, the Contractor shall keep the work area reasonably neat and orderly by frequent periodic cleanups.

B. Prior to substantial completion, clean equipment and systems used during construction.

C. Repair surfaces damaged or impacted by the work. Restore to original condition or better. Retexture surfaces to match surrounding surfaces. Repaint affected surfaces,

with extent of paint to include adjacent surfaces to next wall or other clean break to avoid mismatched finish.

D. As independent parts of the installation are completed, they may be tested and utilized during construction.

3.12 ACCESS DOORS

A. Provide access doors required for access to equipment provided under Division 26. Doors shall be rated for the surrounding construction. Use of access doors shall be minimized, and all locations and cosmetic features shall be submitted for approval in advance.

B. Doors shall be finished to match surrounding surfaces as approved by the Contracting Agency.

3.13 DEMOLITION

A. Examination Prior to Bid: Drawings involving existing conditions are based on building record drawings and/or limited field observation. Conduct a site inspection prior to submission of Bid to become thoroughly familiarized with the Scope of Work. Report discrepancies to Contracting Agency. Submission of bid certifies acceptance of existing conditions.

B. Examination Prior to Start of Demolition: Conduct a thorough site inspection before disturbing existing installation. Verify field measurements and circuiting arrangements. Verify that abandoned wiring and equipment serve only abandoned facilities. Beginning of demolition certifies acceptance of existing conditions.

C. Preparation:
   1. Disconnect electrical systems in walls, floors, ceilings, etc., scheduled for removal.
   2. Coordinate utility service outages with utility companies and Contracting Agency.
   3. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.
   4. Existing Electrical Service: Maintain existing systems in service until new systems are complete and ready for service. Disable system only to make switchovers and connections. Obtain permission from Owner at least 72 hours before partially or completely disabling system. Contractor shall not be entitled to any additional compensation due to inability of Owner to grant an outage at the desired time. Minimize outage duration. Make temporary connections to maintain service in areas adjacent to work area.

D. Demolition of Existing Electrical Work:
   1. Remove, relocate, and extend existing installations to accommodate new construction.
   2. Remove abandoned wiring to source of supply.
   3. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut concealed conduit flush with walls and floors, and patch surfaces.

4. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets, which are not removed. In finished areas, blank covers shall be blank plates matching the device plates specified for new work, unless otherwise noted or specified.
5. Disconnect and remove abandoned panelboards and distribution equipment.
6. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.
7. Disconnect and remove abandoned light fixtures. Remove brackets, stems, hangers, and other accessories.
8. Repair adjacent construction and finishes damaged during demolition and extension work.
9. Maintain access to existing electrical installations that remain active. Modify installation or provide access panels as appropriate.
10. Restore circuits and systems to remain that are affected in any way by demolition Work, such as loads downstream of demolished equipment, switched lighting circuits where selected fixtures are demolished, etc.
11. Salvage or disposal of removed items shall be as noted on the Drawings or as directed by the Contracting Agency. Items, which the Owner does not desire to retain, shall be disposed of at a legal disposal site.

E. Cleaning and Repair:
   1. Clean and repair existing materials and equipment that remain or are to be reused or are affected by this work.

END OF SECTION 26 0000

SECTION 26 0519 - LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes specific requirements, products, and methods of execution relating to wire and cable, 600 volts or less, approved for use on this project.

B. Related Sections
   1. 26 0533 - Raceways and Boxes for Electrical Systems
   2. 26 0553 - Identification for Electrical Systems

1.2 REFERENCES

A. International Electrical Testing Association:
   1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

B. National Fire Protection Association:
   1. NFPA 70 - National Electrical Code.
   2. NFPA 262 - Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces.

1.3 SUBMITTALS

A. Provide submittals for products in accordance with Section 26 0000 - Electrical General Requirements and Division 10.

1.4 QUALITY ASSURANCE

A. Conductors shall be sized according to American Wire Gauge (AWG). Stranding, insulation, rating and geometrical dimensions shall conform to UL and ICEA specifications.

PART 2 - PRODUCTS

2.1 INSULATION TYPES

A. Branch circuit conductors shall be 600 volt insulated, and unless otherwise noted on the Drawings, shall have the following insulation types:
   1. Heated indoor spaces - THHN/THWN or XHHW.
   2. Outdoors, wet locations (such as slab-on-grade), or other cold locations (such as unheated attics) - XHHW.

B. Feeder conductors shall be 600 volt insulated, and unless otherwise noted on the Drawings, shall have the following insulation types
   1. Heated indoor spaces - THHN/THWN or XHHW-2.
   2. Outdoors, wet locations (such as slab-on-grade), or other cold locations (such as unheated attics) - XHHW-2.

C. Nylon-jacketed conductors such as Types THHN or THWN shall not be used in any location subject to ambient temperatures below 20° F.

D. Special applications: Conductors in high temperature locations shall have one of the special insulation types suitable for the use and as permitted by the NEC.

E. Conductors feeding Variable Speed Drives (VSDs) and between VSDs and equipment supplied by the VSDs shall be Type XHHW-2.

2.2 FLEXIBLE CORD

A. Flexible cord shall be Type SO or ST, or for the larger sizes, Type G.

2.3 MISCELLANEOUS

A. Miscellaneous: Miscellaneous wire and cable for special purpose applications and not covered in the categories as indicated above or otherwise specified, shall be as shown on the plans and/or required by the intended use.

2.4 MINIMUM SIZE

A. Unless specified otherwise minimum wire sizes shall be as follows:
   1. #12 AWG for branch circuit wiring.
   2. #20 AWG for low voltage switching circuits if part of an approved cable assembly, #18 AWG otherwise.
   3. #14 AWG for control circuit wiring.
   4. #16 AWG for light fixture whips, refer to specification Section 26 0533 - Raceway and Boxes for Electrical Systems, for maximum fixture whip lengths.

B. On 20A circuits, with one-way conductor lengths measured from panel to farthest receptacle, or center of lighting string (as applicable):
   1. #10 AWG for 120V circuits of 75 feet to 120 feet.
   2. #8 AWG for 120V circuits of 120 feet to 200 feet.
   3. #10 AWG for 277V circuits of 130 feet to 215 feet.
   4. #8 AWG for 277V circuits of 215 feet to 330 feet.

C. Similar oversizing shall apply to circuits of other ratings and/or greater lengths, as necessary to comply with the voltage drop limitations in Part 3 of this Section.

D. Cable or conductors for fire alarm systems and other special systems shall be as described in other sections of the specifications, noted on the drawing, or recommended by the equipment manufacturer, whichever is greater.

2.5 CONDUCTORS

A. Conductors used on this project shall be copper, solid or stranded for wiring #10 and smaller, stranded for #8 and larger.

B. Stranded control, communication, and alarm conductors shall have compression terminations where terminated on screw terminals.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Unless otherwise noted or specified, all conductors shall be run in raceways as specified in Section 26 0533 – Raceways and Boxes for Electrical Systems. Raceways shall be installed as a complete system, free from obstructions, and clean before conductors are installed.

B. Provide conductors from outlet to outlet and splice branch circuit conductors only at outlet or junction boxes. Install all conductors in a single raceway at one time and leave sufficient cable at all fittings or boxes. Keep conductors within the manufacturer's allowable tension. Do not violate minimum bending radii. Lubricants for wire pulling, if used, shall conform to UL requirements for the insulation and raceway material.

C. Do not install Type XHHW conductors in temperatures below -10° F, or the other types in temperatures below +20° F.

D. Conductors that extend below grade shall be suitable for wet locations (type XHHW or XHHW-2). The use of THHN below grade is not acceptable.

3.2 CONDUCTOR SUPPORT

A. Provide conductor supports as recommended by the NEC or cable manufacturer in vertical conduits.

3.3 SPLICING

A. No splicing or joints are permitted in branch circuits except at outlet or accessible junction boxes. Prior to splicing, conductors shall be stripped to the exposed length recommended by the splicing device manufacturer.

B. Utilize compression type solderless connectors when making splices or taps in conductors No. 8 AWG or larger. Provide heat or cold shrink type insulating tubing on splices and tape outer surface continuously with Scotch #88 plastic tape to secure insulation strength equal to that of the conductors joined.

C. Utilize pre-insulated connectors, hard-shell type only, Ideal Industries, Inc., "Wing-Nut" or “Twister Pro” or "In-Sure Push-in Connectors" for splices and taps in conductors No. 10 AWG and smaller in dry locations.

D. Utilize Ideal “Twister DB Plus”, water repellent, sealant filled, UL 486D Listed connector splices and taps in conductors No. 10 AWG and smaller in damp or wet locations.

E. Utilize “Buchanan pre-insulated crimp connectors” on stranded conductors for fire alarm control and alarm circuits.

F. Splices in underground junction boxes, handholes, and manholes are not permitted.

G. Feeder conductors shall be installed with no splices unless otherwise noted on the Drawings. Splices in feeder conductors, where specifically allowed, shall be compression type butt splices.

3.4 CONDUCTOR TERMINATION

A. Provide power and control conductors that terminate on equipment or terminal strips with solderless lugs or T & B "Sta-Kon" terminals.

B. Prior to termination, conductors shall be stripped to the exposed length recommended by the termination device manufacturer.

3.5 CONDUCTOR PHASE COLOR CODING

A. Service, feeder and branch circuit conductors throughout the project secondary electrical system shall be color coded as follows:

208/120 Volts	Phase	480/277 Volts
Black	A	Brown
Red	B	Orange
Blue	C	Yellow
White	Neutral	Gray (see following)
Green	Ground	Green

B. Permanently post conductor color code at each panelboard in accordance with NEC Article 210 and Section 26 0553 – Identification for Electrical Systems

C. Where color coded conductors are not commercially available, colored non-aging, plastic tape may be utilized where permitted by NEC.

D. Where neutrals of different systems exist on the project, neutral conductor identification method shall satisfy the Authority Having Jurisdiction, as to compliance with NEC Article 200. Branch circuit neutral conductors shall have a color stripe matching the corresponding phase conductor where neutral is not shared.

E. Phases in panelboards and similar equipment shall be connected Phase A, B, C from left to right, top to bottom, or front to back.

3.6 DERATING OF CONDUCTORS

A. Derating of conductors shall be per National Electrical Code.

3.7 VOLTAGE DROP

A. The maximum total voltage drop shall not exceed three (3) percent in branch circuits or feeders, for a total of five (5) percent to the farthest outlet based on steady state design load conditions. Wire sizes shown on the Drawings are for minimum ampacity. Wire and conduit sizes shall be increased to limit voltage drop based upon

actual lengths required in the field. Base voltage-drop calculations on NEC Chapter 9, Table 9.

B. Secondary transformer voltage taps may be used to offset voltage drop as long as no load voltage does not exceed 125 volts phase to neutral/ground at transformer secondary.

3.8 OPEN WIRING ABOVE LAY-IN CEILINGS PROHIBITED

A. Wiring for all systems shall be installed in one of the raceway systems listed for this project. Refer to the Drawings and the specific Section under which each system is specified.

3.9 TESTING

A. Feeder and branch circuit cables larger than #4 AWG shall be megger tested prior to final termination in accordance with Section 26 0000 – Electrical General Requirements.

END OF SECTION 26 0519

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SECTION 26 0526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes general requirements, products and methods of execution relating to the furnishing and installation of a complete grounding system as required for this project.

B. Related Sections:
   1. Division 26 sections.

1.2 REFERENCES

A. The publications listed below form a part of this specification. The publications are referred to in the text by basic designation only, latest edition.

NUMBER	TITLE
ANSI/IEEE C2	National Electrical Safety Code
ANSI/NFPA 70	National Electrical Code
IEEE C62.41	Recommended Practice on Surge Voltages in Low-Voltage Surge Protective Devices
IEEE C62.42	Guide for the Application of Gas Tube Arrester Low-Voltage Surge Protective Devices
IEEE Draft P1250 (D4)	Guide on Service to Equipment Sensitive to Momentary Voltage Disturbances
IEEE Std 1100	Recommended Practice for Powering and Grounding Sensitive Electronic Equipment
IEEE Std 142	Recommended Practice for Grounding of Industrial and Commercial Power Systems
IEEE STD 81	Recommended Guide for Measuring Ground Resistance and Potential Gradients in the Earth
NFPA 70	National Electric Code (NEC) - Codebook and Handbook
REA PE-33	(1985) Shield Bonding Connectors
UL 1449 Edition 3	Surge Protective Devices (SPDs)
UL 467 Edition 6	Grounding and Bonding Equipment

1.3 SUBMITTALS

A. Provide submittals for products in accordance with Section 26 0000 - Electrical General Requirements and Division 10. Include copies of catalog cuts, data sheets and other descriptive information for all specified materials.

1.4 MINIMUM REQUIREMENTS

A. The minimum requirements for the system shall conform to Article 250 of the NEC.

1.5 SPECIAL REQUIREMENTS

A. Unless specified elsewhere, the ohmic values for grounds and grounding systems from system to earth shall be as follows:
   1. For grounding metal enclosures and frames for electrical and electronically operated equipment -- 5 ohms maximum.
   2. For grounding systems to which electrical utilization equipment and appliances are connected -- 5 ohms maximum.
   3. For grounding secondary distribution systems, neutrals, noncurrent carrying metal parts associated with distribution systems, and enclosures of electrical equipment not normally within reach of other than authorized and qualified electrical operating and maintenance personnel -- 10 ohms maximum.

PART 2 - PRODUCTS

2.1 EQUIPMENT

A. Grounding conductors, ground rods, and equipment required for ground systems shall be listed for the purpose intended and approved by a Nationally Recognized Testing Laboratory (NRTL), and be in accordance with U.L. 467 and as follows:
   1. Ground rods shall be 3/4 inch by 10 foot copper bonded steel. Erico Eritech or approved equal.
   2. Grounding conductors shall be copper. Unless specified otherwise, raceway for service grounding conductor shall be Schedule 40 PVC.
   3. Grounding conductor for telephone service entrance and telephone/data panels shall be #6 insulated copper, with 6 feet-0 inches slack cable at each panel. Comply with intersystem bonding requirements of NEC.
   4. Grounding conductor for television and radio distribution systems shall be #6 AWG insulated copper. Comply with intersystem bonding requirements of NEC.

2.2 CONNECTIONS

A. Joints in grounding conductors and mats below grade shall be made with exothermic welding process or hydraulically crimped fittings listed for direct burial. Terminations above grade shall be made with solderless lugs, securely bolted in place unless noted otherwise on the Drawings or telecommunications specification sections.

B. Clamps, lugs, connectors, bonding bushings, and other such grounding and bonding items shall be:
   1. Labeled or listed for the purpose.
   2. Shall be made (both body and hardware) of hot dip galvanized steel, bronze, or other corrosion resistant alloy (except bushing throats shall be plastic).
   3. Shall be the products of O-Z/Gedney, T & B, Raco, or accepted equals.
   4. In outdoor, damp, or corrosive environments, metals for these items shall be copper (with or without tin-plating), bronze, or other corrosion resistant alloys only; O-Z/Gedney or accepted equal.

2.3 IDENTIFICATION AND LABELING

A. Grounding conductors shall be labeled in accordance with Specification Section 26 0553.

PART 3 - EXECUTION

3.1 EQUIPMENT GROUND

A. The raceway system shall be bonded in conformity with NEC requirements to provide a continuous ground path. Where required by Code or Ordinance or where called for on the plans an additional grounding conductor shall be provided, sized in conformity with Table 250.122 of the NEC, unless larger size is noted.

B. Provide separate grounding conductor securely bonded and effectively grounded to the enclosures at both ends of all non-metallic raceways and all flexible conduits.

C. Provide an equipment grounding conductor sized in conformity with Table 250.122 of the NEC, unless larger size noted, for new feeder and branch circuit conduits. Where conductors are adjusted in size to compensate for voltage drop, equipment grounding conductors shall be adjusted proportionately according to circular mil area.

D. Refeeding existing feeder/branch circuits that do not have an existing equipment grounding conductor: Bond equipment grounding conductor of new feeder or branch circuit to junction box and new and existing conduits.

3.2 CONCEALED CONNECTIONS

A. Permanent grounding connections, where permitted by the NEC to be concealed, shall not be so concealed until inspected and accepted by the Contracting Agency. Failure to comply with this requirement shall make the Contractor liable for all expenses incurred in the process of re-exposing the connections for inspection, and subsequent repair and patching of the concealing construction, including the work of other trades. The Contractor shall schedule inspection of such connections at least one work week in advance of concealment, and shall not be entitled to any additional compensation or time extension for delays caused by inability of the Contracting Agency's representative to be available at the desired time.

3.3 CORDS AND NONMETALLIC CABLES

A. Unless specifically permitted otherwise, cords and nonmetallic cables shall be furnished with integral Code-sized grounding conductor. Securely bond metal components and effectively ground the entire electrical system.

3.4 EXTERNAL BONDING JUMPERS

A. Not permitted; bonding jumpers shall be run inside the raceways for the circuits they serve.

3.5 SEPARATELY DERIVED SYSTEMS

A. Separately derived systems shall be grounded in accordance with NEC Article 250.30.
   1. System Bonding jumper:
      a. The system bonding jumper shall be sized in accordance with NEC Table 250.102(C)(1). Where the derived phase conductors are larger than 1100 kCMIL copper, the system bonding jumper shall have an area that is not less than 12-1/2 percent of the area of the largest ungrounded phase conductor.
      b. The system bonding jumper shall be used to connect the equipment grounding conductor (EGC) of the separately derived system to the grounded circuit conductor.
      c. The system bonding jumper shall be located within the enclosure of the source of the separately derived system, unless specifically noted otherwise.
   2. Grounding Electrode Conductor:
      a. The grounding electrode conductor shall be sized in accordance with NEC Table 250.66.
      b. The grounding electrode conductor shall be used to connect the system grounded conductor or EGC to a grounding electrode or to a point on the grounding electrode system.
      c. The grounding electrode conductor shall be connected and used to extend the connection to a grounding electrode at any of the following locations in accordance with NEC 250.68(C):
         1). Effectively grounded metal structural frame of a building.
         2). Effectively grounded interior metal water piping located not more than 5 feet from the point of entrance to the building.
         3). Effectively grounded rebar-type concrete-encased electrode, “Ufer Ground”, installed in accordance with NEC 250.52(A)(3) with an additional rebar section extended from its location within the concrete to an accessible location.
   3. Grounding electrode:
      a. The grounding electrode shall be as near as practical to and preferably in the same area as the grounding electrode conductor connection to the system.
      b. The building or structure grounding electrode system shall be used as the grounding electrode for the separately derived system.
   4. Provide termination lugs for the co-located grounded circuit conductor, grounding electrode conductor and system bonding jumper terminations, using Listed compression-type connectors suitable for all conductors landed at each location.

END OF SECTION 26 0526

SECTION 26 0529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes:
   1. General hanger and support requirements for electrical equipment, conduit and cable trays not required to be vibration and/or seismically controlled.
   2. Penetrations, sleeves and seals.

B. Products installed but not supplied under this Section:
   1. Vibration Isolation and Seismic Control anchoring and support systems furnished under Section 20 0548 – Mechanical Vibration and Seismic Control.

C. Related Sections:
   1. 20 0548 - Mechanical Vibration and Seismic Control
   2. 26 0000 - Electrical General Requirements
   3. 26 0533 - Raceways and Boxes for Electrical Systems
   4. 26 2200 - Low Voltage Transformers
   5. 26 2413 - Switchboards
   6. 26 2416 - Panelboards
   7. 26 2900 - Low Voltage Controllers
   8. 26 3213 - Engine Generator
   9. 26 5000 - Lighting Fixtures

1.2 REFERENCES

A. NFPA 70: National Electrical Code (NEC) latest legally enacted edition.

1.3 DESCRIPTION

A. Provide general hanger, support and seismic support requirements for electrical equipment, conduit and cable trays and other nonstructural equipment in accordance with the manufacture’s written installation instructions and NFPA 70.

1.4 SUBMITTALS

A. See Section 26 0000 - General Electrical Requirements for general submittal requirements

B. Product Data:
   1. Provide manufacturers catalog data for each product specified. Indicate channel gauge and maximum load capacities of the selected products.
   2. Manufacturer’s Installation Instructions: Include assembly instructions, recommended parts and special procedures as required.

C. Design Requirements:
   1. Obtain the services of a specialized and qualified design firm (Seismic Design Firm) to design the overall vibration and seismic control restraint systems for the

non-structural elements of this Project in accordance with the International Building Code (IBC) Chapters 16 and 17.

2. Duties of the Seismic Design Firm include:
   a. Specialized design, product review, and product selection.
   b. Site verification and written certification that the installed vibration and seismic control and related products and systems meet the specialized design requirements.
3. Exceptions.
   a. Pre-engineered seismically designed and certified assemblies in accordance with IBC, accompanied with written “Certificate of Compliance” acceptable to the Authority Having Jurisdiction, AHJ.
   b. Pre-manufactured equipment designed in accordance with IBC accompanied with written “Certificate of Compliance” acceptable to the Authority Having Jurisdiction.

D. Shop Drawings:
1. Provide a single shop drawing submittal which integrates the shop drawing requirements of this section along with the additional requirements of Section 20 0548 – Mechanical Vibration and Seismic Control.
2. Provide shop drawings to include the following:
   a. Housekeeping pads (coordinated with approved electrical equipment footprints and anchor point locations).
   b. Pre-engineered and field fabricated support system details for each installation location. To include but not limited to:
      1). Raceway and lighting fixture support.
      2). Conduit and control panel support.
      3). Trapeze hangers.
      4). Electrical equipment support.
   c. Equipment locations and conduit and cable tray routing coordinated with mechanical equipment and systems. Indicate routing height above finished floor.
   d. Indicate hanger type/attachment method and hanger spacing intervals.

E. Project Record Information:
1. Indicate installed locations of hangers and supports on project as-built shop drawings.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Acceptance at Site:
1. Verify products are delivered in original factory packaging and are free from damage and corrosion.
2. Replace equipment delivered to job site that does not comply with above requirements at no expense to the Owner.

