

Egan Convention Center Solar Expansion

INVITATION TO BID NO. 2026C020



**Municipality of Anchorage
Maintenance & Operations
Capital Projects
PO Box 196650
Anchorage, AK 99519**

MUNICIPALITY OF ANCHORAGE
MAINTENANCE AND OPERATIONS DEPARTMENT
CAPITAL PROJECTS

Egan Center Solar Array Expansion

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MUNICIPALITY OF ANCHORAGE

PURCHASING DEPARTMENT

Invitation to Bid No. 2026C020

Sealed bids will be received in accordance with the time schedule shown below by the Municipality of Anchorage at the Purchasing Department, 632 W. 6th Ave., Suite 520, Anchorage, Alaska 99501, or through Bid Express, for:

Egan Convention Center Solar Array Expansion

Project Consists of but is not limited to:

Description: Install a 36.4kw solar array and connecting to the building electrical distribution system to offset building electrical power consumption. system will use ballasted roof support. Contractor will be responsible for all required permitting and delegated design submittals. All work must be coordinated with facility operator to minimize impacts to their event schedule.

ESTIMATED CONSTRUCTION COST: **Between: \$100,000 - \$150,000**

Site Visit:	10 AM Local Time, May 19, 2026
Site Visit Address:	555 W 5th Ave, Anchorage, AK 99501
Pre-Bid Conference:	N/A
Questions Due:	12 PM Local Time, May 22, 2026
Bid Opening:	2 PM Local Time, June 04, 2026

All Pre-Bid Conferences and/or Bid Openings may be attended in person or via conference call at this number (907) 343-6089. You may call in five (5) minutes before any scheduled conference. FAXED OR EMAILED BIDS WILL NOT BE ACCEPTED.

ALL QUESTIONS SHALL BE SUBMITTED PRIOR TO THE QUESTION DUE DATE THIS WILL BE THE FINAL OPPORTUNITY TO ASK QUESTIONS OR REQUEST CLARIFICATIONS.

Questions and requests for interpretation or clarification of the bidding Documents shall be made in writing to the Purchasing Office (wwwpur@muni.org). Please reference the Invitation to Bid Number & Project Title. Do not contact the specified department directly.

Bid documents are available electronically at the MOA Purchasing Department's web page at [Purchasing](#) and at [BidExpress](#). Addenda will be posted within the solicitation at BidExpress and on the web page.

Electronic bids **will be not be** accepted through Bid Express at this time. The only method for submission is paper bids. Bids will be submitted in a sealed envelope addressed to the MOA Purchasing Department, 632 W. 6th Avenue, Suite 520, Anchorage, AK 99501 and will include the following, clearly and legibly written/typed on the outside of the envelope:

- a. Bidder's Name (as indicated on Business License), Address, City, State, and Zip Code
- b. Invitation to Bid #, Invitation to Bid Title and Buyer's Name.

To maintain the project schedule, Interpretations, corrections, or changes to the Bidding Documents shall be made by Addendum and shall not be binding unless included in the Addendum. It is your responsibility to periodically check for addenda posted on BidExpress or the Municipality bidding web site.

At the above indicated time, the bids will be opened publicly and read. Bids shall be submitted to the Municipal Purchasing Department in a sealed envelope prior to the time of opening specified in the Invitation to Bid for opening of the bids to be considered. Late Bids shall not be considered. Time of receipt will be as determined by the time stamp in the Purchasing Office.

The Municipality reserves the right to reject any and all Bids, and to waive any informalities and irregularities in Bidding.

The Municipality shall not be responsible for bid preparation costs, nor for costs, including attorney fees, associated with any (administrative, judicial or otherwise) challenge to the determination of the lowest responsive and responsible bidder and/or award of contract, and/or rejection of bids. By submitting a bid, each bidder agrees to be bound in this respect and waives all claims to such costs and fees.

Unless otherwise stated in the Bidding Documents, the Contract, if awarded, shall be awarded to the responsible Bidder who submits the lowest responsive Bid.

The Municipality of Anchorage assumes no responsibility for any interpretations or presentations made by any of its officers or agents unless such interpretations or presentations are made by written addendum to this Invitation to Bid.

Bonding Requirements are per MASS/MASS B or as per special provisions.