B. Storage and Protection:
1. Store products in covered storage area, protected from the elements, outside the general construction area until installed.
2. Handle items to avoid damage.
3. Replace damaged items with same item in new condition.

1.6 WARRANTY

A. Provide warranty in accordance with Section 26 0000 - General Electrical Requirements.

PART 2 - PRODUCTS

2.1 PRE-ENGINEERED SUPPORT SYSTEMS

A. Manufacturers:
   1. Unistrut
   2. Super-Strut
   3. B-Line
   4. K-Line
   5. Erico.

B. Material:
   1. Cold worked steel.

C. Finish:
   1. Heated indoor areas: Pre-galvanized zinc coating.
   2. Outdoor areas: Hot dipped galvanized finish. In addition, coat hot dipped galvanized finish channel field cuts with zinc rich paint provided by the support system manufacturer.
   3. Painted areas: Paintable galvanizing or phosphatized and primed.
   4. Surface metal raceways: U.L. Listed epoxy coating.

D. Channel:
   1. Standard Size: 1-5/8 inch x 1-5/8 inch. Gauge thickness as required for attached load.
   2. Standard Hole Pattern: Slotted. Provide solid channel in exposed public areas.

E. Nuts and Hardware:
   1. Channel nuts: Hardened steel (ASTM-A675 and ASTM A36).
   2. Bolts, screws and nuts: Hardened steel (ASTM-A307, ASTM A563 and SAE J429).
   3. Finish: Electroplated zinc.

F. Fittings: Plate steel (ASTM A635). Epoxy or electroplated zinc coating.

G. Electrical Accessories: Provide accessories from the support system manufacturer designed for the specific equipment to be supported to include but not limited to:
   1. Lighting fixture hangers.
   2. Outlet box adapters.
   3. Snap-in closures.
   4. Conduit connection plates.
   5. Junction box adapters.
   6. Strut joiners.
   7. "Caddy" fasteners are permitted for support of conduit to concealed metal studs and for conduit concealed above suspended acoustical ceilings.

2.2 SLEEVES, ACOUSTICAL SEALS AND FIRE-STOPPING

A. See Part 3 - PENETRATIONS.

B. Sleeves for pipes through fire rated and fire resistive floors and walls, and fire proofing: UL listed prefabricated fire rated sleeves and seals.

2.3 WALL/FLOOR PENETRATION WATER SEALS

A. Mechanical seal consisting of interlocking synthetic rubber links shaped to continuously fill the annular space between the conduit and the wall opening.

B. EPDM seals.

C. 316 Stainless steel bolts and nuts.

D. Hot-dipped galvanized or coated sleeve with full water stop flange with continuous weld on both sides.

E. Manufacturer: Metraflex, Thunderline, Crouse-Hinds, or pre-approved equal.

PART 3 - EXECUTION

3.1 PREPARATION

A. Prior to installation, prepare detailed shop drawings of the planned installation of hanger and support products specified by this section. Coordinate the location, type and size of hangers and supports, housekeeping pads (thickness/perimeter overhang dimensions) and roof curbs with Architectural and Structural elements utilizing the shop drawing review process.

B. Submit shop drawings required by this section coordinated with the seismic design and associated shop drawings required by Section 20 0548 – Mechanical Vibration and Seismic Control – Mechanical Vibration and Seismic Control as a single submittal.

C. Do not install hangers and supports without approved shop drawings.

3.2 GENERAL INSTALLATION

A. Install hangers and supports in accordance with manufacturer’s instructions, applicable Code requirements (NFPA 70) and approved shop drawings.

B. See Section 26 0000 – Electrical General Requirements for electrical equipment wall mounting heights.

3.3 VIBRATION AND SEISMIC CONTROL PRODUCT INSTALLATION

A. Install vibration isolators, seismic control and wind restraint systems in strict compliance with the manufacturer’s written instructions and certified and approved application engineering installation drawings and details.

3.4 INSERT AND ATTACHMENT INSTALLATION

A. Inserts
   1. Provide inserts or cast-in-place channels for placement in concrete formwork.
   2. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
   3. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.
   4. Use expansion type anchor bolts with pre-cast concrete including concrete masonry units within loading limits of the pre-cast material and anchor bolt manufacturer's recommendations.
   5. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut recessed into and grouted flush with slab.
   6. Plastic screw inserts and caulked lead inserts are prohibited, except for mounting instructions and control diagrams.

B. Attach electrical equipment to structure as follows:
   1. Hollow masonry: Toggle bolts.
   2. Solid masonry and concrete: Preset inserts or expansion bolts.
   3. Structural steel: Beam clamps which engage both sides of structural member or have retaining clips or other approved means for positive engagement.
   4. Metal surfaces: Machine screws, bolts or welding.
   5. Wood construction: Wood or sheet metal screws. Bugle head drywall screws or deck screws are not allowed.
   6. Do not use powder actuated fasteners for anchorage in tension applications. Obtain written permission from the Owner prior to using any type of powder powered studs.
   7. Attachment to plaster or gypsum board (sheet rock) not approved. Equipment shall be attached to or supported from structure.

3.5 RACEWAY INSTALLATION

A. Support raceways using approved types of wall brackets, ceiling trapeze hangers or malleable iron straps utilizing attachment methods described above. "Perforated plumber’s strap" is not permitted as a means of support.

B. Support raceways independent of ceiling systems, piping and ductwork. Exceptions: Lighting fixtures and outlet boxes (i.e. ceiling speaker boxes) specifically designed for attachment to suspended ceiling systems

C. Support EMT conduit (1-1/2 inch and smaller/dry locations) using hanger rods with spring steel fasteners.

D. Support cable trays and multi-conduit runs independently from other support systems utilizing double hanger rods at each support point.

3.6 LIGHTING INSTALLATION

A. General

1. Attach safety hanger wires to lighting fixtures such that in event of a ceiling suspension system failure, no part of the fixture will drop more than 6 inches below normal ceiling height. Secure each end of each wire with a minimum of three tight wraps.

B. Fixtures (greater than 20 pounds/non-suspended ceiling applications)
   1. Support lighting fixtures from structural members capable of supporting the total weight of the fixture and independent from electrical wiring system. Attach to steel members using approved beam clamps and rods.

3.7 PENETRATIONS

A. Coordinate electrical penetrations with architectural, structural and mechanical construction details prior to installation. Set sleeves in position in concrete formwork. Provide reinforcement around sleeves as required.

B. Provide compatible materials, fasteners, adhesives, sealants, and other products required for proper installation.

C. Penetrations through roof, exterior walls and floors shall be weather and water tight (see floor penetration seals).

D. Firestopping: Provide UL rated firestopping assemblies for rated roof, wall and floor penetrations in accordance with Division 7.

E. Conduit Sleeves
   1. Provide sleeves for conduit passing through floors, walls, ceilings, or roofs.
      a. Fabricate sleeves in non-load bearing walls from 20 gauge galvanized sheet steel conforming to ASTM A 924/A 924M.
      b. Fabricate sleeves in load bearing walls from standard weight galvanized steel pipe conforming to ASTM A 53/A 53M.
      c. Provide 1/2 inch clearance between conduit and sleeve opening.
   2. Provide escutcheons for conduit passing through walls, floors and ceilings in finished areas, below counters and inside closets and casework subject to view when doors are open. Size escutcheons to cover sleeves. Secure escutcheons in position.

F. Acoustical Seals
   1. Monolithic sound walls (i.e. poured concrete or masonry): Provide wall sleeve with approximately one-inch annular space around conduit. Pack annular space with backer rod or acoustical filler as specified in Division 7. Allow a 1 inch recess at each end of sleeve. Caulk sleeve flush with flexible sealant or fire-stopping material as specified in Division 7.
   2. Where acoustical wall is a two component type, such as a staggered or double stud partition, treat each component as a separate wall. Pack and seal each half of penetration sleeve as previously specified, except that only the exposed end of each sleeve portion shall be caulked with sealant or firestop. Provide adequate separation between each sleeve.

G. Wall Penetration Seals

1. Provide pre-engineered wall penetration water seal systems for exterior wall penetrations.
2. Select appropriate wall penetration sealing systems based on conduit material and nominal conduit size in accordance with the manufacturer's selection charts.
3. Install conduit and sealing system prior to waterproofing the wall. Grout void between water seal and outside face of foundation wall to provide continuous bearing surface for waterproofing fabric.

H. Floor Penetration Seals
1. Provide pre-engineered floor penetration water seal systems for conduit floor penetrations in rooms where a pipe leak/failure could result in water damage to adjacent spaces (i.e. mechanical rooms located above the ground floor or basement) and other areas as noted.
2. Extend conduit floor penetration sleeves 2 inches above finished floor.

END OF SECTION 26 0529

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SECTION 26 0533 - RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes specific requirements, products, and methods of execution relating to conduit, conduit fittings, surface raceways, multi-outlet assemblies, wireways, outlet boxes, pull boxes and junction boxes approved for use on this project. Type, size and installation methods shall be as shown on Drawings, required by Code and/or specified in this Section.

B. Related Sections
1. 26 0519 – Low Voltage Electrical Power Conductors and Cables
2. 26 0526 – Grounding and Bonding for Electrical Systems
3. 26 0529 – Hangers and Supports for Electrical Systems

1.2 REFERENCES

A. American National Standards Institute/Underwriters Laboratory
1. ANSI C80.1 – Electrical Rigid Steel Conduit
2. ANSI C80.3 – Steel Electrical Metallic Tubing
3. ANSI C80.6 – Electrical Intermediate Metal Conduit
4. ANSI/UL 1 – Flexible Metal Conduit
5. ANSI/UL 6 – Electrical Rigid Metal Conduit – Steel
6. UL 6A – Standard for Electrical Rigid Metal Conduit – Aluminum and Stainless Steel
7. UL 360 – Standard for Liquid Tight Flexible Steel Conduit
8. UL 514A – Metallic Outlet Boxes
9. UL 514B – Conduit, Tubing and Cable Fittings
10. UL 651 – Standard for Schedule 40 and 80 Rigid PVC Conduit and Fittings
11. UL 651A – Type EB and A Rigid PVC Conduit and HDPE Conduit
12. ANSI/UL 651B – Standard for Continuous Length HDPE Conduit
13. ANSI/UL 797 – Electrical Metallic Tubing – Steel
14. ANSI/UL 1242 – Electrical Metal Intermediate Conduit – Steel

B. National Electrical Manufacturers Association
1. NEMA 250 – Enclosures for Electrical Equipment (1000 Volts Maximum)
2. NEMA FB 1 – Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing and Cable
3. NEMA OS 1 – Sheet Steel Outlet Boxes, Device Boxes, Covers and Box Supports
4. NEMA RN 1 – Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit
5. NEMA TC 2 – Electrical Polyvinyl Chloride (PVC) Conduit
6. NEMA TC 3 – Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing
7. NEMA WD 6 - Wiring Device Configurations.

C. NECA (National Electrical Contractors Association) Standard of Installation.

1.3 SUBMITTALS

A. Provide submittals for products in accordance with Section 26 0000 - Electrical General Requirements and Division 10.

B. Product Data: Provide dimensions, knockout sizes and locations, materials, fabrication details, surface raceway finishes (custom factory pre-painting, color as selected by architect), and accessories.

C. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, and installation of Product.

1.4 QUALITY ASSURANCE

A. Raceways and boxes shall be standard types and sizes as manufactured by a nationally recognized manufacturer of this type of materials and be in conformity with applicable standards and UL listings.

B. Surface raceways shall be of the latest approved design as manufactured by a nationally recognized manufacturer and shall be listed by the Underwriters' Laboratory and bear the UL label.

C. Pull and junction boxes 50 cubic inches and smaller shall conform to specifications for outlet boxes.

D. Pull and junction boxes larger than 50 cubic inches shall conform to U.L. Standard 50, Cabinets and Boxes.

E. Perform work in accordance with NECA Standard of Installation.

F. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

PART 2 - PRODUCTS

2.1 CONDUIT

A. Conduit types specifically approved for use on this project shall be of the following types only:
   1. Galvanized rigid metal conduit - GRC or RMC.
   2. Intermediate metal conduit - IMC.
   3. Electrical metallic tubing - EMT.
   4. Polyvinyl chloride conduit - PVC: May be Schedule 40 or Schedule 80, except where Schedule 80 is specifically noted or specified.
   5. Flexible metal (steel) conduit - FMC or flex: In short lengths as specifically permitted.
   6. Liquid-tight flexible steel conduit - LFMC: In short lengths as specifically permitted.
   7. Extreme temperature liquid-tight flexible steel conduit - AT: Shall have temperature rating of -67 ° F to +220 ° F, Liquatite “ATLA”, or as approved.

8. Types specifically identified on the Drawings or in the Specifications
9. Other products not specifically approved such as ENT, MC Cable, etc., are not allowed.
10. Manufactured wiring systems are not approved.

2.2 CONDUIT FITTINGS

A. Fittings utilized with rigid steel and IMC conduit shall be galvanized steel or iron or copper-free aluminum and shall be threaded. Conduit bushings shall be provided and shall be of the insulated types. Where grounding bushings are required, provide insulated grounding bushings with integral pressure type ground lugs, Thomas & Betts “Blackjack”, or as approved.

B. Couplings and connectors for EMT shall be made of steel or malleable iron. Die-cast products shall not be used. Connectors shall have insulated throats.

C. Fittings for PVC 40 shall be polyvinyl chloride, installed using PVC solvent to form a watertight joint, except elbows (including bends exceeding 30°) shall be metallic. These metallic elbows shall be of the type specified in this section for the environment in which they are to be installed. Large radius sweeps are not subject to the requirement for metallic elbows.

D. Fittings for flexible metal conduit shall be steel or malleable iron only. Throats shall be insulated.

E. Fittings for liquid-tight flexible conduit shall be steel or malleable iron, of a type incorporating a threaded grounding cone, nylon or plastic compression ring, and a tightening gland, providing a low resistance ground connection. Throats shall be insulated.

2.3 CAST BOXES

A. Cast boxes with threaded hubs, external mounting brackets or holes, and gasketed covers shall be used in the following locations:
1. Exterior locations.
2. Wet or damp locations.
3. Shops, mechanical rooms, pump stations, bag makeup areas, etc., where exposed to mechanical damage.
4. Exposed interior locations below 48 inch above floor where subject to damage.
5. Where shown on Drawings.

2.4 STEEL BOXES

A. Galvanized pressed steel boxes may be used wherever they are permitted by code, except in areas indicated in the preceding paragraph.

B. Flush mounted, pressed steel boxes shall be equipped with external mounting brackets for attachment to framing members with screws or nails.

C. Ceiling boxes and wall boxes for bracket lights shall be not less than 4 inch in diameter by 1 ¼ inch deep and shall have 3/8-inch malleable iron fixture studs if required.

D. Grounding Screw: All stamped steel boxes shall have a drilled and tapped hole in the back of the box for a grounding screw.

E. Accessories: Box covers, extension rings, bases, hanger bars, etc., for use in connection with the installation, shall be approved for use in the various applications.

2.5 TELECOMMUNICATION OR BUILDING AUTOMATION SYSTEM OUTLET BOXES

A. Boxes for telecommunication or Building Automation System (BAS) outlets shall be a minimum of 4 inches square by 2 1/8 inches deep.

B. Device rings for telecommunication outlets shall be double-gang, minimum 5/8 inches deep, to provide a minimum internal finished depth of 2 3/4 inches.

2.6 INDOOR PULL AND JUNCTION BOXES

A. Indoor pull and junction boxes shall conform to Article 314 of the NEC and the following requirements:
   1. Sheet metal boxes are approved for use in all dry, interior, nonhazardous locations.
   2. Boxes installed in wet locations shall be NEMA 3R, unless otherwise noted.
   3. Furnish such boxes, whether shown or not, in order to conform to requirements for maximum pulling length and maximum number of bends allowed.
   4. Special boxes, as noted on the Drawings, shall be installed in areas of specific service and/or hazards.

B. Junction box extension rings will not be accepted on new boxes. Appropriate size boxes shall be used for each application.

2.7 UNDERGROUND PULL AND JUNCTION BOXES

A. Boxes set in ground shall be either precast concrete or cast iron. Covers shall be galvanized steel or cast iron, and shall be bonded to the grounding system with a stranded grounding conductor secured with a grounding lug. Provide sufficient slack to allow removal of the cover and normal working access.

B. Underground concrete pull boxes installed in or adjacent to traffic areas shall be constructed to withstand AASHTO HS-20 wheel loading.

2.8 OUTDOOR ABOVE-GROUND PULL AND JUNCTION BOXES

A. Boxes exposed to rain or installed in wet locations shall be NEMA 4X unless otherwise noted.

B. Outdoor pull and junction boxes and conduit bodies for use with galvanized conduits shall be made of galvanized ferrous metal or cast aluminum, with integral threaded hubs or Myers-type weathertight hubs of matching composition and finish.

C. Furnish such boxes, whether shown or not, in order to conform to requirements for maximum pulling length and maximum number of bends allowed.

PART 3 - EXECUTION

3.1 CONDUIT USES PERMITTED

A. Conduits shall be of the sizes shown on the Drawings or as required by the NEC, whichever is larger. Base sizes on using type XHHW for wire sizes #6 and smaller and type THHN/THWN wire for wire sizes #4 and larger. Unless otherwise noted, conduits installed in the following locations shall be of the types specifically identified only:
   1. Underground or encased in concrete - rigid steel, PVC-40, or IMC.
   2. Outdoors aboveground or damp locations - RMC, IMC or extreme temperature liquid-tight flexible steel conduit (where required).
   3. Dry indoor locations concealed or exposed - RMC, EMT (where not susceptible to physical damage), flexible conduit where necessary, or IMC.
   4. Indoor locations, exposed, where susceptible to physical damage - RMC or IMC.
   5. Motor and equipment flexible connections - LFMC or FMC (when installed in plenum spaces).

3.2 RACEWAY INSTALLATION METHODS - GENERAL

A. Concealed raceways: In occupied areas, conduit and raceways shall be concealed unless specifically noted otherwise. In service spaces (mechanical equipment rooms, electrical rooms, storage closets, etc.), approved raceways may be surface-mounted for connection to equipment in exposed surface mounted locations and in exterior locations as noted on the Drawings.

B. Concealed raceways shall be routed as directly as possible with a minimum of bends. Concealed raceways above lay-in ceilings shall be installed a minimum of 12 inches above the ceiling grid.

C. Exposed Raceways: Where allowed by this Specification or specifically noted on the Drawings, raceways may be mounted on the surface of walls, ceilings and other surfaces. Exposed raceways shall comply with the following:
   1. Exposed raceways shall be run parallel or perpendicular to building lines and bent symmetrically or made up with standard elbows or fittings.
   2. Surface-mounted conduit, junction boxes, pull boxes, outlet boxes, etc. installed in finished areas shall be painted to match the surrounding surfaces.
   3. Connectors and fittings for raceways and conduits installed on the surface in exterior locations shall be suitable for and Listed for use in a wet location.
   4. Conduits installed in exterior locations shall be painted to match the exterior finish of the building surface to which they are attached. This shall include conduits attached via racks and stand-off brackets or attached directly to the surface.

D. There shall not be more than the equivalent of four quarter bends (360 degrees total) between pull points. Pull boxes added to conduit runs as a result of this requirement shall be in accordance with this Section.

E. Conduit and tubing shall be cut square and reamed smooth at the ends and all joints made tight. Conduit threads shall be lubricated with an approved thread lubricant.

F. Each conduit shall enter and be securely connected to a cabinet, junction box, pull box or outlet box by means of a locknut on the outside and a locknut/bushing on the inside,

or by means of a liquid-tight, threaded, self-locking, cold-weld type wedge adapter. Connections shall be made wrench tight. Locknuts shall be the bonding type with sharp edges and shall be installed in a manner that will assure a locking installation. Locknuts and bushings or self-locking adapters will not be required where conduits are screwed into threaded connections. Conduit runs shall be protected from the entrance of foreign material prior to the installation of conductors.

G. Conduit or tubing deformed or crushed in any way shall not be installed. Conduit shall be bent only with approved bender (hydraulic or hickey). Bending machines shall be used to make field bends in conduit of 1-1/4 inch size and larger. Open flame torches shall not be used in making conduit bends.

H. Raceways shall be spaced at least 6 inches from parallel runs of heating system pipes, flues, other high temperature piping systems, and other heat sources. This basic spacing shall be increased if necessary to ensure that raceways experience no significant temperature rise from external sources. Raceways shall not be embedded in any spray applied insulation, fireproofing, or other materials that would restrict heat dissipation.

I. Pull wires shall be provided in spare and unused conduits. (Nylon "jet-line" or as approved.)

J. Clean conduits 3 inches and larger utilizing conduit mandrels.

K. Conduits stubbed up out of floor and terminating inside of an enclosure shall have insulating grounding bushings installed.

L. Raceways penetrating vapor barriers or traversing from warm to cold areas shall be sealed on the inside with a non-hardening duct sealing compound to prevent the accumulation of moisture, and shall be taped airtight to the vapor barrier on the outside. Refer to Section 26 0000 for additional requirements and limitations regarding penetration of vapor barriers. Larger conduits (2-1/2 inch and larger) shall be sealed with Polywater FST two-part foam sealant or approved equal on warm indoor side of penetration.

M. Raceways (particularly PVC) shall be provided with expansion joints where necessary to allow for thermal expansion and contraction. Set initial opening of expansion joints per manufacturer's instructions, to suit the ambient temperature at the time of installation.

N. Provide flexible conduit connection at seismic joints to allow for displacement of conduit in all three axes. Provide appropriate lengths of flexible conduits at seismic joints and appropriate amounts of slack in conduit to allow movement of conduit/cabling in accordance with the design of the seismic joint. Slack shall be maintained in conduit after cabling is installed. Minimum lengths of flexible conduit and minimum amount of slack for various size conduits shall be as follows:
   1. 2 inch and greater: 4 foot length, 4-6 inches slack.
   2. 1-1/2 inch and smaller: 2 foot length, 3 inches slack.

O. Flexible metal conduit with supplemental ground jumper shall be used for connection to vibrating equipment, or where installation conditions warrant its use with express

permission. Flexible conduit shall not penetrate walls. Liquid-tight flexible conduit with supplemental ground jumper shall be used for motor and transformer connections (except utilize flexible metal conduit in plenum spaces). The ground jumper in flexible conduits shall be routed within the conduit.

P. Length of flexible conduit shall not exceed 36 inches, except for lighting fixture whips and where specifically noted. Fixture whips shall not exceed 72 inches. Flexible conduit shall not penetrate walls or vapor barrier retarder/barrier.

Q. Electrical raceways may penetrate roofing membranes only where absolutely necessary. Submit intended locations to Contracting Agency for approval prior to installation. Such penetrations shall be flashed and sealed as required for mechanical piping penetrations of roof. Where practical, conduits stubbed up to roof mounted equipment shall be routed within the equipment curb supporting the equipment.

3.3 CONDUIT SIZES – GENERAL

A. Minimum sizes for rigid steel, IMC, and PVC-40 conduits shall be ¾ inch.

B. Minimum size for EMT shall be ½ inch.

C. Minimum size for flexible conduits shall be ½ inch, except fixture whips may be 3/8 inch as allowed by the NEC.

3.4 STRUCTURAL COORDINATION

A. Layout conduits in slabs to avoid compromising structural integrity. Obtain approval from Structural Engineer for maximum conduit sizes, quantities, arrangement, and placement in structural slabs.

B. Structural members shall not be cut, drilled, or notched for raceways or other electrical features unless specifically accepted by the Contracting Agency.

C. Underfloor raceways for slab-on-grade construction shall be embedded in the fill under the slab, not in the slab itself. Where raceways are required or permitted to be embedded in concrete, the thickness of concrete on all sides of each raceway shall not be less than 2 inches.

3.5 EXISTING CONDUIT

A. Accurately measure the physical length of all existing underground conduits by the use of True Tape or an approved equivalent prior to the purchase or installation of any cable, wire, or innerduct. Costs incurred as a result of not obtaining accurate lengths of underground conduits prior to the purchase or installation of cable, wire, or innerduct; such as the need to replace cable, wire or innerduct, or splice cable or wire, or provide an additional manhole or pull point, shall be the responsibility of the Contractor.

3.6 OUTLET BOX INSTALLATION

A. Outlet boxes shall be securely fastened in position and supported independently of the conduit system.

B. Outlet boxes located in suspended ceiling system shall be fastened to ceiling “t-bar” system with bar-hanger rods manufactured for the purpose, or from hanger rods with solid supports from structure above. “T-bar” hanger rods shall be clipped to cross-members supported by the main ceiling support members. Outlet boxes supported from the suspended ceiling system shall be provided with one safety wire attached to the box or box support clip, or two safety wires attached to the bar hanger.

C. Boxes shall be installed true to the building lines and at equal heights in conformity with mounting heights specified in other sections of the specification.

D. Provide the best suitable box for each outlet requirement. Extension rings shall not be used on new construction except where needed to bring an outlet box out to 1/8 inch of the finished wall or ceiling line.

E. Boxes shall have only the holes necessary to accommodate the conduits at point of installation. All boxes shall have lugs or ears to secure covers.

F. Boxes shall be rigidly secured in position. Recessed boxes shall be so set that the front edge of the box shall be flush with the finished wall or ceiling line, or not more than 1/8 inch back of same. This requirement is more stringent than NEC requirements.

G. Boxes shall be accessible.

H. Provide boxes for each application that will not violate the fire rating of the wall, floor or ceiling assembly in which the box is installed.

I. Do not place order for floor boxes without ensuring that the Contracting Agency has positively approved submittals for the specific cover types/styles colors necessary for all applications and locations.

J. Recessed boxes shall not be placed back-to-back in adjacent rooms. They shall be offset at least 12 inches, or greater as required by codes and standards applicable to the specific construction.

K. Boxes (electrical boxes, outlet boxes and telecommunication boxes, etc) penetrating fire rated walls, walls with vapor retarder/barriers, wall types that extend to structure or wall types that contain batts shall be sealed airtight with approved Firestop Putty Pads to reduce sound transmission, reduce air transmission and increase fire resistance. Mold putty pads around electrical junction boxes and conduits to form an airtight seal in accordance with manufacturer’s installation instructions.

3.7 JUNCTION BOX AND PULL BOX INSTALLATION

A. Junction and pull boxes shall be installed so that covers are readily accessible and adequate working clearance is maintained after completion of the installation.

B. Select boxes properly sized per NEC for power and lighting applications.

END OF SECTION 26 0533

SECTION 26 0553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Provide identification of on equipment, raceways, boxes, and conductors.

B. Section includes:
1. Nameplates
2. Labels
3. Wire markers
4. Conduit markers
5. Miscellaneous Electrical Identification

C. Related Sections: Divisions 26 Sections.

1.2 SUBMITTALS

A. Division 10 and Section 26 0000 – Electrical General Requirements.

B. Product Data:
1. Submit manufacturer’s catalog literature for each product required.
2. Submit electrical identification schedule including list of wording, symbols, letter size, color coding, tag number, location, and function.

PART 2 - PRODUCTS

2.1 NAMEPLATES

A. Electrical Distribution Equipment Labels and Nameplates
1. Name equipment in accordance with Contract Documents.
2. Nameplates shall be laminated plastic, 0.125 inch thick, with matte finish and square corners. Minimum lettering size as noted elsewhere in this section.
a. Label and Nameplate Colors:
1). Normal Equipment: White letters on a black background or match existing color scheme.
2). Emergency Equipment: White letters on a red background or match existing color scheme.
3). Standby Equipment: Black letters on a yellow background or match existing color scheme.
b. Securely attach labels with threaded fasteners or pop-rivets. Adhesive attachment not acceptable.
c. Temporary markings not permitted on equipment. Repaint trims, housings, etc., where markings cannot be readily removed. Refinish defaced finishes.
3. Include item designation and branch circuit designation (panel and circuit number) on disconnects, starters, equipment and device nameplates, e.g., “FAN No. 4, Circuit LA-30”).

2.2 WIRE AND CABLE MARKERS

A. Wire and Cable Markers: Wrap on labels, cloth tape type wire markers or tubing type for all phase, neutral and ground conductors.

2.3 LABELS

A. Adhesive film label with clear protective overlay: Machine printed, in black, by thermal transfer process or equivalent. Minimum lettering size as noted elsewhere in this section. Overlay shall provide a weatherproof and UV resistant seal for label.

2.4 UNDERGROUND ELECTRICAL LINE PLASTIC LINE MARKER

A. Minimum 4-inch wide detectable tape with suitable label describing buried electrical lines.

2.5 POWER ONE-LINE DIAGRAM

A. Laminated, approved print of the "As-Built" power distribution system. Install in accordance with Part 3.

PART 3 - EXECUTION

3.1 NAMEPLATE INSTALLATION

A. Install nameplate parallel to equipment lines.

B. Mechanically fasten nameplates using threaded fasteners or pop rivets.

C. Mechanical fasteners shall have no sharp edges or points which can damage conductors or injure personnel.

D. Temporary markings are not permitted on equipment. Repaint trims, housings, etc., where markings cannot be readily removed. Refinish defaced finishes.

E. No labeling abbreviations are permitted without prior approval.

3.2 DISTRIBUTION AND BRANCH PANELBOARD NAMEPLATES

A. Nameplate shall contain the following information (minimum ½ inch height letters):
   1. Line 1: Panel Name as noted on drawings and schedules.
   2. Line 2: Voltage and Phase.
   3. Line 3: Shall indicate if panelboard is "NORMAL" (black background), or "STANDBY" (yellow background) or "EMERGENCY" (red background).
   4. Line 4: Source from which panel is fed, “FED FROM: PANEL NH-031”.

B. Install a 2-inch x 4-inch nameplate on each branch panelboard where a building contains distribution systems of different voltages (minimum 1/8 inch height letters):

THIS BUILDING CONTAINS TWO WIRING SYSTEMS:				
	Phase A	Phase B	Phase C	Neutral
480Y/277V	Brown	Orange	Yellow	Gray
208Y/120V	Black	Red	Blue	White

3.3 NAMEPLATE LOCATIONS

A. Provide 1 inch minimum height letters on following equipment:
   1. Service disconnect(s) (red background).
      a. Enclosures containing multiple service disconnects for utility power must clearly identify each switch as a service disconnect along with the load served.
      b. Where the building has multiple electrical services at different locations, provide signage at each service that indicates the total number and location of all electrical service disconnects that control the electrical service to the building.
      c. Where an on-site emergency power source is provided, a sign shall be placed at the service entrance(s) indicating the type and location of on-site emergency power sources.

B. Provide 1/2 inch minimum height letters on following equipment:
   1. Secondary feeder breakers in distribution equipment. Designation as required by load served.
   2. Special equipment housed in cabinets, as designated on plans, on outside of door.
   3. Equipment housed in equipment cabinets, as designated on plans, on inside of cabinet door.
   4. Switchboards, motor control centers, transformers, as designated on plans, on outside of door or equipment.
   5. Emergency system equipment, boxes and enclosures, as designated on plans, on outside of equipment, boxes and enclosures.
   6. Control or low voltage system panels such as Fire Alarm, Security, Video Surveillance, etc., with the following information:
      a. Line 1: Unique panel name as shown on the shop drawings.
      b. Line 2: System description such as Fire Alarm, Security, etc.
      c. Line 3: Panelboard and circuit number from which the panel is fed if applicable.

C. Provide 1/4-inch minimum height letters on:
   1. Switchboards, switchgear and panelboards: Provide signage in accordance with NEC 408 indicating maximum available fault current and date of fault current calculation.
   2. Disconnects, starters, VFDs and contactors:
      a. Line 1: Load Served (Use nameplate designation for source).
      b. Line 2: Panelboard and circuit number from which the device is fed.
      c. Line 3: Voltage, Phase, fuse size or circuit breaker size.
   3. Lighting control relays, dimmer controls and remote lighting control equipment.
   4. Switches and receptacles where item controlled is not visible from the switch, or as noted on Drawings.

5. External Power Sources: Provide 1/4 inch white letters on red background on all starters or controllers that receive power from an external source that is not de-energized by operating the associated disconnecting means.
6. Designated electrical equipment.

3.4 RECEPTACLE AND LIGHT SWITCH DEVICE PLATES CIRCUIT NUMBERS

A. Provide 3/16 inch minimum height letters on receptacle and light switch device plates:
   1. Provide clear adhesive label (black letter on clear background) indicating branch circuit designation (panel and circuit number) on receptacle and light switch device plates, e.g., “NPA-30”). Labels shall be printed not handwritten.

3.5 LABEL LOCATIONS

A. Provide 3/16 inch minimum height letters on the following equipment:
   1. Security System Device Labels:
      a. Provide label on each security field device, denoting device address. Affix label to device faceplate for ceiling-mounted devices or wall mounted devices above 8’-0” AFF. Affix label inside back box for exterior devices.
   2. Fire Alarm Device Labels:
      a. Provide label on exterior surface of each initiating device denoting the unique device address corresponding to the text annunciator description. For detectors, the label shall be affixed to the base and not to the detector itself. For pull stations, the label shall be affixed to the top of the device and not to the vandal proof cover.
      b. Provide label on each remote test station indicating description and location of device being tested.
      c. Provide label on telecom conductors at each end denoting FACP lines for use with the digital alarm communicator transmitter (DACT).

3.6 DISTRIBUTION/BRANCH CIRCUIT PANELBOARD CIRCUIT LABELING

A. Distribution Panels and Branch Circuit Panelboard Directories: Provide neatly typed schedule (odd numbered circuits on left side or top, even on right side or bottom) under plastic jacket or protective cover to protect the schedule from damage or dirt. Securely mount on inside face of panelboard door. Define briefly, but accurately, nature of connected load (i.e., Lighting Room 201, Receptacles Janitor Room 155, Etc.) as approved. Sequentially numbered schedules shall not be used.

B. Use final approved room numbers from finished construction (not necessarily as indicated on the drawings).

C. Provide numbering for terminals on terminal strips in the terminal enclosure that identifies the origin, function and destination of each conductor.

D. Install wire marker for each conductor inside panelboards (phase, neutral and ground conductors). Locate label within 6 inches of termination. Labels shall be visible with panel dead front installed.

E. Provide updated circuit directory in existing panelboards that are modified. Install directory in panelboard in protective cover and submit electronically in the O&M Manual.

3.7 EMERGENCY SYSTEM IDENTIFICATION

A. Emergency circuits shall be permanently marked so they will be readily identified as a component of an emergency circuit or system by the following methods:
   1. All equipment, boxes and enclosures (including transfer switches, generators and power panels) for emergency circuits shall be permanently marked as a component of an emergency circuit or system.
   2. Where boxes or enclosures are not encountered, exposed cable or raceway shall be permanently marked to be identified as a component of an emergency circuit or system at intervals not to exceed 25 feet.
   3. Receptacles supplied from the emergency system shall have a distinctive color (red) and circuit identification on the receptacle cover plate as noted elsewhere in these specifications.

3.8 WIRE MARKER INSTALLATION

A. Install wire marker for each conductor (phase, neutral and ground conductors) at panelboards, pull boxes, outlet and junction boxes, and each load connection. Locate label within 6 inches of termination in panelboards. Labels shall be visible with panel dead front installed.

B. Wire markers are not required on conductors in a pull or junction box that contains only an individual branch circuit, however, source panel and circuit number shall be noted on pull or junction box cover as noted elsewhere in this section.

C. Fire Alarm Circuits: Provide cable markers showing Notification Appliance Circuit (NAC) or Signaling Line Circuit (SLC) loop identification number at fire alarm junction boxes and pull boxes.

D. Power Circuits: Panelboard name and branch circuit or feeder number.

E. Control Circuits: Control wire number as indicated on schematic and/or shop drawings.

F. Color Code:
   1. Color code phases, neutral, and ground per NEC requirements and Section 26 0519 – Low Voltage Electrical Power Conductors and Cables.
   2. Color code all low voltage system wiring in accordance with applicable Sections.

3.9 TRANSFORMERS

A. Nameplate shall contain the following information:
   1. Line 1: Transformer Name as noted on drawings and schedules.
   2. Line 2: KVA Rating/Primary/Secondary Voltage.
   3. Line 3: Source from which transformer is fed, “FED FROM: PANEL NHA”
   4. Line 4: Destination of transformer feed, “FEEDS: PANEL NPA.

B. When the transformer disconnect is located in a remote location, the disconnecting means shall be labeled to reference the transformer location in accordance with NEC Article 450.

3.10 MISCELLANEOUS ELECTRICAL IDENTIFICATION

A. Junction Boxes: Mark the circuit number(s) and panel source of wiring on all junction boxes with sheet steel covers. Mark with indelible black marker. On exposed junction boxes in finished areas mark on inside of cover.

B. Conduits
   1. Mark all conduits entering or leaving panelboards with indelible black magic marker with the circuit numbers of the circuits contained inside.
   2. Empty Conduits: Provide tags with typed description of purpose, and location of opposite end, wired to each end of conduits.

C. Junction Boxes
   1. Markings shall be made with indelible black marker.
   2. On exposed junction boxes in finished areas markings shall be on inside of cover.
   3. Mark the circuit numbers of wiring on all junction boxes with sheet steel covers.
   4. Mark all Special System junction boxes with sheet steel covers with appropriate system designation, e.g., "Intercom", "Clock", "Telecom", “Video Surveillance”, etc. Fire Alarm System: Paint all fire alarm junction boxes inside and out with red paint where installed in concealed accessible location. Where installed in exposed locations paint boxes to match the adjacent surface.

D. Label Generator System shunt trip switch “GENERATOR ELECTRICAL DISCONNECT”.

E. One-Line Diagram: Mount behind protective cover (1/8-inch minimum thickness clear Plexiglas) in accessible location at main switchboard.

F. Exterior underground power, control, signal and communications lines.
   1. Install continuous underground plastic line marker located directly above line at 6 to 8 inches below finished grade. Where width of multiple lines installed in a common trench or concrete envelope exceeds 16 inches provide additional markers.
   2. Install markers for both direct buried and conduit encased conductors.
   3. Label each underground conductor with its circuit number or identification tag.

G. Provide a label at the fire alarm control panel that identifies the panelboard and circuit number that supplies the control panel. Provide a red label adjacent to the circuit breaker inside the panelboard that clearly identifies the circuit breaker that feeds the control panel in accordance with NFPA requirements.

3.11 CODE REQUIRED MARKINGS AND WARNINGS:

A. Provide all placards, markings and identification systems required by Code and/or the Contract Documents, such as (but not limited to):
   1. Arc Flash.
   2. Series Rated Systems.

3. Conductor insulation color identification.
4. Special conductor identification and legends.
5. Multiple services placards.
6. Emergency systems markings.
7. Emergency source grounded circuit conductor connected to a grounding electrode at a location remote from the emergency source: Provide a sign at the grounding location identifying all emergency and normal sources connected at that location.
8. Warning messages shall include an appropriate plain language imperative command, such as "DANGER HIGH VOLTAGE - KEEP OUT".
9. Available Fault Current: Service equipment shall be legibly marked in the field with the maximum available fault current. The field marking(s) shall include the date the fault calculation was performed and shall be of sufficient durability to withstand the environment involved.

3.12 CLEARANCE STRIPING

A. For electrical equipment located in areas with uncarpeted floors, the clearances dictated by NEC Article 110 shall be indicated by two inches wide colored striping on the floor.

B. Striping shall be of a bright color (typically red or yellow) that contrasts with the floor color and shall be applied by the most durable process that is commercially available for the particular floor finish. Examples are: epoxy paint on concrete floors, and colored tile segments in composition tile floors. Striping color and method shall be subject to approval by the Contracting Agency.

C. On the floor immediately inside the striping, stencil in two-inch block letters the statement: "ELECTRICAL CLEARANCE – NO STORAGE." For floor types where painted stenciling is not feasible or sufficiently durable, this message shall instead be posted on the wall below the equipment as an engraved nameplate of the type specified in this Section, with 1/2-inch lettering. Note the specific clearance requirements on the engraved nameplate.

END OF SECTION 26 0553

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SECTION 26 0800 - ELECTRICAL COMMISSIONING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Commissioning requirements for Division 26 electrical systems.

B. Related Sections:
   1. 26 0000 - Electrical General Requirements
   2. Division 10 – Submittal List

1.2 DESCRIPTION

A. This section describes requirements for commissioning equipment and associated systems specified under:
   1. Division 26.

B. Refer to Division 10 – Submittal List

C. Refer to Part 3 of this Section for a list of equipment and systems to be commissioned.

D. Prepare the Commissioning Master Equipment and System List. Submit to the Contracting Agency for review and approval prior to construction.

E. Identify all Division 26 equipment and systems that will be included in each completion checkout item listed on the Commissioning Master Equipment and System List.

F. Identify and summarize all tests and certifications required for each piece of equipment and system specified in Division 26 and submit to the Contracting Agency for review and approval.

G. Identify and summarize all submittals required for each piece of equipment specified in Division 26. Submit summary to the Contracting Agency for review and approval.

H. Prepare and submit Prefunctional Installation Examination Checklist Forms (PCs) for each piece of equipment required to be commissioned under Division 26. Coordinate with each trade and obtain all installation requirements and startup procedures from the manufacturer for each piece of equipment and include such requirements and procedures in the Form. Note that this requirement precedes compilation of O&M Manuals.

I. Prepare and submit Functional Performance Test Checklist Forms (FTs) for each piece of equipment required to be functionally tested under Division 26 to the Contracting Agency for review and approval.

J. Identify and summarize all training required for each piece of equipment specified in Division 26. Submit summary to the Contracting Agency for review and approval.

K. Verify that all Test Reports and Certifications required for Division 26 equipment and systems in the summary above are completed and accepted.

L. Coordinate compilation of O&M manuals with each trade. Verify the O&M submittals meet all requirements of the Specifications. Verify acceptance of all O&M manuals.

M. Verify submittal and acceptance of all Prefunctional Installation Examination Checklist Forms for each piece of equipment required to be commissioned under Division 26.

N. Verify submittal and acceptance of all Functional Performance Test Checklist Forms for each piece of equipment and system required to undergo functional testing under Division 26.

O. Maintain a punch list of all items in Divisions 26 that require corrective action.

P. Verify completion of training for all systems listed in the training summary required above.

1.3 REFERENCES

A. ASHRAE Guideline 0-2019 – The Commissioning Process

1.4 SUBMITTALS

A. Commissioning Master Equipment and System Lists.

B. Prefunctional Installation Examination Checklists for all equipment commissioned under Division 26. Attach manufacturer's installation requirements and startup procedures to the form.

C. Functional Performance Test Checklists for all equipment commissioned under Division 26.

D. List of Equipment and System Training requirements.

E. System training syllabuses for each piece of equipment and system requiring training.

F. Submit copies of all completed Division 26 Prefunctional Installation Examination Checklists and Functional Test Checklists for acceptance.

G. O&M Manuals.

H. Closeout submittals in accordance with Division 10.

1.5 QUALITY ASSURANCE

A. Electrical Systems Commissioning Representatives
   1. Designate individuals who will be responsible for the completion of the commissioning activity for Division 26 equipment and systems. At a minimum, commissioning representatives of the following systems shall be named:
      a. Emergency Standby Generating System.
      b. All other Electrical systems.
   2. The individuals named shall have the following minimum qualifications:

a. 5 years' experience in the system(s) for which he will be responsible. The individual shall be thoroughly experienced in startup and commissioning of similar equipment.
b. The individual shall have experience supervising others, reading drawings and specifications, and inspecting construction work.
c. The individual shall have good communication and problem-solving skills, and a knowledge of local conditions.
d. Ability to develop or oversee development of all documentation required for the commissioning process, including:
   1). Commissioning Master Equipment and System List.
   2). Prefunctional Installation Examination Checklists and Functional Test Checklists.
   3). Training Syllabuses.
   4). O&M manuals.

1.6 SEQUENCING

A. Prefunctional Installation Examination Checklists (PC), test reports and certifications for equipment or systems shall be submitted and accepted prior to Functional Test Checkout of the equipment or system. Refer to the technical specifications for specific requirements.

B. Complete all punch list items prior to Functional Checkout of the system.

C. O&M manuals shall be submitted and accepted at least 30 days prior to training sessions for the systems covered by manual.

1.7 SCHEDULING

A. Coordinate with Division 10 the following items to be included in the commissioning schedule:
   1. Submittals required under this Section.
   2. Prefunctional Installation Examination Checklists (PC) for each item of Work shall be identified in the commissioning schedule. All equipment and systems included in the item of Work shall be identified in the Commissioning Master Equipment and System List with the corresponding commissioning identifier.
   3. Functional Performance Test Checklists (FT) for each item of Work shall be identified in the CPM schedule. All equipment and systems included in the item of Work shall be identified in the Commissioning Master Equipment and System List with the corresponding CPM identifier and Functional Performance Test.
   4. Syllabus Submittals.
   5. Training Sessions.

PART 2 - PRODUCTS

2.1 TEST EQUIPMENT

A. Provide all test equipment necessary to fulfill the testing requirements of this Division.

2.2 REQUIRED CONSUMABLES

A. Provide all required consumables required for testing (e.g., generator diesel fuel).

PART 3 - EXECUTION

3.1 EXAMINATION AND TESTING

A. Perform and clearly document all startup procedures. Execute the Division 26 portions of the Prefunctional Installation Examination Checklists for all commissioned equipment. Submit copies of all completed checklists for acceptance.

B. Notify Contracting Agency of Installation Examinations or Functional Performance Tests schedules a minimum of seventy-two (72) hours before they are to occur. Successfully functionally test all equipment prior to demonstrating Functional Checkout to the Contracting Agency. Functional Tests shall not proceed without the presence of the Contracting Agency's representative unless authorized by the Contracting Agency.

C. Representatives from each discipline who are responsible for performing the commissioning activities shall be present at the scheduled activity.

D. Provide fully qualified technicians to execute starting of equipment and to execute the Functional Performance Tests. Ensure that they are available and present during the agreed upon schedules and for sufficient duration to complete the necessary tests, adjustments and problems solving. Failure of necessary technicians to be available will cause the test to be considered failed.

E. The agency or installer that performs the tests of the individual systems required within each specification section shall provide instrumentation necessary to perform the test. Instruments shall be operated by the agency or installer as required, or additionally at the request of the Contracting Agency.

F. Provide all tools, ladders, and communication equipment required to properly access equipment and efficiently perform commissioning activity.

G. Execute the Division 26 related portions of the Functional Performance Test Checklist for all commissioned equipment and systems required to be functionally tested. Submit copies of all completed checklists for acceptance.

H. Correct deficiencies and retest the equipment.

3.2 COMMISSIONED EQUIPMENT AND SYSTEMS LIST

A. Commission the following equipment and systems.

Section	Item	PC	FT
26 0519	Wire and Cable (Megger test feeder cables)	X	N/A
26 3213	Engine Generator	X	X
26 0526	Grounding Systems - Power	X	N/A
26 2200	Secondary Transformers	X	X

Section	Item	PC	FT
26 2416	Panelboards	X	X
26 2800	Overcurrent Protective Devices	X	X
26 5000	Lighting Fixtures	X	N/A

3.3 TRAINING

A. The Contractor shall be responsible for training coordination and scheduling and ultimately to ensure that training is completed.

B. The Contractor shall be responsible for overseeing and approving the content and adequacy of the training of Owner personnel for commissioned equipment. Refer to Division 10 for additional details.

C. Electrical Commissioning Representatives shall have the following training responsibilities:
   1. Provide the Contracting Agency with a training plan two weeks before the planned training according to the outline described in Division 10.
   2. Provide designated Owner personnel with comprehensive training in the understanding of the systems and the operation and maintenance of each major piece of commissioned electrical equipment or system.
   3. Training shall start with classroom sessions, followed by hands on training on each piece of equipment, which shall illustrate the various modes of operation, including startup, shutdown, fire/smoke alarm, power failure, etc.
   4. During any demonstration, should the system fail to perform in accordance with the requirements of the O&M manual or sequence of operations, the system will be repaired or adjusted as necessary, and the demonstration repeated.
   5. The appropriate trade or manufacturer's representative shall provide the instructions on each major piece of equipment. This person may be the start-up technician for the piece of equipment, the installing contractor or manufacturer’s representative. Practical building operating expertise as well as in-depth knowledge of all modes of operation of the specific piece of equipment are required. More than one party may be required to execute the training.
   6. The training sessions shall follow the outline in the Table of Contents of the operation and maintenance manual and illustrate whenever possible the use of the O&M manuals for reference.
   7. Training shall include:
      a. Use the printed installation, operation and maintenance instruction material included in the O&M manuals.
      b. Include a review of the written O&M instructions emphasizing safe and proper operating requirements, preventative maintenance, special tools needed and spare parts inventory suggestions. The training shall include start-up, operation in all modes possible including degraded modes of operation, shut-down, seasonal changeover and any emergency or degraded operations procedures.
      c. Discuss relevant health and safety issues and concerns.
      d. Discuss warranties and guarantees.
      e. Cover common troubleshooting problems and solutions.

f. Explain information included in the O&M manuals and the location of all plans and manuals in the facility.
g. Discuss any peculiarities of equipment installation or operation.
h. Classroom sessions shall include the use of overhead projections, slides, video and audio taped material as appropriate or specified elsewhere.

8. Hands-on training shall include start-up, operation in all modes possible including degraded modes of operation, manual, shut-down and any emergency procedures and maintenance of all pieces of equipment.
9. Fully explain and demonstrate the operation, function and overrides of any local packaged controls, not controlled by the central control system.
10. Training shall occur after functional testing is complete, unless approved otherwise by the Contracting Agency.
11. A complete, organized set of all training materials (such as slides, videos, audio program, etc.) used during training shall be turned over to the Contracting Agency at the end of each training segment.

3.4 DEFERRED TESTING

A. Refer to Division 10 for requirements of deferred testing.

END OF SECTION 26 0800

SECTION 26 2200 - LOW VOLTAGE TRANSFORMERS

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes general provisions, products, and methods of execution relating to transformers approved for use on this project. Type, size, ratings, etc., shall be as shown on the plans and in accordance with UL and NEMA standards.

B. Includes power and control transformers through 600 volts in this and other Divisions of specifications, including items such as: control, communications systems, lighting and power, distribution and signal systems transformers, whether furnished as an integral component of an item of equipment or separately provided.

C. Related Sections:
   1. 26 0529 - Hangars and Supports for Electrical Systems
   2. 26 0533 - Raceways and Boxes for Electrical Systems

1.2 REFERENCES

A. NFPA 70 - National Electrical Code
   1. Shall conform to the requirements of ANSI/NFPA 70.

B. NEMA ST20
   1. Transformers shall be manufactured and tested in accordance with NEMA ST20.

C. Underwriters Laboratory (UL) and Canadian Standards Association (CSA)
   1. UL 1561 – Dry-Type General Purpose and Power Transformers.
   2. CSA C22.2 No.47-M90 Air-Cooled Transformer (Dry Type).
   3. Transformers 1000kVA and smaller shall be listed by Underwriters Laboratories.
   4. UL 50 Enclosures for Electrical Equipment, Non-Environmental Considerations.
   5. UL50E, Enclosures for Electrical Equipment, Environmental Considerations (Units self-certified to NEMA 250 shall not be accepted – must have Third Party Testing).
   6. UL 969, Marking and Labeling Systems.

D. Institute of Electrical and Electronics Engineers (IEEE)
   1. The following IEEE/ANSI standards when referenced in NEMA ST-20 or UL 1561:
      a. C57.94 “Recommended Practice for Installation, Application, Operation, and Maintenance of Dry-Type Distribution and Power Transformers”.
      b. C57.96, “IEEE Guide for Loading Dry-Type Distribution and Power Transformers”.
      c. C57.12.91, "IEEE Standard Test Code for Dry-Type Distribution and Power Transformers”.
      d. C57.12.01, “IEEE Standard General Requirements for Dry-Type Distribution and Power Transformers Including Those with Solid Cast and/or Resin Encapsulated Windings”.
      e. C57.12.70, “Standard Terminal Markings and Connections for Distribution and Power Transformers”.

E. Federal Regulations, Policies and Acts
   1. 2005 Energy Act PUBLIC LAW 109–58—AUG. 8, 2005 Comply with all Rules from Department of Energy.
   2. 10 CFR 429 Certification, Compliance, and Enforcement for Consumer Products and Commercial and Industrial Equipment.
   3. 10 CFR 431 Energy Efficient Program for Certain Commercial and Industrial Equipment, Subpart K (Effective 1/1/2016).

1.3 STANDARDS

A. Seismic Standards
   1. International Building Code (IBC).
   2. Tri-axial shake table test results conducted in accordance with the AC156 test protocol 3 (Acceptance Criteria for Seismic Qualification Testing for Non-structural Components).

B. International Standards Organization (ISO)
   1. ISO 9001:2000 Quality Management System
   2. ISO 14001:2004 Environmental Management System

1.4 SUBMITTALS

A. Provide submittals for products in accordance with Section 26 0000 - Electrical General Requirements and Division 10.

B. Submit for approval manufacturers shop drawings to show weights, dimensions, mounting arrangements, interconnecting diagrams, and electrical power requirements. Furnish typical test data, including ratio, resistance, losses, sound level, applied voltage, induced voltage, temperature rise, impulse test, impedance, X/R ratio, efficiency, transient inrush current and short circuit test.

1.5 QUALITY ASSURANCE

A. Transformers shall be of the latest approved design as manufactured by a nationally recognized manufacturer and be listed in the Underwriters' Laboratory and bear the UL label.

B. Transformers shall perform in accordance with applicable NEMA standards and shall be installed in accordance with the National Electric Code.

PART 2 - PRODUCTS

2.1 BASIS OF DESIGN

A. The Basis of Design is equipment from Schneider/Square D Company to set a standard for quality. Equipment from Cutler Hammer, Siemens Energy & Automation, General Electric or alternative systems will be considered providing that sufficient documentation is provided to satisfy the CONTRACTING AGENCY that the equipment meets the requirements of the specification.

2.2 TRANSFORMERS

A. Transformers shall be dry-type.

B. Except as specifically noted on the Drawings, single phase transformers shall be 480 volt primary and 240/120 volt secondary. Three phase transformers shall be 480-volt delta primary and 208/120 volt, wye secondary.

C. Transformers 25 KVA and larger shall have a minimum of 4-2 1/2% full capacity primary taps (2 above normal and 2 below) unless otherwise noted.

D. Transformers 15 KVA and larger shall be rated 115°C temperature rise above 40°C ambient, unless otherwise indicated on the Drawings. The transformer shall be listed by Underwriters' Laboratory for the specified temperature rise. Insulating materials shall be in accordance with NEMA ST20 standards for a 220°C UL component recognized insulation system.

E. Transformer coils shall be of aluminum continuous wound construction and shall be impregnated with non-hygroscopic, thermosetting varnish.

F. , non-aging silicon steel with high magnetic permeability, and low hysteresis and eddy current losses. Magnetic flux densities shall be kept well below the saturation point under all conditions of possible load. The core laminations shall be clamped together with structural steel angles. The complete core and coil shall then be bolted to the base of the enclosure but isolated there from by means of rubber, vibration absorbing mounts. There shall be no metal-to-metal contact between the core and coil and the enclosure except for a flexible safety ground strap. On transformers 500 KVA and smaller, the vibration isolating system shall be designed to provide a permanent fastening of the core and coil to the enclosure. Sound isolating systems requiring the complete removal of all fastening devices are not acceptable.

G. Transformers 15 KVA and larger shall be in a heavy gauge, sheet steel, ventilated enclosure. The ventilating openings shall be designed to prevent accidental access to live parts in accordance with UL, NEMA, and National Electrical Code standards for ventilated enclosures.
   1. Minimum clearance from rear and sides: ½ inch.
   2. Units 75 KVA and smaller shall designed to be either floor or wall mounted.
   3. Units 150 KVA and smaller shall have provisions to be trapeze mounted.
   4. Standard transformer enclosures are NEMA 1 rated and shall be available with a kit to convert to NEMA Type 3R.
   5. Larger transformers (>150 KVA) shall be designed for floor mounting only.

H. The maximum temperature of the top of the enclosure shall not exceed 50°C rise above a 40°C ambient.

I. The core of the transformer shall be visibly grounded to the enclosure by means of a flexible grounding conductor sized in accordance with applicable UL, NEC, NEMA, IEEE, and ANSI standards.

J. The entire transformer enclosure shall be degreased, cleaned, phosphatized, primed, and finished with gray, baked enamel (ANSI 49).

2.3 SOUND RATINGS

A. Sound levels shall be minimum of 3db below ST-20 standard and guaranteed by the manufacturer not to exceed the following:
   1. 15 to 50 KVA: 45dB.
   2. 51 TO 150 KVA: 50dB.
   3. 151 TO 300 KVA: 55dB.
   4. 301 TO 500 KVA: 60dB.
   5. 501 to 700kVA 62dB.
   6. 701 to 1000kVA 64dB.

B. Replace transformers deemed excessively noisy by the Contracting Agency at no additional contract cost.

2.4 TRANSIENT INRUSH CURRENT AND OVERCURRENT PROTECTION

A. Primary overcurrent protection for dry type step down transformers is based on Basis of Design manufacturer's published data for transient inrush current. If transformers submitted have higher inrush currents that require upsizing of circuit breakers, conduits, conductors, etc., the cost of these changes shall be borne by the Contractor. Basis of design inrush currents and recommended breaker selections are listed in Appendix A at the end of this Section.

B. If transient inrush current exceeds that of the specified transformers a complete coordination study shall be included with the submittals for the affected portions of the electrical systems, and all affected components (circuit breakers, conduits, conductors, etc.) shall be resized accordingly. Costs of changes due to higher inrush currents shall be borne by the Contractor.

2.5 EFFICIENCY

A. Transformers shall have rated minimum efficiencies in accordance with *DOE 10 CFR 431.192 (2016 Energy Conversion Standards for Low-Voltage Type Distribution Transformers*) per the table below when operated at 35% of full capacity.

Single-Phase		Three-Phase	
KVA	% Efficiency	KVA	% Efficiency
15	97.70	15	97.89
25	98.00	30	98.23
37.5	98.20	45	98.40
50	98.30	75	98.60
75	98.50	112.5	98.74
100	98.60	150	98.83
167	98.70	225	98.94
250	98.80	300	99.02
333	98.90	500	99.14

---	---	750	99.23
---	---	1000	99.28

2.6 TRANSFORMER ACCESS AREAS AND TERMINAL SIZING REQUIREMENTS

A. Transformer access areas shall allow for NEC bending radius for the cable sizes shown on the drawings.

B. Transformer terminals shall be sized to handle cable sizes shown on the drawings.

PART 3 - EXECUTION

3.1 MOUNTING

A. Provide required structural support and anchorage at floor, by wall brackets, or in a trapeze suspended from structural members as indicated on drawings or approved.

B. Transformers up to 100 kVA: Mount transformers on double-deflection neoprene-in-shear isolators (no harder than 50 durometer) sized for the following static deflections:
1. 0.2 inches static deflection for slab on grade installations.
2. 0.5 inches static deflection for other than slab on grade installations.
3. Mason Industries or as approved.

C. Provide minimum 3-inch high concrete pad with minimum 2 inch reveal on front and sides for mounting transformer. Concrete pad shall comply with requirements of Division 3 and code requirements.

3.2 CLEARANCES

A. Required clearances for transformers with ventilating openings shall be in accordance with the manufacturer’s requirements.

3.3 ADJUSTMENT

A. Adjust transformer taps to provide rated voltage at the secondary bus with all connected loads "on", except the no-load secondary line-to-neutral voltage shall not exceed 125 volts on nominal 120 volt phases. Submit log of final voltage and current readings at no load and full load.

3.4 ELECTRICAL CONNECTIONS

A. For transformer connections that are not routed under slab, the following wiring methods shall be utilized:
1. Transformer mounted in space used for environmental air (e.g. fan room): Flexible metal conduit (FMC) with supplemental ground jumper.
2. Transformer mounted in all other areas: Liquid-tight flexible metal conduit (LFMC) with supplemental ground jumper.

B. The flexible conduit shall be installed in a slack, shallow "U" form and shall prevent rigid contact between the transformer components and the nearby structure, conduits, etc.

3.5 GROUNDING AND BONDING

A. Transformer wye secondaries shall be grounded as separately derived systems as specified in Section 26 0526 - Grounding.

B. Transformers and conduits shall be bonded per NEC requirements.

3.6 FIELD QUALITY CONTROL

A. Document each installation and operational step in accordance with Section 01 9100 - Commissioning.

B. Document each installation and operational step in accordance with approved shop drawings and manufacturer's requirements.

APPENDIX A

TRANSFORMER INRUSH AND CIRCUIT BREAKER SELECTION TABLES

Catalog Number Designations

Type H: 150 Deg. Rise Aluminum Windings
Type HCU: 150 Deg. Rise Copper Windings
Type HF: 115 Deg. Rise Aluminum Windings
Type HFCU: 115 Deg. Rise Copper Windings
Type HB: 80 Deg. Rise Aluminum Windings
Type HBCU: 80 Deg. Rise Copper Windings

Example: EX150 3 HFCU = 3 phase, 150KVA, 150 Deg. Rise, Type EX with Copper Windings

Catalog Number	RMS Inrush (x Rated Pri Current)	Primary Winding	NP Amps	NEC% – Handle Rating in Amps																					
				NEC 125% – Handle Rating 25 Amps											NEC 250% – Handle Rating 45 Amps										
				FA	FC	FH	HD	HG	HJ	HL	HR	ED	EG	EJ	FA	FC	FH	HD	HG	HJ	HL	HR	ED	EG	EJ
EX15T3H	8.1	480 Delta	18	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
EX15T3HCU	11.8	480 Delta	18	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
EX15T3HF	8.1	480 Delta	18	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
EX15T3HFCU	11.8	480 Delta	18	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
EX15T3HB	18.6	480 Delta	18	—	—		Fixed	Fixed	Fixed	Fixed	Fixed	—	—	—	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
EX15T3HBCU	20.0	480 Delta	18	—	—		8 (60AS)					—	—	—	Fixed	Fixed	Fixed	8 (60AS)					Fixed	Fixed	Fixed

				NEC 125% – Handle Rating 50 Amps											NEC 250% – Handle Rating 90 Amps										
				FA	FC	FH	HD	HG	HJ	HL	HR	ED	EG	EJ	FA	FC	FH	HD	HG	HJ	HL	HR	ED	EG	EJ
EX30T3H	9.3	480 Delta	36.1	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
EX30T3HCU	10.0	480 Delta	36.1	Fixed	Fixed	Fixed	8 (60AS) / 6 (100AS) / 3 (150AS)					Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
EX30T3HF	9.3	480 Delta	36.1	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
EX30T3HFCU	10.0	480 Delta	36.1	Fixed	Fixed	Fixed	8 (60AS) / 6 (100AS) / 3 (150AS)					Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
EX30T3HB	11.7	480 Delta	36.1	—	—	—	9 (60AS) / 6 (100AS) / 4 (150AS)					Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
EX30T3HBCU	13.0	480 Delta	36.1	—	—	—	10 (60AS) / 6 (100AS) / 4 (150AS)					Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed

Catalog Number	RMS Inrush (x Rated Pri Current)	Primary Winding	NP Amps	NEC% – Handle Rating in Amps																		
				NEC 125% – Handle Rating 70 Amps												NEC 250% – Handle Rating 125 Amps						
				FA	FC	FH	HD	HG	HJ	HL	HR	ED	EG	EJ	HD	HG	HJ	HL	HR	ED	EG	EJ
EX45T3H	7.8	480 Delta	54.1	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
EX45T3HCU	8.7	480 Delta	54.1	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
EX45T3HF	7.8	480 Delta	54.1	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
EX45T3HFCU	8.7	480 Delta	54.1	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
EX45T3HB	12.7	480 Delta	54.1	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	—	—	—	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
EX45T3HBCU	14.2	480 Delta	54.1	—	—	—	10 (100AS) / 7 (150AS)					—	—	—	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed

				NEC 125% – Handle Rating 125 Amps								NEC 250% – Handle Rating 225 Amps								
				HD	HG	HJ	HL	HR	ED	EG	EJ	JD	JG	JJ	JL	JR	LD	LG	LJ	LL	LR
EX75T3H	7.6	480 Delta	90.2	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	4 (250AS) / 3 (400AS) / 1.5 (600AS)			
EX75T3HCU	8.5	480 Delta	90.2	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	4 (250AS) / 3 (400AS) / 2 (600AS)			
EX75T3HF	8.6	480 Delta	90.2	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	4 (250AS) / 3 (400AS) / 2 (600AS)			
EX75T3HFCU	9.7	480 Delta	90.2	7 (150AS)	7 (150AS)	7 (150AS)	7 (150AS)	7 (150AS)	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	5 (250AS) / 3 (400AS) / 2 (600AS)			
EX75T3HB	8.6	480 Delta	90.2	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	4 (250AS) /3 (400AS) / 2 (600AS)			
EX75T3HBCU	9.7	480 Delta	90.2	7 (150AS)	7 (150AS)	7 (150AS)	7 (150AS)	7 (150AS)	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	5 (250AS) /3 (400AS) / 2 (600AS)			

Catalog Number	RMS Inrush (x Rated Pri Current)	Primary Winding	NP Amps	NEC% – Handle Rating in Amps												
				NEC 125% – Handle Rating 175 Amps										NEC 250% – Handle Rating 350 Amps			
				JD	JG	JJ	JL	JR	LD	LG	LJ	LL	LR	LD	LG	LJ	LR
EX112T3H	5.7	480 Delta	135.3	Fixed	Fixed	Fixed	Fixed	Fixed	4 (250AS) / 3 (400AS)					3 (400AS) / 2 (600AS)			
EX112T3HCU	6.5	480 Delta	135.3	Fixed	Fixed	Fixed	Fixed	Fixed	5 (250AS) / 3 (400AS)					3 (400AS) / 2 (600AS)			
EX112T3HF	8.0	480 Delta	135.3	Fixed	Fixed	Fixed	Fixed	Fixed	6 (250AS)/ 4 (400AS)					4 (400AS) / 3 (600AS)			
EX112T3HFCU	11.6	480 Delta	135.3	8 (250AS)	8 (250AS)	8 (250AS)	8 (250AS)	8 (250AS)	8 (250AS) / 5 (400AS)					5 (400AS) / 4 (600AS)			
EX112T3HB	8.0	480 Delta	135.3	Fixed	Fixed	Fixed	Fixed	Fixed	6 (250AS) / 4 (400AS)					4 (400AS) / 3 (600AS)			
EX112T3HBCU	11.6	480 Delta	135.3	8 (250AS)	8 (250AS)	8 (250AS)	8 (250AS)	8 (250AS)	8 (250AS) / 5 (400AS)					5 (400AS) / 4 (600AS)			

				NEC 125% – Handle Rating 250 Amps										NEC 250% – Handle Rating 450 Amps						
				JD	JG	JJ	JL	JR	LD	LG	LJ	LL	LR	LD	LG	LJ	LL	LR	MG	MJ
EX150T3H	6.0	480 Delta	180.4	Fixed	Fixed	Fixed	Fixed	Fixed	6 (250AS) / 4 (400AS) / 3 (600AS)					3 (600AS)					Fixed	Fixed
EX150T3HCU	8.7	480 Delta	180.4	Fixed	Fixed	Fixed	Fixed	Fixed	8 (250AS) / 5 (400AS) / 4 (600AS)					4 (600AS)					Fixed	Fixed
EX1503HF	6.5	480 Delta	180.4	Fixed	Fixed	Fixed	Fixed	Fixed	6 (250AS) / 4 (400AS) / 3 (600AS)					3 (600AS)					Fixed	Fixed
EX150T3HFCU	7.6	480 Delta	180.4	Fixed	Fixed	Fixed	Fixed	Fixed	8 (250AS) / 5 (400AS) / 3 (600AS)					3 (600AS)					Fixed	Fixed
EX150T3HB	6.5	480 Delta	180.4	Fixed	Fixed	Fixed	Fixed	Fixed	6 (250AS) / 4 (400AS) / 3 (600AS)					3 (600AS)					Fixed	Fixed
EX150T3HBCU	7.6	480 Delta	180.4	Fixed	Fixed	Fixed	Fixed	Fixed	8 (250AS) / 5 (400AS) / 3 (600AS)					3 (600AS)					Fixed	Fixed

Catalog Number	RMS Inrush (x Rated Pri Current)	Primary Winding	NP Amps	NEC% – Handle Rating in Amps												
				NEC 125% – Handle Rating 350 Amps							NEC 250% – Handle Rating 600 Amps					
				LD	LG	LJ	LL	LR	MG	MJ	LD	LG	LJ	LL	LR	MG	MJ
EX225T3H	4.4	480 Delta	270.6	4 (400AS) / 3 (600AS)					Fixed	Fixed	3 (600AS)					Fixed	Fixed
EX225T3HCU	5.1	480 Delta	270.6	5 (400AS) / 3 (600AS)					Fixed	Fixed	3 (600AS)					Fixed	Fixed
EX225T3HF	4.4	480 Delta	270.6	4 (400AS) / 3 (600AS)					Fixed	Fixed	3 (600AS)					Fixed	Fixed
EX225T3HFCU	5.1	480 Delta	270.6	5 (400AS) / 3 (600AS)					Fixed	Fixed	3 (600AS)					Fixed	Fixed
EX225T3HB	7.3	480 Delta	270.6	6 (400AS) / 4 (600AS)					Fixed	Fixed	4 (600AS)					Fixed	Fixed
EX225T3HBCU	8.2	480 Delta	270.6	8 (400AS) / 5 (600AS)					Fixed	Fixed	5 (600AS)					Fixed	Fixed

				NEC 125% – Handle Rating 500 Amps							NEC 250% – Handle Rating 800 Amps					
				LD	LG	LJ	LL	LR	MG	MJ	MG	MJ	PG	PJ	PK	PL
EX300T3H	5.5	480 Delta	360.8	4 (600AS)					Fixed	Fixed	Fixed	Fixed	3 (800AS) / 3 (1000AS) / 2 (1200AS)			
EX300T3HCU	6.2	480 Delta	360.8	5 (600AS)					Fixed	Fixed	Fixed	Fixed	4 (800AS) / 3 (1000AS) / 3 (1200AS)			
EX300T3HF	5.5	480 Delta	360.8	4 (600AS)					Fixed	Fixed	Fixed	Fixed	3 (800AS) / (1000AS) / 2 (1200AS)			
EX300T3HFCU	6.2	480 Delta	360.8	5 (600AS)					Fixed	Fixed	Fixed	Fixed	4 (800AS) / 3 (1000AS)/ 3 (1200AS)			
EX300T68HB	3.5	480 Delta	360.8	3 (600AS)					Fixed	Fixed	Fixed	Fixed	2 (800AS) / 1.5 (1000AS) / 1.5 (1200AS)			
EX300T68HBCU	3.3	480 Delta	360.8	3 (600AS)					Fixed	Fixed	Fixed	Fixed	2 (800AS) / 1.5 (1000AS) / 1.5 (1200AS)			

Catalog Number	RMS Inrush (x Rated Pri Current)	Primary Winding	NP Amps	NEC% – Handle Rating in Amps									
				NEC 125% – Handle Rating 800 Amps						NEC 250% – Handle Rating 1200 A			
				MG	MJ	PG	PJ	PK	PL	PG	PJ	PK	PL
EX500T68H	2.1	480 Delta	601.4	Fixed	Fixed	2 (800AS) / 1.5 (1000AS) / 1.5 (1200AS)				1.5 (1200AS)	1.5 (1200AS)	1.5 (1200AS)	1.5 (1200AS)
EX500T68HCU	2.0	480 Delta	601.4	Fixed	Fixed	2 (800AS) / 1.5 (1000AS) / 1.5 (1200AS)				1.5 (1200AS)	1.5 (1200AS)	1.5 (1200AS)	1.5 (1200AS)
EX500T68HF	2.1	480 Delta	601.4	Fixed	Fixed	2 (800AS) / 1.5 (1000AS) / 1.5 (1200AS)				1.5 (1200AS)	1.5 (1200AS)	1.5 (1200AS)	1.5 (1200AS)
EX500T68HFCU	2.0	480 Delta	601.4	Fixed	Fixed	2 (800AS) / 1.5 (1000AS) /1.5 (1200AS)				1.5 (1200AS)	1.5 (1200AS)	1.5 (1200AS)	1.5 (1200AS)
EX500T68HB	6.5	480 Delta	601.4	Fixed	Fixed	6 (800AS) / 5 (1000AS) / 4 (1200AS)				4 (1200AS)	4 (1200AS)	4 (1200AS)	4 (1200AS)
EX500T68HBCU	6.2	480 Delta	601.4	Fixed	Fixed	6 (800AS) / 5 (1000AS) / 4 (1200AS)				4 (1200AS)	4 (1200AS)	4 (1200AS)	4 (1200AS)

				NEC 125% – Handle Rating 1200 Amps				NEC 250% – Handle Rating 2000 Amps			
				PG	PJ	PK	PL	RG	RJ	RK	RL
EX750T68H	4.3	480 Delta	902.1	4 (1200AS)	4 (1200AS)	4 (1200AS)	4 (1200AS)	3 (2000AS) / 2 (2500AS)			
EX750T68HCU	4.2	480 Delta	902.1	4 (1200AS)	4 (1200AS)	4 (1200AS)	4 (1200AS)	3 (2000AS) / 2 (2500AS)			
EX750T68HFCU	4.2	480 Delta	902.1	4 (1200AS)	4 (1200AS)	4 (1200AS)	4 (1200AS)	3 (2000AS) / 2 (2500AS)			

END OF SECTION 26 2200

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SECTION 26 2416 - PANELBOARDS

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes general provisions, products, and methods of execution relating to branch circuit panelboards approved for use on this project. Type, size, ratings, etc., shall be as shown on the plans and in accordance with UL Standards 50 and 67.

B. Related Sections:
   1. 26 0526 - Grounding and Bonding for Electrical Systems
   2. 26 0553 - Identification for Electrical Systems
   3. 26 2800 - Low Voltage Circuit Protective Devices

1.2 REFERENCES

A. The panelboards and circuit breakers referenced herein shall be designed and manufactured according to the latest revision of the following specifications.
   1. NEMA PB 1 - Panelboards
   2. NEMA PB 1.1 - Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less.
   3. NEMA AB 1 - Molded Case Circuit Breakers
   4. NEMA KS 1 - Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum)
   5. UL 50 - Enclosures for Electrical Equipment
   6. UL 67 - Panelboards
   7. UL 98 - Enclosed and Dead-front Switches
   8. UL 489 - Molded-Case Circuit Breakers and Circuit Breaker Enclosures
   9. NFPA 70 - National Electrical Code (NEC)
   10. ASTM - American Society of Testing Materials
   11. IBC – International Building Code – Seismic compliance requirements
   12. NFPA 5000 – NFPA Building Code – Seismic compliance requirements
   13. ASCE 7 – American Society of Civil Engineers, Minimum Design Loads for Buildings and Other Structures – Seismic compliance requirements
   14. ICC ES AC156 – International Code Council Evaluation Services Acceptance Criteria for Seismic Qualification by Shake-Table Testing of Nonstructural Components and Systems – seismic testing protocol

1.3 SPECIAL REQUIREMENTS

A. Special features such as integral surge protective devices (SPDs), etc., shall be provided as required by this Section and as noted on the Drawings or on the panel schedules.
   1. Trims shall be furnished to be compatible with type of mounting.
   2. “Door-in-door” construction shall be furnished on all panelboards unless otherwise noted.

1.4 SUBMITTALS

A. Provide submittals for products in accordance with Section 26 0000 - Electrical General Requirements and Division 10.

B. Submit for approval manufacturer's shop drawings to show weights, dimensions, mounting arrangements, interconnecting diagrams, schedules of overcurrent devices, voltage ratings, and specified accessories.

1.5 QUALITY ASSURANCE

A. Panelboards shall be of the latest approved design as manufactured by a nationally recognized manufacturer and shall be listed by the Underwriters' Laboratory and shall bear the UL label.

PART 2 - PRODUCTS

2.1 BASIS OF DESIGN

A. The Basis of Design is equipment from Square D Company to set a standard for quality. Equipment from Eaton, Siemens Energy & Automation, General Electric, or alternative systems will be considered providing that sufficient documentation is provided to satisfy the CONTRACTING AGENCY that the equipment meets the requirements of the Specifications and matches the Basis of Design on all points which are pertinent to the Project.

2.2 CABINETS AND FRONTS

A. Panelboard assembly shall be enclosed in a steel cabinet. Fronts shall include doors and have flush, brushed stainless steel, cylinder tumbler type locks with catches and spring-loaded door pulls. All panelboard locks shall be keyed alike. Fronts shall have adjustable, indicating trim clamps that shall be completely concealed when the doors are closed. Doors shall be mounted by completely concealed steel hinges. Fronts shall not be removable with door in the locked position. A circuit directory frame and card with a clear plastic covering shall be provided on the inside of the door. The directory card shall provide a space at least 1/4 inch high by 3 inch long or equivalent for each circuit. The directory shall be typed to identify the load fed by each circuit. Fronts shall be of code gauge, full finished steel with rust inhibiting primer and baked enamel finish. Cabinets shall be labeled in accordance with the Drawings and Section 26 0000 - Electrical General Requirements.

B. “Door-in-door” construction shall be furnished on panelboards unless otherwise noted.

2.3 SAFETY BARRIERS

A. The panelboard interior assembly shall be dead front with panelboard front removed.

2.4 BUS ASSEMBLY

A. Panelboard bus structure and main lugs or main breaker shall have current ratings as shown on the panelboard schedule. Bus structure shall allow 1, 2 and 3-pole breakers of various frame sizes to be mounted in any location and in any combination up to the capability of the panel.

2.5 SHORT CIRCUIT CURRENT RATING

A. Each panelboard, as a complete unit, shall have a short circuit current rating (SCCR) equal to or greater than that shown on the panelboard schedule, or as necessary to comply with the requirements stated on the power one-line diagram. The SCCR rating shall not, in any case, be less than 10,000 Amps at 240 volts, and 14,000 Amps at 480 volts.

2.6 PROTECTION DEVICES

A. Circuit breakers shall individually comply with Section 26 2800 – Low Voltage Circuit Protective Devices. The type to be furnished shall be as shown on the plans. If no withstand rating is specified, minimum requirements shall be as necessary to comply with the preceding requirements.

2.7 NEUTRAL TERMINAL BAR

A. Panelboards shall be equipped with an insulated neutral terminal bar.

2.8 EQUIPMENT GROUNDING TERMINAL BAR

A. Panelboards shall be equipped with an equipment grounding terminal bar to terminate equipment grounding conductors.

2.9 HANDLE LOCK-OFF EQUIPMENT

A. Circuit breakers serving as the required disconnecting means for appliances or other equipment shall be equipped with equipment to allow the breaker to be padlocked in the "off" position.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Verify mounting arrangements for each location shown on the plans. Where cabinets are recessed, verify adequate thickness of wall and make arrangements for furring or trim as required. In general, conduits shall enter the top or bottom of panel.

B. Provide additional wire gutters or pull boxes to facilitate orderly entry of conduits into cabinets. Bundle and support wires and arrange them in an orderly manner in the designated wire gutters.

C. Panelboards shall not be used for pull boxes for wiring not terminating in the panelboard.

3.2 SPARE CONDUITS

A. Provide spare conduits from flush mounted panels into accessible ceiling or floor spaces as follows:

No. of Poles (Spares + Spaces)	Spare Conduits
1 - 3	One 3/4 inch
4 - 6	Two 3/4 inch
7 or more	Two 3/4 inch, One 1 inch

3.3 PANELBOARD LABELS

A. In addition to applicable NEC requirements for emergency systems, series rated applications, etc., label panelboards in accordance with Section 26 0553 – Identification for Electrical Systems.
   1. First line shall be panelboard name.
   2. Second line shall be voltage and phase.
   3. Third line shall indicate if panelboard is "NORMAL" (black background), or "STANDBY" (yellow background) or "EMERGENCY" (red background).
   4. Fourth line shall be source from which panel is fed, “FED FROM: PANEL NH031”.

B. Install a 2 inch x 4 inch nameplate on each branch panelboard where a building contains distribution systems of different voltages:

THIS BUILDING CONTAINS TWO WIRING SYSTEMS:				
	Phase A	Phase B	Phase C	Neutral
480Y/277V	Brown	Orange	Yellow	Gray
208Y/120V	Black	Red	Blue	White

3.4 FIELD QUALITY CONTROL

A. Inspect complete installation for physical damage, proper alignment, anchorage, and grounding.

B. Check tightness of bolted connections and circuit breaker connections using calibrated torque wrench or torque screwdriver per manufacturer's written specifications.

3.5 SHORT CIRCUIT INFORMATION/PANEL SCHEDULES

A. Refer to the drawings for Short Circuit Information and Panel Schedules.

END OF SECTION 26 2416

SECTION 26 2726 - WIRING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes general provisions, products and methods of execution relating to line voltage wiring devices for use on this project.

B. Related Sections
   1. 26 0533 - Raceway and Boxes for Electrical Systems

1.2 REFERENCES

A. National Electrical Manufacturers Association:
   1. NEMA WD 1 - General Requirements for Wiring Devices.
   2. NEMA WD 6 - Wiring Devices-Dimensional Requirements.

1.3 SUBMITTALS

A. Provide submittals for products in accordance with Section 26 0000 - Electrical General Requirements and Division 10.

B. Do not place order for devices, plates, etc., without ensuring that the Contracting Agency has positively approved submittals for the specific colors necessary for all applications and locations. Note that the selection of one color for general use does not rule out the selection of other colors for special applications or for aesthetic reasons.

1.4 QUALITY ASSURANCE

A. Manufacturers mentioned and catalog numbers specified are for establishment of type, configuration and quality. Other manufacturers and types may be submitted for approval.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design is Hubbell commercial grade wiring devices to set a standard for quality. Equal devices manufactured by Arrow Hart (by Cooper Wiring Devices), Pass and Seymour, Leviton and Bryant are acceptable. Provide all similar devices of same manufacturer.

2.2 SWITCHES

A. Provide UL listed 20 AMP switches with voltage rating for the load served. Switches shall include the following:
   1. Single Pole
   2. Three-way
   3. Double Pole

4. Pilot Switch

B. Multiple 277V switches shall be installed in partition boxes or shall be furnished with shields.

C. Other switch types shall be provided as called for on the Drawings or as required by the application.

2.3 RECEPTACLES

A. Provide grounding type receptacles as follows, or as required to match equipment furnished in this or other divisions.

20A-125V	NEMA #5-20R
20A-125V GFCI	NEMA #5-20R
20A-125 SPD	NEMA #5-20R

B. Outlets requiring ratings and configurations different from those listed above shall be provided as shown on the plans and/or required by the equipment served.

2.4 DEVICE COLOR

A. Device color shall be the following unless otherwise noted or as selected by the Architect:
1. white

B. Receptacles connected to emergency, life safety, or critical power shall be red.

2.5 DEVICE PLATES

A. Device plates shall be constructed of the following materials unless otherwise noted:
1. High impact nylon. Device plate color shall match device color.

B. Indoor device plates for surface mounted boxes in utility spaces shall match the box and device type being used and shall be constructed of the following:
1. Stainless or galvanized steel

C. Weatherproof outlet plates shall be of the safety outlet enclosure type that can be closed to remain weatherproof while in use. The outlet cover/enclosure shall be clearly marked “Suitable for Wet Locations While In Use”, “UL Listed”, and “Extra-Duty”. A gasket shall be provided between the enclosure and the mounting surface, and between the hinged cover and the mounting plate/base to ensure a proper seal. Enclosure shall be oversized depth, single-gang, vertical-mount, with non-locking latch, GFCI opening, cord openings, and cover.

D. Label receptacle and light switch plates in accordance with Section 26 0553 – Identification for Electrical Systems.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install wiring devices indicated complete with cover plates. Cover plates shall fit snugly against finished surfaces and line up true with adjacent building lines, and be symmetrical in location and appearance.

B. Switches shall be installed so their handles move in a vertical plane.

C. Door swings shall be checked and, if necessary, switches shall be relocated to place them on the strike side of the door.

D. Unless otherwise noted on the drawings, receptacles shall be installed in the vertical position with the grounding pin down unless wording on the face of the device requires other mounting.

E. Receptacles identified as Ground-Fault Circuit Interrupter (GFCI) type shall be provided as individual GFCI receptacles, unless otherwise noted.

F. NEMA 5 configuration receptacles located in shops or commercial kitchens whether on single or multiple receptacle circuits shall be rated at least 20 amps.

END OF SECTION 26 2726

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SECTION 26 2800 - LOW VOLTAGE CIRCUIT PROTECTIVE DEVICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Thermal Magnetic Molded Case Circuit Breakers.
   2. Electronic Trip Molded Case Circuit Breakers.
   3. Fusible switches and fuses.

B. Related Sections:
   1. 26 2416 - Panelboards

1.2 REFERENCES

A. The circuit breaker(s) referenced herein shall be designed and manufactured according to the latest revision of the following standards.
   1. ANSI/NFPA 70 - National Electrical Code (NEC).
   2. NEMA AB 1 - (National Electrical Manufacturers Association) Molded Case Circuit Breakers and Molded Case Switches.
   3. UL 489 - (Underwriters Laboratories Inc.) Molded Case Circuit Breakers and Circuit Breaker Enclosures.
   4. UL 943 - Standard for Ground Fault Circuit Interrupters.
   5. UL 1053 – Ground Fault Sensing and Relaying Equipment.

1.3 SYSTEM DESCRIPTION

A. Provide overcurrent protective devices as specified herein and as shown on schedules and/or drawings.

1.4 SUBMITTALS

A. Provide submittals for products in accordance with Section 26 0000 - Electrical General Requirements and Division 10.

B. Product Data: Submit product data showing material proposed. Submit sufficient information to determine compliance with the Drawings and Specifications. Submit product data for each type of overcurrent protective device, ground fault protector, accessory, and component indicated. Include dimensions and manufacturer's technical data on features, performance, electrical characteristics, ratings, and finishes.

C. Provide outline drawings with dimensions, and ratings for voltage, amperage and maximum interruption. Include instructions for circuit breaker mounting, trip unit functions and adjustments, trouble shooting, accessories and wiring diagrams.

D. Coordination data to check protective devices: Manufacturer shall provide electronic and hard copy time/current characteristic trip curves (and Ip & I^2t let through curves for current limiting circuit breakers) for each type of circuit breaker.

E. Provide information required to verify compliance with the short circuit withstand and interrupting ratings, as shown on the Drawings or further stated in these Specifications.

1.5 QUALITY ASSURANCE

A. Devices shall be the latest approved design as manufactured by a nationally recognized manufacturer and in conformity with applicable standards and UL listings.

B. Nationally Recognized Testing Laboratory (NRTL) Labeling: Electrical equipment and conductors installed in the State of Alaska must be “Approved,” “Certified,” “Identified,” or “Listed” and “Labeled” to establish that the electrical equipment is safe, free of electrical shock and fire hazard, and suitable for the purpose for which it is intended to be used. The manufacturer shall have the specific authorization of one of the Occupational Safety and Health Administration (OSHA) approved Nationally Recognized Testing Laboratories (NRTLs) in accordance with the applicable national standards to label the equipment as suitable.

C. The overcurrent protection device manufacturing facility shall be Registered by Underwriters Laboratories Inc. to the International Organization for Standardization ISO 9000 Series Standards for quality.

PART 2 - PRODUCTS

2.1 PRODUCT

A. The Basis of Design is equipment from Square D by Schneider Electric to set a standard for quality. Equipment from Eaton, Siemens Energy & Automation, General Electric, or alternative systems will be considered providing that sufficient documentation is provided to the Contracting Agency that the equipment meets the requirements of the Specifications and matches the Basis of Design on all points that are pertinent to the Project.

2.2 MOLDED CASE CIRCUIT BREAKERS

A. General Characteristics:
   1. Circuit breakers shall be constructed using glass reinforced insulating material. Current carrying components shall be completely isolated from the handle, and the accessory mounting area.
   2. Circuit breakers shall have an over center, trip free, toggle operating mechanism which shall provide quick make, quick break contact action. The circuit breaker shall have common tripping of all poles.
   3. The circuit breaker handle shall reside in a tripped position between on and off to provide local trip indication. Circuit breaker escutcheon shall be clearly marked on and off in addition to providing international I/O markings.
   4. The maximum ampere rating and UL, IEC, or other certification standards with applicable voltage systems and corresponding interrupting ratings shall be clearly marked on face of circuit breaker.
   5. Each circuit breaker shall be equipped with a push-to-trip button, located on the face of the circuit breaker to mechanically operate the circuit breaker tripping

mechanism for maintenance and testing purposes (except Type QO/EDB/EGB/EJB).

6. MCCBs shall be able to receive a device for locking in the isolated position. MCCBs that serve as the main service disconnect shall be provided with a device for locking in the isolated position.
7. Electronic components shall withstand temperatures up to 221°F (105°C).
8. Circuit breakers shall be UL listed to accept field installable/removable mechanical type lugs (except Type (except Type QO/EDB/EGB/EJB/QB/QD/QG/QJ).
9. Lugs shall be UL listed to accept solid (not larger than #8 AWG) and/or stranded copper and aluminum conductors. Lugs shall be suitable for 75°C rated wire or 90 C rated wire, sized according to the 167°F (75°C) temperature rating in the NEC.

B. Trip Unit:
   1. General:
      a. MCCBs with ratings up to 400 amperes shall be equipped with thermal magnetic trip units.
      b. MCCBs with ratings over 400 amperes shall be equipped with electronic trip units.
      c. Circuit breakers with permanent trip units shall be UL listed for reverse connection without restrictive line and load markings and shall be suitable for mounting in any position.
      d. The trip units shall not augment overall circuit breaker volume.
   2. Thermal Magnetic (400 Ampere Frame and Below):
      a. Basis of Design: PowerPact Q, H and J Frame, FA, LA, and LH as manufactured by Square D by Schneider Electric.
         1). General:
            a) Thermal trip elements shall be factory preset and sealed. Circuit breakers shall be true RMS sensing and thermally responsive to protect circuit conductor(s) in a 104 F (40 C) ambient temperature. Circuit breaker frame sizes above 150 amperes shall have a single magnetic trip adjustment located on the front of the circuit breaker
         2). Type QO (for use in NQ Series Panelboards) and Type EDB/EGB/EJB (for use in NF Series Panelboards) as manufactured by Square D by Schneider Electric.
            a) Breakers shall have two forms of visible trip indication. The breaker handle shall reside in a position between ON and OFF. In addition, there shall be a red VISI-TRIP® indicator appearing in the clear window of the circuit breaker housing.
   3. Electronic Trip Circuit Breakers (breakers with ratings above 400 Ampere):
      a. MICROLOGIC Trip System:
         1). Basis of Design: PowerPact H, J, L, P and R Frame (15 amperes to 3000 amperes) as manufactured by Square D by Schneider Electric.
         2). General:
            a) Circuit breaker trip system shall be a MICROLOGIC electronic trip unit with true RMS sensing.
            b) Current transformers shall be used to ensure accurate measurements from low current up to high currents.
            c) Electronic trip unit shall be fitted with thermal imaging.

d) The following monitoring functions shall be integral parts of electronic trip units:
   i. A test connector shall be installed for checks on electronic and tripping mechanism operation using an external device.
   ii. LED for load indication at 105 percent.
   iii. LED for load indication at 90 percent of load for applications 600A and smaller.
   iv. LED for visual verification of protection circuit functionality for applications 600A or smaller.
   v. LED for trip indication for applications above 600A.
e) MICROLOGIC trip unit functions shall consist of adjustable protection settings with the capability to be set and read locally by rotating a switch.
   i. Long time pickup shall allow for adjustment to nine long time pickup settings. This adjustment shall be at least from 0.4 to 1 times the sensor plug (In), with finer adjustments available for more precise settings to match the application.
   ii. Adjustable long-time delay shall be in nine bands. At six times Ir, from 0.5 to 24 seconds above 600A, and 0.5 to 16 seconds for 600A and below.
   iii. Short time pickup shall allow for nine settings from 1.5 to 10 times Ir.
   iv. Short time delay shall be in nine bands from 0.1–0.4 I 2 t ON and 0 - 0.4 I 2 t OFF.
   v. Instantaneous settings on the trip units with LSI protection shall be available in nine bands.
f) Above 600A, from 2 to 15 times In
g) 600A, from 1.5 to 11 times In
h) 400A from 1.5 to 12 times In
i) 250A and below, from 1.5 to 15 times In
j) It shall be possible to fit the trip unit with a seal to prevent unauthorized access to the settings in accordance with NEC Section 240.
k) Trip unit shall provide local trip indication and capability to locally and remotely indicate reason for trip, i.e., overload, short circuit, or ground fault.
l) Provide neutral current transformers for four wire systems.
m) Trip units shall have the capability to electronically adjust the settings locally and remotely to fine increments below the switch settings. Fine increments for pickup adjustments shall be 1 ampere. Fine increments for delay adjustments shall be one second.
n) Trip units shall provide real time metering. Metering functions shall include, but shall not be limited to, the following:
   i. Current (phases, neutral, average, maximum).
   ii. Voltage (phase to phase, phase to neutral, average, unbalance).
   iii. Power (active [kW], reactive [kVAR], apparent [kVA], power factor).
   iv. Energy (active [kWh], reactive [kVAR], apparent [kVA]).
   v. Frequency.

vi. Metering accuracy shall be 1.5 percent current (above 600A), 1.0 percent current (600A and below), 0.5 percent voltage, and 2 percent energy. Accuracies shall be total system, including, but not limited to, CT and meter.

o) Measurement chain shall be independent from the protection chain.

p) The measurements shall be displayed on the breaker itself and/or on a remote display and/or on a remote system via Modbus communication.

q) Connections from circuit breaker to remote display and/or communication module shall be plug-n-play via RJ45 connector. No special tools or programming shall be required.

r) Optional features for applications above 600A, choose all that apply:

i. Inverse definite minimum time lag (IDMTL)
ii. Zone selective interlocking
iii. Protective relaying functions (Current unbalance, maximum demand current, reverse power, etc)
iv. Phase loading
v. Contact wear indication
vi. Wave form capture
vii. Data logging

b. ET 1.0 Trip System (300 Amperes to 800 Amperes):

1). Basis of Design: PowerPact M Frame (300 amperes to 800 amperes) as manufactured by Square D by Schneider Electric.

2). General:

a) The circuit breaker trip system shall be a microprocessor based true RMS sensing design. Sensor ampere ratings shall be as indicated on the Drawings or schedules.

b) The integral trip system shall be independent of any external power source and shall contain no less than industrial grade electronic components.

c) Trip unit shall not be field replaced.

d) ET 1.0 trip unit functions shall consist of adjustable instantaneous pickup with no intentional time delay.

e) The long-time trip point setting shall be fixed and cannot be adjusted.

f) The instantaneous settings on the trip unit shall allow 2 to 10 times the sensor rating (In). The trip unit shall have the capability for the adjustment to be set and read locally by a rotating switch.

g) Ground fault protection shall not be provided.

C. Accessories:

1. General:

a. Circuit breakers shall be equipped with UL listed electrical accessories as noted on the Drawings or schedules or they may be field installable.

b. The addition of auxiliaries shall not increase the volume of the circuit breaker.

2. Electrical Auxiliaries: Electrical auxiliaries, such as voltage releases (shunt and undervoltage releases) and indication switches as follows:

a. Same field installable auxiliary contacts for signaling different functions, such as open/ closed position, fault signal, electrical fault (including electrical leakage) signal. Auxiliaries shall be common for the entire range,
b. Electrical auxiliaries shall be separated from power circuits,
c. Electrical auxiliaries shall be of the snap in type and fitted with terminal blocks,
d. Electrical auxiliary function and terminals shall be permanently engraved on the case of the circuit breaker and the auxiliary itself.

3. Handle Accessories:
   a. Provide circuit breaker handle accessories required for locking handle in the on and off position.

2.3 FUSIBLE SWITCHES

A. Main Fusible Devices
   1. Fused Power Circuit Devices
      a. Individually fixed mounted bolted pressure switches through 4000 A.
      b. Each device shall have power terminals to accommodate either cable or bolted bus connections.
      c. The over current protective devices shall be of the fusible bolted pressure contact type as shown on the associated drawings.
      d. Switches, with Class L fuse installed, shall be rated for use on systems capable of delivering not more than 200,000 rms symmetrical amperes at 600 VAC maximum. Switches shall have an interrupting rating of 12 times continuous ampere rating at 240, 480, and 600 VAC. Switches shall be 100% rated devices. Lugs shall be rated for use with 90° C wire insulation (sized according to the 75° C temperature rating in the NEC).
      e. Switches shall have switch blades which are fully visible in the Open (off) position when the fuse access door is open. Bolted pressure contacts shall be made by providing an additional pressure or clamping action at both ends of the switch blade when the blades are fully closed. Switches having butt-type contacts are not acceptable.
      f. Manual operated switches shall have quick-make, quick-break front operating mechanisms.
      g. Electrically Operated Switch
         1). Switches shall have a manual-charging, electric trip open, quick-make, quick-break, front operated mechanism with manual override.
      h. Provisions for locking the switch in the Open (off) position with at least three padlocks shall be provided. Switches shall have dual fuse door interlock designed to prevent the fuse access door from being opened when the switch is Closed (on) and prevents the switch being turned ON while the fuse access door is open. A means of bypassing the interlock by authorized personnel shall be provided to allow the switch to be inspected in the Closed position. An external mechanical flag shall be provided to identify whether the switch is either Open or Closed.
      i. Accessories shall be supplied as follows:
         1). Capacitor trip power supply
         2). Blown main fuse protection.
         3). Blown main fuse indication.
         4). Phase failure relay with capacitor trip power supply

5). Key interlock
6). Equipment ground fault protection.
a) Provide a zero-sequence type ground fault system including current sensor and appropriate relaying equipment. The current sensor shall enclose all phase (and neutral, if present) conductors to be monitored. The current sensor frame shall be so constructed that one leg can be opened to allow the removal of the sensor without disturbing the cables or requiring drop-links in the bussing. A test winding shall be provided to simulate the flow of ground fault current through the current sensor for testing.
b) The ground fault relay shall be of solid-state construction and have adjustable pick-up for ground fault currents from 100 amperes to 1200 amperes.
c) Direct adjustable time delay shall be provided by the ground fault relay. The time delay shall be permanently calibrated to preclude tampering after installation.
d) Ground fault system to meet the on-site testing requirements of NEC article 230-95(c).
e) Ground fault system shall be Square D type GC.

j. Switches shall be BOLT-LOC as manufactured by Square D.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Installation shall be in accordance with reviewed product data, final shop drawings, manufacturer's written recommendations, and as indicated on the Drawings. Install circuit breakers in accordance with manufacturer's instructions, the National Electrical Code and applicable local codes.

B. Size devices as shown and specified, or as required by the load being served.

C. Electronic circuit breakers with Micrologic trip units: Provide specific Micrologic trip unit types as noted in panel schedules or on the Power One Line drawings.

3.2 ADJUSTMENTS

A. Circuit breaker pick-up level and time delay settings shall be adjusted to values indicated on the Drawings or schedules, or as recommended by the manufacturer.

3.3 ARC FLASH LABELING

A. Provide arc flash labels for equipment that provides all of the following:
1. Nominal system voltage
2. Arc flash boundary
3. At least one of the following:
a. Available incident energy level or arc flash PPE Category in NFPA 70E, Standard for Electrical Safety
b. Minimum arc rating of clothing
c. Site specific level of PPE

END OF SECTION 26 2800

SECTION 26 3213 - ENGINE GENERATOR

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. This section includes the scope of work for the Emergency/Standby electric generating system on the project.

B. Related Sections:
   1. 20 0000 - Mechanical General Requirements
   2. 20 0529 - Mechanical Hangers and Supports
   3. 23 1113 - Fuel Oil Piping and Specialties
   4. 25 5000 - Building Automation System
   5. 26 0000 - Electrical General Requirements

1.2 REFERENCES

A. Institute of Electrical and Electronics Engineers, Inc. (IEEE):
   1. ANSI/IEEE 446, "Recommended Practice for Emergency and Standby Power Systems for Industrial and Commercial Applications"

B. International Electrotechnical Commission (IEC):
   1. IEC 801.2, “Electrostatic Discharge”
   2. IEC 801.3, “Radiated RF Immunity”
   3. IEC 801.5, “Power Testing”
   4. IEC 8528-4, “Control Systems for Generator Sets”

C. International Organization for Standardization (ISO):
   1. ISO 9001, "Quality Management Systems - Requirements"

D. National Electrical Manufacturers Association (NEMA):
   1. NEMA MG 1, "Motors and Generators"

E. National Fire Protection Association (NFPA):
   1. NFPA 37, "Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines"
   2. NFPA 70, "National Electrical Code"
   3. NFPA 99, "Standard for Health Care Facilities"
   4. NFPA 110, "Standard for Emergency and Standby Power Systems”

F. Underwriters Laboratories, Inc. (UL):
   1. UL 142, "Standard for Steel Aboveground Tanks for Flammable and Combustible Liquids"
   2. UL 499, "Standard for Electric Heating Appliances"
   3. UL 508, "Standard for Industrial Control Equipment"
   4. UL 1236, "Standard for Battery Chargers"
   5. UL 1446, "Standard for Systems of Insulating Materials - General"
   6. UL 2200, “Standard for Stationary Engine Generator Assemblies”

G. U.S. EPA Non Road Source Emissions Standards, 40 CFR 89, “Control of Emissions from New and In Use Non-Road Compression Ignition Engines”

1.3 SYSTEM DESCRIPTION

A. Provide and acceptance test a complete and operable Emergency/Standby electric generating system, including all devices and equipment specified herein, as shown on the Drawings, or required for the service. Other than equipment specifically specified to be reused, equipment shall be new, factory tested, and delivered ready for installation.

B. The system shall include, but not be limited to, engine-generator, starting batteries, battery charger, remote annunciators, conduit, wire, fittings and accessories required to provide a complete operating system. Units shall be located in accordance with the plans.

C. Provide the generator system in a weatherproof housing with features, accessories and appurtenances called for in this Section and on the Drawings.

D. Provide the generator system in a fully enclosed, walk-in, sound attenuated, weatherproof housing with features, accessories and appurtenances called for in this Section and on the Drawings.

E. The system shall comply with the applicable requirements of NFPA 110 - Emergency and Standby Power Systems for Level 1, Type 10, Class 96 systemsProvide all features and accessories required.

F. The system shall comply with the applicable requirements of NFPA 99 - Health Care Facilities for Essential Systems, and Article 517 of the National Electrical Code (NEC). Provide features and accessories required.

G. Prototype tests shall have been performed on a complete and functional unit. Component level type tests will not satisfy this requirement. Prototype testing shall comply with the requirements of NFPA 110.

H. The system shall be listed to UL2200.

I. The generation system shall be grounded as a “separately derived system” in accordance with NEC Article 250 for grounded systems. Provide a busbar within the maintenance building to bond the generators separately derived system to so that the existing ATSes can in turn be bonded to that busbar.

J. The work also includes, but is not limited to:
   1. Load shed priority and control system to give priority to NEC Article 517 Essential Electrical System loads over NEC 702 standby loads and to dynamically manage the standby load according to Owner-established priorities.
   2. Connection to the Building Automation Control System (BAS) LONG Building Controls network.

3. Hardwired connection to the Building Automation Control System to provide remote monitoring as specified elsewhere in these specifications and on the drawings.
4. Generator vibration isolators to meet seismic requirements.

K. Provide sound, vibration and seismic support in accordance with Section 25 0548 – Mechanical Vibration and Seismic Control – Mechanical Vibration and Seismic Control.

1.4 SUBMITTALS

A. Provide submittals for products in accordance with Section 26 0000 - Electrical General Requirements and Division 10.

B. Provide submittal data with the following information:
1. Manufacturer’s product literature and performance data, sufficient to verify compliance to specification requirements.
2. Drawings and/or literature describing diesel engine generator set(s), switchgear, controls and other auxiliary equipment to be provided.
3. Shop drawings showing plan and elevation views with certified overall dimensions, as well as wiring interconnection details.
4. Interconnection wiring diagrams showing external connections required; with field wiring terminals marked in a consistent point-to-point manner.
5. Manufacturer's installation instructions.
6. Drawings of the diesel generator set offered hereunder.
7. Layout Drawings of the module (housing) showing equipment and demonstrating required working clearances. Provide calculations for generator module wind loading, snow loading and sound attenuation performance.
8. The following data in tabulated form:
   a. Make of engine.
   b. Number of cylinders.
   c. Bore, inches.
   d. Stroke, inches.
   e. Piston displacement, cubic inches.
   f. Piston speed, feet per minute, at rated RPM.
   g. Make and type of generator.
   h. Generator electrical rating, kVA or kW @ 0.8 power factor.
   i. Exciter type.
   j. Alternator insulation class and temperature rise.
   k. Alternator direct-axis transient reactance (X'd).
   l. Alternator sub-transient reactance at standby rating of genset.
   m. Total harmonic distortion of AC voltage at full load at 0.8 power factor, line-to-line and line-to-neutral.
   n. Parts and service support.
   o. Engine manufacturer's certified engine BHP curve and certified genset fuel consumption curve.
   p. Auxiliary equipment showing options.
   q. Manufacturers installation instructions.
9. Submit 8-1/2 by 11 literature and equipment data in hard-back, 3-hole, loose leaf binders by individual sets. Cardboard or paper binders are unacceptable.

1.5 CLOSEOUT SUBMITTALS

A. Furnish complete sets of Operation and Maintenance Manuals and other information necessary for the operation and maintenance of the system in accordance with Division 10 requirements. Provide number of sets as required in Division 10, however if not specified, provide a minimum of two complete sets.

1.6 QUALITY ASSURANCE

A. Provide system designed and built in accordance with NEMA, IEEE, ANSI Standards, and in accordance with NFPA and the electrical codes.

1.7 WARRANTY AND SERVICE

A. Warranty service with no deductible shall be provided for components by a trained, certified specialist of the equipment manufacturer. The specialist shall be based in a fully-staffed branch office located within a reasonable distance from the job site. This requirement applies to all components of the complete system.

B. Warrant components, parts, and assemblies against defects in materials provided under this contract, and all workmanship, for a period of five (5) years or 3,000 operating hours (whichever comes first) after Final Acceptance of this work.

C. Warranty response time shall not exceed twenty-four (24) hours.

PART 2 - PRODUCTS

2.1 BASIS OF DESIGN

A. Provide a diesel-generator set of the latest commercial type and design. In a standby capacity, it shall be capable of continuous service at rated output for the duration of any utility power failure. The engine and generator shall be the product of one company. It shall be a new, factory assembled and tested set as manufactured by the Caterpillar Company which is the Basis of Design system shown on the Drawings. The engine and generator set shall have undergone comprehensive prototype testing to ensure acceptable performance at rated load and power factor.

B. Alternative systems: The City of Valdez has an existing maintenance contract for their generators with the Caterpillar Company. No other alternative systems will be considered on this Project.

C. Provide the necessary controls and accessories to the extent that this equipment, in conjunction with the diesel engine generator set, comprises a complete operating package for installation at 150 feet above sea level in an ambient temperature of 80 degrees F. maximum, 18 degrees F. minimum. The generator vendor shall review the Contract Documents to become informed regarding loads served by the system. Equipment provided shall be compatible with loads served under all operational scenarios.

2.2 RATING

A. Rating of the diesel engine generator set shall be based on operation of the set when equipped with required operating accessories such as radiator, fan, air cleaners, lubricating oil pump, fuel transfer pump, fuel injector pump, jacket water pump, governor, alternating current generator and exciter regulator.

B. The diesel engine generator set shall be capable of producing 500 kW at 0.8 power factor continuously for standby power applications at the ambient and altitude conditions stated in Section 2.1. The output voltage shall be 480 volts, 4-wire, 3 phase, 60 Hertz.

C. Engines with special fuel requirements are not acceptable. Engine shall obtain rated output with No. 1 or No. 2 diesel or heating fuel.

D. Generator set manufacturer shall provide documentation demonstrating compliance with applicable limits of U.S. EPA Title 40 CFR 1039 Control of Emissions from New and In-Use Nonroad Compression-Ignition Engines.

2.3 SEQUENCE OF OPERATION

A. Upon failure of the normal (utility) power source, the engine shall start and the Life Safety Branch ATS (ATS-LS) and the Critical Branch ATS (ATS-CRIT) shall connect to the generator within 10 seconds as required by Code.

B. After a 15 second (adjustable from 1 to 120 seconds) delay the Equipment Branch (ATS-EQUIP) shall connect the Equipment Branch to the generator set.

C. After a 30 second (adjustable from 1 to 120 seconds) delay the UPS Branch (ATS-UPS) shall connect the UPS Branch to the generator set.

D. After a 45 second (adjustable from 1 to 120 seconds) delay the Clinic Branch (ATS-CLIN) shall connect the Clinic Branch to the generator set.

E. Upon restoration of normal (utility) power, the generator shall delay retransfer of standby load (ATS-EQUIP, ATS-UPS and ATS-CLIN) to the normal power source for 14 minutes (adjustable), and emergency load (ATS-LS and ATS-CRIT) for 15 minutes (adjustable).

F. Provide load shed provisions to shed the Equipment Branch (ATS-CLIN), the UPS Branch (ATS-UPS), and the Clinic Branch (ATS-EQUIP), to prevent generator overload. First to shed shall be ATS-CLIN, then if overload persists shed ATS-UPS, and last to shed shall be ATS-EQUIP.

G. After retransfer of load to the normal power source the engine shall run for a minimum 10-minute cool-down period.

2.4 ENGINE

A. The engine shall be diesel fueled, four (4) cycle, water-cooled, while operating with nominal speed not exceeding 1800 RPM. The engine will utilize in-cylinder

combustion technology, as required, to meet applicable EPA non-road mobile regulations and/or the EPA NSPS rule for stationary reciprocating compression ignition engines. Additionally, the engine shall comply with the State Emission regulations at the time of installation/commissioning. Actual engine emissions values must be in compliance with applicable EPA emissions standards per ISO 8178 – D2 Emissions Cycle at specified ekW / bHP rating. Emissions requirements / certifications of this package: EPA ESE

B. Certified engine horsepower curves shall be submitted showing the manufacturer's approval of the engine rating for generator set standby and prime power application. Special ratings or "maximum" ratings are not acceptable.

C. The engine shall be 1800 RPM at normal operation.

D. The engine shall be capable of satisfactory performance on commercial grades of distilled petroleum fuel oil, including No. 1 and No. 2 diesel and heating fuels.

E. Governor: The engine speed shall be governed by an isochronous electronic governor to maintain governed speed within +0.25% of rated frequency from steady state no load to steady state full load generator output.
   1. The frequency regulation from no load to rated load shall be in accordance with that defined by the engine governor performance. For any addition of load up to 100% of rated load, the frequency shall recover to the steady state frequency band within 7.0 seconds.

F. The fuel system shall be that which is normally used by the diesel engine manufacturer. It shall include a replaceable element fuel filter and fuel/water separator, both conveniently located for servicing.
   1. Steel braid reinforced flexible fuel lines shall be furnished for each fuel connection to the engine.

G. The engine shall have a gear type lubricating oil pump for supplying oil under pressure to main bearings, crankpin bearings, pistons, piston pins, timing gears, camshaft bearings, and valve rocker mechanism.

H. Threaded spin on type full flow lubricating oil filters, conveniently located for servicing, shall be provided. Filter housing, integral to engine lubrication system, shall be equipped with a spring-loaded bypass valve to ensure oil circulation if filters are clogged.

I. Engine jacket water or air-to-air cooled and engine manufacturer approved aftercooler or intercooler may be furnished.

J. The engine shall be provided with one or more dry type, replaceable element, air cleaners.

K. The engine shall be equipped with either 12- or 24-volt negative ground electric starting system of sufficient capacity to crank the engine at a speed that will allow full diesel starting of the engine.

1. Lead acid batteries shall be furnished having sufficient capacity for cranking the engine for at least two complete cranking cycles (3 @ 15 second crank cycles and 3@ 15 second rest periods) at firing speed in the ambient temperature specified. A battery rack and necessary cables and clamps shall be provided.
2. The alternator shall have sufficient capacity to recharge the batteries at their 3-hour rate.
3. A current limiting battery charger shall be furnished to automatically recharge batteries. Charger shall float at 2.17 volts per cell and equalize at 2.33 volts per cell. It shall include overload protection, silicon diode full wave rectifiers, temperature compensated voltage regulator, 12 hour equalize timer, DC ammeter and voltmeter and input and output fuses. AC input shall be as required or as shown on the Drawings output shall be rated at not less than 10 amperes. Provide monitoring of the battery charger in accordance with NFPA 110 as noted elsewhere in this section.

L. Provide engine preheating as follows:
1. An engine mounted, thermostatically controlled (via contactor) engine coolant heater shall be provided to ensure that engine block coolant temperature is maintained in the range of 120 degrees to 140 degrees F (50 degrees - 60 degrees C). Provide a lube oil pressure switch or other approved means for automatic cutout on engine start.
2. Provide thermostatically controlled oil sump heater, sized to prevent scorching of the lube oil. Provide lube oil pressure switch or other approved means for automatic cutout upon engine start.

M. The engine shall be furnished with a cooling system having sufficient capacity for cooling the engine when the diesel generator set, with all engine driven accessories, is delivering full rated load at specified ambient temperature and altitude limits, with specified coolant protection.
1. The engine shall be equipped with an engine driven, centrifugal type water circulating pump and thermostatic valve to maintain the engine at recommended temperature level.
2. Antifreeze - the engine cooling system shall be filled with a minimum concentration of 50% ethylene glycol antifreeze with corrosion inhibitors and water pump lubrication per the engine manufacturer's recommendations. Propylene glycol protection may be submitted for approval if acceptable to the equipment manufacturer.
3. The engine shall be equipped with a radiator, blower fan, and close-fitting venturi shroud of a type and capacity recommended by the engine manufacturer. A rigid guard shall enclose both top and sides of moving parts between the engine and radiator.
4. For installations in an enclosed space, specify dimensions of radiator core and the flow of cooling air, in cubic feet per minute, required for proper cooling of the engine and generator.
5. The radiator shall be sized to operate safely at anticipated ambient temperatures and shall be equipped with a duct adapter flange.
6. Prototype testing shall verify that the exact engine, fan and radiator combination provided is suitable for operation in the specified ambient conditions.

N. A suitable silencer, of the hospital type shall be provided with the engine. Silencer shall slope down away from the inlet (engine exhaust) and a condensate drain valve shall be provided at the low point.
   1. A flexible continuous, bellows type stainless steel seamless exhaust pipe at least 24 inches long shall be furnished for the engine exhaust outlet. The pipe outlet connections shall be compatible with standard ASA 125-pound pipe flanges.
   2. Mounting of the exhaust silencer shall be coordinated with Divisions 20 and 23. Silencer shall be mounted so that its weight is not supported by the engine.

O. The engine and generator shall be equipped with suitable full-length subbase for mounting the engine generator unit, including radiator.

P. The generator shall be equipped with seismically restrained spring type vibration isolators between the subbase and the floor. Coordinate floor mounting and reinforcing requirements and installation with other applicable Divisions. Isolators shall be suitable for the site seismic requirements.

Q. Furnish a drip pan under engine. Drip pan shall extend full length and width of engine and shall have 3/4-inch minimum depth.

R. Engine crankcase breather shall be equipped with a filter system (Nelson Emission Absorber or equal). Filter system shall be sized to handle the full engine blow by volume at end of engine service life, with the filter at end of service interval, without exceeding backpressure limitations on the crankcase breather. The housing of the filter system shall be installed in such a manner that the filter element(s) can be changed without removing any accessory equipment. The output of the filter system shall be ducted into the atmosphere side of the engine air filter in such a manner that it does not significantly hamper servicing of the air filter element(s). Oil drain line from the filter system shall be plumbed, without valves, into the engine oil sump below the minimum oil level line, at a location that does not interfere with other features.

2.5 ALTERNATOR

A. The alternator shall be a brushless, revolving field type, coupled directly to the engine flywheel through a flexible driving disc for positive alignment. The alternator shall have a 2/3 pitch coil. The generator housing shall bolt directly to the engine flywheel housing. The generator housing shall have a single ball bearing support for the rotor. The rotor shall be dynamically balanced up to 25% over speed.

B. The alternator shall comply with NEMA standard MG1, Part 22. Insulation shall be class H as recognized by NEMA. The temperature rise of alternator components for the class insulation being furnished, and as measured by the resistance method at the voltage specified shall be in accordance with NEMA standard MG1-22.40 for prime operation. The generator shall be fully guarded per NEMA MG1-1.25. The maximum temperature rise shall be 125°C with Class H.

C. The alternator shall have a sub transient reactance of 12% or less.

D. Generator Excitation System: Excitation system shall be the permanent magnet “PMG” type. The PMG and associated controls shall be capable of sustaining and

regulating current supplied to a single phase or three phase fault at approximately 300% of rated current for up to 10 seconds.

E. The rotor shall be layer wound with thermosetting epoxy between each layer plus a final coat of epoxy for moisture and abrasion resistance. Amortisseur windings shall be integral with the rotor coil support. The rotor shaft bearing shall be shielded type with provisions for easy servicing through grease pipes that extend to the exterior of the generator frame. The bearing shall be designed for a minimum B-10 bearing life of 40,000 hours.

F. The generator shall be furnished with a load connection box such that load conductors can enter the top or bottom of the junction box.

G. Voltage Regulation:
   1. The generator set shall include an automatic voltage regulation system with the following features:
      a. Microprocessor based with programmable operating characteristics.
      b. True RMS 3-phase voltage monitoring.
      c. Regulation: +0.25% no load to full load. Response time: Maximum of 10 milliseconds.
      d. Fault detection logging.
      e. Digital display allow system parameter monitoring.
      f. The balanced telephone influence factor (TIF) shall not exceed 50.
      g. The voltage regulator shall include the following programmable variables and adjustments:
         1). Voltage vs frequency characteristic: Two slope ranges adjustable for 1-10 V/Hz for optimum performance.
         2). Fine voltage level (+10% to -10%).
         3). Droop adjustment (up to 10% @ 0.8 pf).
         4). Overvoltage setpoint (105% to 140% of nominal) with adjustable trip time.
         5). Gain (0-10% of nominal).
         6). Three phase sensing.
         7). Underfrequency point (15 to 40 Hz).
         8). Knee frequency (45 to 65 Hz).
      h. The voltage regulator shall include the following protective functions:
         1). Overvoltage/undervoltage protection.
         2). Loss of sensing.
         3). Rotating diode monitor shall monitor the status of the rotating diodes and operate the alarm relay in the event of failure of one or more of the diodes.
         4). Loss of excitation: Over excitation protection shall shut off generator output when excitation current exceeds normal operating currents for 15 seconds. Shut off shall be instantaneous if output is shorted.
         5). Underfrequency protection to avoid overheating of the rotor.
         6). Instantaneous field overcurrent trip to protect the DVR in the event of output short circuit or improper connections.

H. Motor starting kVA shall be not less than 2,429 kVA at 90% sustained voltage.

I. Total harmonic distortion of the generator output voltage waveform shall not exceed 5%, when measured line-to-line or line-to-neutral, from no-load to rated load. Under these same conditions, no single harmonic shall exceed 3% of the fundamental.

2.6 CONTROLS-GENERATOR SET MOUNTED

A. Provide a fully solid-state, microprocessor based, generator set control. The control panel shall be designed and built by the engine manufacturer. The control shall provide all operating, monitoring, and control functions for the generator set. The control panel shall provide real time digital communications to all engine and regulator controls via SAE J1939.

B. The control shall be in compliance with NFPA 110 for a Level1, Type 10 system.

C. The generator set control shall be tested and certified to the following environmental conditions:
1. -40°C to +70°C Operating Range
2. 100% condensing humidity, 30°C to 60°C
3. IP22 protection for rear of controller; IP55 when installed in control panel.
4. 5% salt spray, 48 hours, +38°C, 36.8V system voltage
5. Sinusoidal vibration 4.3G's RMS, 24-1000Hz
6. Electromagnetic Capability (89/336/EEC, 91/368/EEC, 93/44/EEC, 93/68/EEC, BS EN 50081-2, 50082-2)
7. Shock: withstand 15G

D. The following functionality shall be integral to the control panel.
1. The control shall include a minimum 33 x 132 pixel, 24mm x 95mm, positive image, LCD display with text-based alarm/event descriptions.
2. The control shall include a minimum of 3-line data display.
3. Audible horn for alarm and shutdown with horn silence switch
4. Standard ISO labeling
5. Multiple language capability
6. Remote start/stop control.
7. Local run/off/auto control integral to system microprocessor
8. Cooldown timer
9. Speed adjust.
10. Lamp test
11. Emergency stop push button
12. Voltage adjust.
13. Voltage regulator V/Hz slope - adjustable
14. Password protected system programming.

E. The controls shall provide the following digital readouts for the engine and generator. All readings shall be indicated in either metric or English units.
1. Engine:
    a. Engine oil pressure
    b. Engine oil temperature
    c. Engine coolant temperature
    d. Engine RPM
    e. Battery volts

f. Engine hours
g. Engine crank attempt counter
h. Engine successful start counter
i. Service maintenance interval
j. Real time clock
k. Engine exhaust stack temperature
l. Engine main bearing temperature

2. Generator:
   a. Generator AC volts (Line to Line, Line to Neutral and Average)
   b. Generator AC current (Avg and Per Phase)
   c. Generator AC Frequency
   d. Generator kW (Total and Per Phase)
   e. Generator kVA (Total and Per Phase)
   f. Generator kVAR (Total and Per Phase)
   g. Power Factor (Avg and Per Phase)
   h. Total kW-hr
   i. Total kVAR-hr
   j. % kW
   k. % kVA
   l. % kVAR
   m. Generator bearing temperature.
   n. Generator stator winding temperature.

F. The control shall monitor and provide alarm indication and subsequent shutdown for the following conditions. All alarms and shutdowns are accompanied by a time, date, and engine hour stamp that are stored by the control panel for first and last occurrence:
   1. Engine Alarm/Shutdown:
      a. Low oil pressure alarm/shutdown
      b. High coolant temperature alarm/shutdown
      c. Loss of coolant shutdown
      d. Overspeed shutdown
      e. Overcrank shutdown
      f. Emergency stop shutdown.
      g. Low coolant temperature alarm
      h. Low battery voltage alarm
      i. High battery voltage alarm
      j. Control switch not in auto position alarm
      k. Battery charger failure alarm
   2. Generator Alarm/Shutdown:
      a. Generator phase sequence
      b. Generator over voltage
      c. Generator under voltage
      d. Generator over frequency
      e. Generator under frequency
      f. Generator reverse power (real and reactive)
      g. Generator overcurrent
   3. Voltage Regulator Alarm/Shutdown:
      a. Loss of excitation alarm/shutdown
      b. Instantaneous over excitation alarm/shutdown

c. Time over excitation alarm/shutdown
d. Rotating diode failure
e. Loss of sensing
f. Loss of PMG

G. Inputs and Outputs
1. The Controller shall include the ability to accept programmable digital input signals. The signals may be programmed for either high or low activation using programmable Normally Open or Normally Closed contacts.
2. The control shall include the ability to operate programmable relay output signals, integral to the controller. The output relays shall be rated for 2A @ 30VDC and consist of six (6) Form A (Normally Open) contacts and two (2) Form C (Normally Open & Normally Closed) contacts.
3. The control shall include the ability to operate two (2) discrete outputs, integral to the controller, which are capable of sinking up to 300mA.

H. All engine, voltage regulator, control panel and accessory units shall be accessible through a single electronic service tool. The following maintenance functionality shall be integral to the generator set control.
1. Engine running hours display.
2. Service maintenance interval (running hours or calendar days)
3. Engine crank attempt counter
4. Engine successful starts counter
5. 40 events are stored in control panel memory.
6. Programmable cycle timer that starts and runs the generator for a predetermined time. The timer shall use 7 user-programmable sequences that are repeated in a 7-day cycle. Each sequence shall have the following programmable set points:
7. Day of week
8. Time of day to start.
9. Duration of cycle

I. The control shall include Modbus RTU communications as standard via RS-485 half duplex with configurable baud rates from 2.4k to 57.6k.

J. The control shall provide Monitoring Software with the following functionality.
1. Monitor up to eight (8) generator sets, plus ATS and UPS.
2. Provide access to all date and events on generator set communications network.
3. Provide remote control capability for the generator set(s)
4. Ability to communicate via Modbus RTU or remote modem.

K. The control panel shall be designed and built by the engine-generator manufacturer. It shall be mounted on the generator set with vibration mounts and incorporate 100% solid state microprocessor based control circuitry, sealed dust tight, water tight modular components with metal housings, and digital instrumentation. The panel shall be labeled with ISO symbols and comply with IEC 144, IP 22, and NEMA 12 for external environmental resistance, and IP 44 and NEMA 12 for resistance of the internal sealed modules.

L. The panel shall include the following equipment:

1. Metering Devices: LED or back-lit LCD displays for volts, hertz, kW, kWh, power factor, and amps in a single environmentally sealed module.
2. Engine Monitoring Devices: LED or back-lit LCD to sequentially rotate display of operating hours, engine RPM, battery DC volts, oil pressure and temperature, jacket water temperature, number of starts, weak battery, governor/voltage percent duty.
3. Controls: Generator voltage level sealed raise/lower switches and ammeter/voltmeter phase selector switch shall be mounted on the panel door. The engine start-stop switch shall be door mounted and include positions for off/reset, run/start, stop, and automatic mode. Start-stop logic shall have provisions for cycle cranking and cool-down operation.
4. Annunciation: The generator set shall shut down and flashing LEDs shall signal operational faults of high coolant temperature, high lube oil temperature, low oil pressure, low coolant level, over crank, and overspeed. The control panel shall include a self-diagnostic fault indicating system to display by visible codes, malfunctions of the panel or its accessories. An additional status panel shall be included to indicate pre-alarm for high water temperature, low oil pressure, low engine jacket water temperature, low DC voltage, system not in automatic, and low fuel level to meet the requirements of NFPA 99 or 110. Indicators for these pre-alarms shall be flashing LEDs and an alarm.
5. Safety Devices: ISO red emergency stop pushbutton shall be provided, and all controls, annunciation, and monitors shall be labeled with ISO symbols.

2.7 ANNNUNCIATION

A. Provide a local, control panel mounted, annunciator to meet the requirements of NFPA 110, Level 1.
   1. Annunciators shall be networked directly to the generator set control.
   2. Local Annunciator shall include a lamp test pushbutton, alarm horn and alarm acknowledge pushbutton.
   3. Provide the following individual light indications for protection and diagnostics:
      a. Overcrank
      b. Low coolant temperature
      c. High coolant temperature warning
      d. High coolant temperature shutdown
      e. Low oil pressure warning
      f. Low oil pressure shutdown
      g. Overspeed
      h. Low coolant level
      i. EPS supplying load.
      j. Control switch not in auto
      k. High battery voltage
      l. Low battery voltage
      m. Battery charger AC failure
      n. Emergency stop
      o. Spare (or ATS Remote Start wiring failure)
      p. Spare (or Tier 4 SCR when applicable)

B. Provide a remote annunciator(s) to meet the requirements of NFPA 110, Level 1 and as located on the drawings.

1. The annunciator shall incorporate ring-back capability so that after silencing the initial alarm, any subsequent alarms will sound the horn.
2. Ability to be located up to 4000 ft from the generator set.
3. The annunciator shall provide remote annunciation of all points listed below:
   a. Overcrank
   b. Low coolant temperature
   c. High coolant temperature warning
   d. High coolant temperature shutdown
   e. Low oil pressure warning
   f. Low oil pressure shutdown
   g. Overspeed
   h. Low coolant level
   i. EPS supplying load
   j. Control switch not in auto
   k. High battery voltage
   l. Low battery voltage
   m. Battery charger AC failure
   n. Emergency stop
   o. Spare
   p. Spare

2.8 ACCESSORIES

A. Overload Protection Circuit Breaker - Molded Case:
   1. Main line molded case 3-pole circuit breaker(s) sized per the Drawings shall provide load circuit interrupting and protection. Breaker(s) shall operate both manually as an isolation switch and automatically during overload and short circuit conditions.
   2. The trip unit for each pole shall have elements providing inverse time delay during overload conditions and instantaneous magnetic tripping for short circuit protection. The circuit breakers shall meet standards established by Underwriters' Laboratories, National Electric Manufacturer's Association, and National Electric Code.
   3. Circuit breaker(s) shall have auxiliary contacts for position indication to be annunciated at generator and remote panel.
   4. Submit main line circuit breaker trip curve(s) with alternator thermal damage curve plotted on chart. Include recommended trip settings to provide optimum protection of alternator and to minimize potential “nuisance” tripping of breaker.

2.9 COOLING

A. Cooling System: Closed loop, liquid cooled, with radiator factory mounted on engine-generator-set mounting frame and integral engine-driven coolant pump.

B. Coolant: Solution of 50 percent ethylene-glycol-based antifreeze and 50 percent water, with anticorrosion additives as recommended by engine manufacturer.

C. Size of Radiator: Adequate to contain expansion of total system coolant from cold start to 110 percent load condition.

D. Expansion Tank: Constructed of welded steel plate and rated to withstand maximum closed-loop coolant system pressure for engine used. Equip with sight gauge and low water level sensor.

2.10 INSULATED WALK-IN GENERATOR ENCLOSURE

A. General:
1. Provide an insulated, sound attenuated generator enclosure to house a diesel driven electric generator and associated accessories. Provide all systems necessary to ensure the generator set will start and be ready to assume the facility life safety, critical, equipment, and standby loads within ten seconds. Maximum radiated noise from the enclosure shall be 65 dBa at 23 feet (7 m), in any direction, with full rated 500 kW standby load. Enclosure shall be sized to provide minimum 3-foot, 6-inch clearance around generator for maintenance access.
2. The engine/generator set shall be housed in an insulated, heated and ventilated, weatherproof protective sheet metal enclosure. Enclosure shall allow full load operation of the engine/generator system and all of its accessories (except transfer switch and remote annunciators) and shall be designed for the exact unit being provided. The entire modular package of engine/generator set and enclosure shall be liftable by 4-point lifting eyes, as well as by forklift.
3. The enclosure shall be of welded and bolted construction, with all fabricated steel parts conforming to ASTM 569, specification C-1018, and all structural steel conforming to ASTM A36. No external fasteners requiring gasketing or allowing corrosion to form will be allowed. All parts shall be individually prepped and primed prior to assembly. All seams shall be caulked with body and seam sealer. The entire enclosure shall receive two coats of rust-preventive primer and two coats of polyurethane paint, Imron, or equal. Submit standard colors to Contracting Agency for selection.
4. Roof of the enclosure shall have a 6" to 8" pitch for water runoff, shall be made of a minimum 12-gauge steel members with 16-gauge steel roof panels, and shall be suitable for at least 140 pounds per square foot snow loads (ASCE-7). Engine exhaust pipe shall pass through a weatherproof thimble.
5. Walls shall be a minimum of 4" thick, fabricated of 14-gauge steel, and shall withstand 100 mph winds with gusts to 130 mph.
6. Enclosure shall have a structural steel skid base and shall include a means for fastening to the concrete slab. The skid base shall include structural or fabricated channel construction, a 7-gauge steel floor with skid resistant finish (diamond deck) with a 2" space for insulation further specified in this Section, and non-skid material installed on the walking areas.
7. Adequate doors shall be provided for unhindered maintenance access to the generator set and all accessories, and full compliance with NEC 110-16. Doors shall be of 14-gauge steel construction, minimum of 2" thick, with vertical, corrosion-resistant metal hinges, rain rail moldings, dual hermetically sealing gaskets, and lockable handles with 3-point latch assemblies. Doors shall be removable (in open position only). A means shall be provided to secure doors against wind movement when open. Single doors shall be at least 36” wide by 78” high. Double doors shall be provided where necessary and shall be at least 60” wide by 72” high.

8. All doors and other features further specified in this Section to be lockable shall be provided with corrosion-resistant padlocks (with non-hardened shackles) so that unauthorized persons cannot gain access to the generator set or other vital parts when the module is left unattended. All padlocks shall be keyed alike; provide three keys to the Contracting Agency.
9. Floor shall have a minimum of 2" of rigid polystyrene insulation (Dow HI-40 or equal). Insulation may be omitted under the generator set skid base, to facilitate proper structural support. Other insulation shall be rigid or expanded polystyrene foam; at least 4" thick in walls and roof, and 2" in doors. All insulation shall be protected by sheet metal on both sides (minimum 24 gauge); no exposed insulation allowed.
10. Pitch the roof at 3-inch rise over 12 inch run at a minimum to facilitate shedding on snow. Provide a 3 in 12 pitched roof over each man door to help prevent the accumulation of snow in front of each man door and thus preventing it's opening or closing.
11. Submit detailed shop drawings of generator and generator enclosure detailing all equipment and connection specified here in and as indicated on the drawings for review and approval prior to construction of enclosure.

B. Base and Foundation:
   1. The enclosure shall be set on an adequately sized, reinforced, concrete pad as detailed on the Drawings. The enclosure frame shall have provisions included for seismic restraints to prevent movement during an earthquake as defined by IBC Seismic Zone 4 and ASCE 7. Fork pockets shall be included in the enclosure frame, and provisions for lifting by crane with the use of spreader bars shall be included at each corner of the container.

C. Enclosure Construction:
   1. The enclosure shall be constructed of a welded steel framework, welded steel base, and welded convoluted sheet steel exterior walls. The interior floor shall be welded sheet diamond deck. An angle iron lip shall be continuous welded to the interior steel floor to act as a leak free containment basin for the fuel system. An insulated "Steelcase " type personnel door shall be installed in one side of the enclosure; it shall have a locking passage set with a lever type exterior handle, and a push bar interior opener, and shall open to the outside. The interior walls and ceiling shall be insulated with a minimum of 2 inches foam, and faced with a riveted or sheet metal screwed, galvanized steel sheeting or other acceptable material. All doors and openings to the enclosure shall have silicon rubber seals. The interior floor shall be cleaned and painted with an anti-skid industrial duty light gray paint; the exterior shall be cleaned, primed, and finish coated with an industrial paint system with color selected by the Contracting Agency.

D. Enclosure Electrical System:
   1. A totally self-contained building electrical system shall be installed. 120/208 volt, 3-phase power will be supplied from a shore power connection on the outside of the enclosure, accessed by connections in a pull box. During emergency power situations, a circuit from the emergency distribution shall continue to provide power to the enclosure. Power shall be fed through a load center with main disconnect circuit breaker, and individual branch circuit breakers as required. The interior equipment shall include, but not be limited to:

a. 120-volt AC Lights, vapor tight with guards and switch.
b. Battery-powered emergency light.
c. One (1) 208 volt (nominal) 10 kW unit heater with thermostat control to maintain space temperature in all ambient conditions.
d. One (1) set 24-volt motorized radiator shutters; these shutters shall open partially upon initial engine start and modulate during operation from a thermostat control installed in the engine return water line.
e. One (1) 120-volt engine jacket water heater circuit.
f. One (1) 120-volt service for a minimum 24-volt DC 6 amp battery charger.
g. Three (3) 120-volt duplex wall outlet.
h. One 24-volt DC light, vapor tight with guard and timer switch, to operate from the engine starting batteries.
i. One wall mount pull box with dry contacts for connection to a remote alarm panel to indicate a common generator fault, and generator running. Access shall be provided by a through-wall thimble into the back of the enclosure.
j. One 120-volt power source for battery heaters.
k. One 120 volt or 24-volt power source as required for Fire suppression System.
l. One 120-volt power source for the engine crankcase breather heat tape.
m. All wiring between the accessories and the load center shall be installed in EMT. AC and DC wiring shall be in separate conduits.
n. Flexible sections shall be installed at points where contact is made with vibrating equipment.
o. Provide a complete grounding system per the NEC, including grounding of module frame, genset frame, bonding to slab reinforcement, and two (2) driven ground rods separated by at least 10 feet.

E. Enclosure Heating and Ventilation:
1. Enclosure Heating and Ventilation: The enclosure will be provided with a stand-alone thermostatically-controlled heating and ventilation system. Refer to sheet M4.01 for generator enclosure heating and ventilation system sequence of operation.
2. A duct transition from the engine radiator shall be installed; it shall have a flexible section to limit transmitted vibration from the engine to the enclosure.
3. Damper actuators shall be accessible for maintenance without any disassembly of module.
4. Fan-forced electric unit heater, UH-1, rated nominal 10kW at 208V three-phase, with integral control contactor; Modine HER or equal, ceiling mounted and aimed for best coverage of module interior.
5. Cooling air system with dampers for outside/combustion intake air (OA), radiator discharge, radiator recirculation air (RA), and generator enclosure exhaust discharge (EA). Damper actuators shall be sized for double the normal operating torque of the dampers, to overcome any frost-binding of the dampers. Dampers shall be thermally insulated type, Tamco or equal.
6. Ventilation cooling fan with two position dampers to limit room temperature rise to 20°F (submit calculations) with a maximum temperature of 90°F when generator is off.
7. Damper actuators shall be energized only when the generator is running.
8. Ventilation openings through exterior skin of enclosure shall be snow-hooded and bird screened. Snow hoods shall be fabricated of minimum 16-gauge steel,

shall be securely bolted to a support frame fabricated as part of the module, and shall withstand 100 mph winds with gusts to 130 mph.

9. Group thermostats at one location, selected to give best reading of mixed-air temperature in the module (i.e.: minimizing influence of cold or warm air streams) when the generator or unit heater is running. Mount thermostats with 1" standoffs from wall.
10. Sheet metal work shall be in accordance with SMACNA requirements.

F. Engine Exhaust System:
1. A side inlet, critical degree exhaust silencer shall be installed inside the enclosure. The system shall be complete with all mounting hardware, flexible exhaust fitting, ventilated roof thimble, rain drip shield, outlet pipe extension, and interior insulation wrap on the pipe which will limit the exterior temperature to 150 degrees F. The exterior portions of the exhaust system may be shipped loose for field installation.

G. Engine Fuel System:
1. Generator shall have integrally-mounted “belly” fuel tank located within its skid base. Tank and entire fuel system shall comply with the requirements of API Standard No. 650, the NFPA Codes and Standards (note particularly 30 & 37), the International Fire Code and UL142.
2. The tank shall be of double-wall construction, for the purpose of leak containment. The tank shall be of welded steel construction, with all fabricated steel parts conforming to ASTM 569, specification C-1018, and all structural steel conforming to ASTM A36. A minimum of two internal baffles shall be provided. Bottom of the tank shall be elevated, to avoid trapping moisture between the tank and the concrete pad on which the module will be installed.
3. Provide duplex fuel oil pump set, FOP-1, inside the generator enclosure to transfer fuel oil from the above ground storage tank to the generator belly tank in accordance with 23 1113 – Fuel Oil Piping and Specialties. The pump set will include controls to rotate pumps and enable the standby pump upon failure of the primary.
4. Provide mechanical fuel-level gauge. Provide floats compatible with duplex fuel oil supply pump controls including low level alarm, low level (enable pump), high level (disable pump), and high-level alarm.
5. Provide fuel tank vents, fuel oil supply connection, and all associated features required by the applicable codes. Provide drain ports for inner and outer tanks.

H. Engine Starting System:
1. The engine shall be equipped with a 12- or 24-volt DC electric starting system, battery set, and battery charger as detailed elsewhere in this specification. The battery charger shall be wall-mounted and powered from the house load center. Batteries shall be enclosed in fiberglass battery boxes with covers, secured to the floor to prevent movement.

I. Miscellaneous Systems:
1. The engine crankcase vent hose shall be piped to discharge at the lower front of the radiator; the line shall be heat-taped to prevent freezing of the line in low ambient temperature operation. For closed loop circuit vent systems, provide a Racor or Airsep style separator system.

2. An emergency manual shutoff switch shall be installed on the outside of the enclosure, near the personnel door.
3. Building Automation System (BAS): Provide monitoring of those points listed in 26 3213.2.7.B.3 above by the existing hospital's building automation system.

J. Enclosure Fire suppression System.
1. The enclosure shall have a FM200 or approved equal Fire Prevention System installed. The system shall be pre-engineered, metal fusible link type system and will consist of the following:
   a. FM200 bottle, sized to match the enclosure volume, ambient temperature, and enclosure leak rate.
   b. One fusible link installed inside the enclosure.
   c. Control head with auxiliary contacts for remote alarm indication.
   d. FM200 discharge nozzles directed toward the engine and fuel tank.
   e. Manual pull station installed on the outside of the enclosure.
   f. System status board installed on the inside of the enclosure.
   g. When FM200 is discharged, auxiliary contacts in the control head will activate the engine shutoff system, and de-energize the radiator power shutter to contain the FM200 gas inside the enclosure.
   h. To protect the engine from the fire suppression agent, the engine shall be equipped with an air inlet shutdown device programmed to trip prior to release of the FM200.
   i. Provide means to monitor the fire suppression system from the hospital's existing fire alarm system (Honeywell Notifier) for alarm and trouble conditions. Provide re-programming of the hospital's existing fire alarm system to properly annunciate an alarm condition within the generator enclosure.
   j. Provide one (1) each of the following smoke/flame detectors in the enclosure as inputs to the fire suppression panel:
      1). One (1) ionization smoke detector.
      2). One (1) ultraviolet, flame detector.
      3). One (1) fixed temperature heat detector.
   k. FM200 to be design, installed, and tested per NFPA 2001.

PART 3 - EXECUTION

3.1 MANUFACTURE

A. Engine-generator set shall be factory assembled, dynamically balanced and full load tested with specified coolant protection as a complete system prior to shipment as a complete assembly from the factory. Submit copy of factory test report, for testing further specified herein.

B. Installation of engine-generator into housing assembly shall be performed by the factory or a factory-authorized dealer.

3.2 INSTALLATION

A. Mount engine-generator on vibration isolators in accordance with manufacturer's requirements and Section 26 0529 - Hangers and Supports and Section 20 0548 – Mechanical Vibration and Seismic Control.

B. Mount module on pad securely to prevent movement. Comply with IBC Seismic requirements.

C. Seismic anchorage shall be adequate for IBC Seismic Requirements __ and in accordance with Section 26 0529 - Hangers and Supports and Section 25 0548 – Mechanical Vibration and Seismic Control.

D. Mount remote annunciator at Hospital Nurse’s Station as indicated on the drawings.

E. Provide a separate dedicated conduit for the engine start conductors from the generator to each transfer switch. Minimum size 1 inch.

F. Mount batteries adjacent to engine. Make connections to starter and battery charger.

G. Emergency system wiring shall comply with NEC Article 700. Standby system wiring shall comply with NEC Article 702.

H. Install equipment in accordance with final submittals and contract documents. Installation shall comply with applicable state and local codes as required by the authority having jurisdiction. Install equipment in accordance with manufacturer's instructions and instructions included in the listing or labeling of UL listed products.

I. Installation of equipment shall include furnishing and installing all interconnecting wiring between all major equipment provided for the on-site power system. The contractor shall also perform interconnecting wiring between equipment sections (when required), under the supervision of the equipment supplier.

J. Equipment shall be installed on concrete housekeeping pads. Equipment shall be permanently fastened to the pad in accordance with manufacturer’s instructions and seismic requirements of the site.

K. All work including physical modifications to the building and building systems to provide access, route equipment, etc., shall be provided. Fully restore altered buildings and systems to original condition or better.

L. Equipment shall be initially started and operated by representatives of the manufacturer.

M. Equipment shall be physically inspected for damage. Scratches and other installation damage shall be repaired prior to final system testing. Equipment shall be thoroughly cleaned to remove all dirt and construction debris prior to final testing of the system.

N. Mount remote annunciator where the existing generator remote annunciator is mounted at the nurse’s station within the hospital as indicated on the drawings.

Utilize existing conduit and provide new conduit as indicated on the drawings and provide new annunciator cable from the generator to the remote annunciator.

3.3 FACTORY TESTS

A. Equipment supplied shall be fully tested at the factory for function and performance. Provide four (4) hour factory test, consisting of one hour at each of 1/4, 1/2, 3/4, and full load. Submit test results prior to on-site test. Verify proper functionality. Record all tests including voltage and frequency dip responses and steady state values. Include test results in O&M Manuals.

3.4 ON-SITE ACCEPTANCE TEST

A. Fill generator belly tank and main fuel tank. Furnish all consumable products for testing. At end of test refill generator belly tank and main fuel tank.

B. The complete installation shall be tested for compliance with the specification following completion of all site work. Testing shall be conducted by representatives of the manufacturer, with required fuel supplied by Contractor. The Engineer shall be notified in advance and shall have the option to witness the tests.

C. Installation acceptance tests to be conducted onsite shall include a "cold start" test, a two hour full load test, and a one step rated load pickup test in accordance with NFPA 110. Provide a resistive load bank and make temporary connections for full load test, if necessary.

D. Load tests shall demonstrate all modes of load shed control.

E. Furnish maintenance records for Owner's use.
   1. Manufacturer's recommended periodic unit tests.
   2. Starting battery inspection/maintenance.
   3. System coolant, lubricant and other fluid inspection and replacement.
   4. Routine replacement parts such as filters.
   5. All other required maintenance to comply with NFPA 110, preserve the warranty and ensure long, reliable operation of the equipment.

3.5 BAS INTERFACE AND GRAPHICS

A. Provide coordination and physical cabling, bridges/gateways, interface cards, and software interfacing for connection to the BAS LONG Building Controls network.

B. All generator system parameters and all ATS alarm and status information shall be presented in graphical form on the BAS Supervisory System Operator Workstations. Alarms shall include all shutdowns and load shed trip conditions.

3.6 REMOTE SYSTEM MONITORING

A. Provide hardwired connections to the BAS specified in Divisions 23 and 25. Refer to Sequence of Operations on sheet M4.01 for additional requirements.

B. Provide remote monitoring functions required by NFPA 110, including annunciator and associated wiring and conduit systems.

3.7 PIPING CONNECTIONS

A. Installation of exhaust silencer is specified under Divisions 20 and 23.

B. Diesel fuel supply to the generator is specified under Division 20 and 23.

C. Coordinate all required connections with Divisions 20 and 23.

END OF SECTION 26 3213

SECTION 26 5000 - LIGHTING FIXTURES

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section describes general requirements, products and methods of execution relating to lighting fixtures, LEDs, LED drivers and related products approved for use on this project.

B. The Fixture Schedule is a general guide to type, quality and other characteristics. Fixtures of equal or better performance and quality may be substituted, subject to approval.

1.2 RELATED SECTIONS

A. 26 0529 - Hangers and Supports for Electrical Systems

B. 26 0533 - Raceway and Boxes for Electrical Systems

C. 26 2726 - Wiring Devices

1.3 QUALITY ASSURANCE

A. The lighting fixtures shall be a standard catalog item as described on the Drawings and as made by a nationally recognized manufacturer.

1.4 SUBMITTALS

A. Provide submittals for all products in accordance with Section 26 0000 and Division 10.

B. Fixture mounting shall be clearly identified on submittal information and coordinated with architectural, features, assemblies, details and reflected ceiling plan.

C. Color selection for fixtures and fixture accessories shall be clearly identified on submittal information and coordinated with architectural.

1.5 SHOP DRAWINGS

A. Provide fabrication drawings that indicate fixture, type, kind, weight, LEDs, LED drivers, method of fitting and fastening parts together, location and complete details of method of suspension and fastening fixtures in place. Verify fixture dimensions with construction conditions prior to ordering fixtures.

B. Provide wiring diagrams that indicate supply power and interconnections for lighting controls, equipment, and light fixtures. Provide sufficient information to assemble and install equipment at the project site without further instructions.

1.6 WARRANTY

A. Special Warranties: Manufacturer's standard form in which manufacturer agrees to repair or replace components that fail in materials or workmanship within 60 months from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 GENERAL

A. Provide fixtures in conformance with the Fixture Schedule, with all suspension, supports, flanges, trim, mounting, and operating accessories normally considered necessary for a complete, functional, and safe installation, whether specifically called for in the Contract Documents or not.

B. Linear fixture systems shall be provided with all corners, transitions, adjustable sections, custom angles, etc., to provide continuous linear systems.

2.2 LIGHT EMITTING DIODE (LED) FIXTURES

A. LED fixtures shall comply with Illuminating Engineering Society (IES) LM-79 guidelines and shall have a LM-79 photometric test report. Fixture shall utilize components (i.e. LEDs, driver, fixture housing, etc) included in LM-79 test.

B. LEDs shall comply with Illuminating Engineering Society (IES) LM-80 guidelines.

C. Fixture shall have lumen maintenance testing with minimum test duration of 10,000 hours.

D. Manufacturer stated end of life shall be at 70% light output. Operating life shall be no less than 50,000 hours.

E. Color temperature, and color rendering index (CRI) shall conform to the lighting fixture schedule shown on the Drawings.

F. Fixture components shall be lead free, mercury free and RoHS compliant.

2.3 LED DRIVERS

A. Characteristics:
   1. Input: 120-277V (UL) AC, 50-60Hz
   2. Efficiency: >81% at full load
   3. Power Factor: >0.9 at full load
   4. Total Harmonic Distortion (THD): <20% at full load
   5. 0-10V compatibility
   6. Flicker-free dimming down to 1%

2.4 BATTERY POWERED EMERGENCY LIGHTING DRIVER – LED

A. Provide emergency battery driver for LED fixtures with the following features:

1. Shall be capable of operating at the minimum lumen output specified on the Lighting Fixture Schedule for a minimum of 90 minutes.
2. Universal input (120-277 VAC)
3. Compatible with the LED fixture and driver intended for use with.
4. High-temperature long-life, nickel-cadmium battery or as approved. Electronic charger with 24 hour or less recharge time.
5. Charge indicator lamp and test switch, with lamp visible, and test switch accessible, without opening fixture.
6. UL listed.
7. When used with dimmable drivers/fixtures circuity/programming to restore light output to specified lumens in emergency mode shall be provided.

2.5 FIXTURE ACCESSORIES

A. Canopies for pendant hung fixtures shall be of the ball joint type. Where more than one pendant is used per fixture, a ball joint fitting shall also be provided in the fixture end of each pendant.

PART 3 - EXECUTION

3.1 GENERAL

A. Drivers shall be installed per manufacturer's recommendations.

B. Fixtures with integral drivers shall have the driver installed and prewired at the factory.

C. Internal fixture wiring shall be factory installed in multiple fixtures which share a common driver. All wiring harnesses shall include an integral copper grounding conductor.

3.2 INSTALLATION

A. Install fixtures level, plumb and true. Align rows accurately in three dimensions.

B. Support suspended acoustical ceiling fixtures according to the requirements of the IBC and Section 26 0529 – Hangers and Supports as well as any local amendments.

C. Fixture pendants, canopies, blank sections, corners, tees and other such accessories shall be finished to match their respective fixture.

D. Refer to applicable details on architectural drawings for specific mounting requirements for all fixtures with special mounting requirements such as cove-mounted fixtures and linear fixtures.

E. For linear fixture systems, verify fixture dimensions and mounting type with other trades prior to installation.

F. Utility Rooms: Surface ceiling mount fixtures in rooms/areas with ceilings. In areas without ceilings pendant fixtures down to bottom of structure or height indicated on the Lighting Fixture Schedule. In areas with mechanical equipment, ductwork and piping, pendant fixtures down to bottom of mechanical ductwork or piping as appropriate.

Fixture pendants shall be rigid (threaded hangar rods) and shall be sway braced where pendants exceed 24 inches in length.

G. Provide an unswitched circuit connection for the following (as applicable):
   1. Exit signs
   2. Emergency lighting units (ELUs)
   3. Emergency fixtures
   4. Emergency night lights
   5. Fixtures with emergency battery LED drivers

H. Wiring for fixtures connected to emergency circuits shall be kept entirely independent of all other wiring and equipment in accordance with NEC Article 700.

I. Clean all fixtures and lenses prior to substantial completion and owner occupancy.

3.3 FIRE-RESISTIVE CONSTRUCTION

A. Refer to Section 26 0000 Electrical General Requirements.

END OF SECTION 26 5000