THE MUNICIPALITY OF ANCHORAGE IS AN "EQUAL OPPORTUNITY EMPLOYER"

Municipality of Anchorage
ITB: 2026C020

PUBLISH ONE TIME

Date: May 12, 2026

Buyer Assigned to this Project:
Jared Brunelle



Jared Brunelle
Senior Buyer

BIDDER'S CHECKLIST

INSTRUCTION TO BIDDER

I. GENERAL:

Bidders are advised that notwithstanding any instructions or implications elsewhere in this Invitation to Bid only the documents shown and detailed on this sheet need be submitted with and made part of their bid. Other documents may be required to be submitted after bid time, but prior to award. Bidders are hereby advised that failure to submit the documents shown and detailed on this sheet shall be justification for rendering the bid nonresponsive. Evaluation of bids for responsiveness shall be accomplished in accordance with Anchorage Municipal Code, Title 7.

II. REQUIRED DOCUMENTS FOR BID

NOTE: "Only the following listed items as marked with an "X" are required to be completely filled out and submitted with the bid."

- Bid Proposal consisting of two (2) pages numbered BP-1 of 2 through BP-2 of 2. Bid Proposal Page **BP-2 of 2** must be manually signed.
- Erasures or other changes made to the Bid Proposal Sheet must be initialed by the person signing the bid.
- Bid Bond, certified check, cashier's check, OR money order shall be submitted with the bid in the amount indicated.
- All Addenda issued shall be acknowledged in the space provided on the Bid Proposal sheet or by manually signing the Addenda sheet and submitting it prior to the bid opening in accordance with Anchorage Municipal Code 7.20.020C.

BIDDER'S CHECKLIST
INSTRUCTION TO BIDDER

(CONTINUED)

II. REQUIRED DOCUMENTS AFTER BID OPENING

The following documents are required within **five (5)** working days of notification by the Purchasing Office. Failure, in whole or in part, to submit the documents required below may be grounds to determine the Bidder as non-responsible.

X In accordance with AO No. 2019-130 (S), Anchorage Municipal Code 7.20.030 and 7.20.070, Contractor Questionnaire consisting of three (3) Pages, Prime Contractor Form filled out by Prime Contractor **and** all known subcontractors. **Please review AO NO. 2019-130 (S), AMC 7.20.030 and 7.20.070, and the attached Contractor Questionnaire before submitting a bid.**

X A copy or the license number of your valid State of Alaska Business License.

X A copy or the license number of your State of Alaska Contractor License.

X A copy or the license number of your Municipality of Anchorage Contractor License.

X A copy of your SAM report (or verification it's ordered) from SAM.gov.

**Municipality of Anchorage
Contractor Questionnaire**

Contractors/Vendors wishing to qualify for award of a bid or proposal offered by the Municipality of Anchorage shall submit this completed form and any supplemental information requested by this form within five days following a request by the Purchasing Officer.

This form is to be filled out by the prime, and subcontractors that perform work "on-site". On-site is defined as the physical place or places where the building or work called for in the contract will remain, and any other site where a significant portion of the building or work is constructed, provided that such site is established specifically for the performance of the contract or project.

Contractor/Vendor Name: _____

Owner(s) of Company (if sole proprietorship or partnership): _____

List all Alaska construction contractor's registration numbers, registration types and expiration dates of the Alaska business licenses held by your company in the past three years:

Has your company changed names, business license number, or contractor registration number in the past three years?

Yes No

If "Yes," explain on a separate signed page, including the reason for the change.

Has any owner, partner or (for corporations) officer of your company operated any business offering similar services outlined in the bid or proposal under any other name in the past three years?

Yes No

If "Yes," explain on a separate signed page, including the reason for the change.

Certifications & Disclosures

For these questions & certifications, "company" includes any entity that shares or has shared majority ownership or control with your company. "Determination of violation" includes any citations, orders or recommendations issued to or against the company.

Debarment

1. In the last three years has your company been debarred from bidding on, or being awarded, a state or federal project?

Yes No

Occupational Safety & Health

Note: Only willful violations of state or federal occupational safety and health laws will result in disqualification; disclosure of other violations does not lead to automatic disqualification.

2. In the last three years has your company been determined to have committed a **willful violation** of state or federal occupational safety and health law? For purposes of this question, a state or federal occupational safety and health law includes laws enforced by the Occupational Safety and Health Administration (OSHA), Alaska Occupational Safety and Health (AKOSH), or another state’s occupational safety and health agency.

Yes No

3. In the last three years, has the federal Occupational Safety and Health Administration (OSHA), Alaska Occupational Safety and Health (AKOSH), or another state’s occupational safety and health agency, made a determination of violation against your company?

Note: If you have filed an appeal of a citation and the appropriate appeals board has not yet ruled on your appeal, you need not include information about it.

Yes No

If “Yes,” attach a separate signed page describing each citation.

Wage & Hour

Note: Only willful violations of state or federal wage and hour laws will result in disqualification; disclosure of other violations does not lead to automatic disqualification.

4. In the last three years has your company been determined to have committed a **willful violation** of state or federal wage and hour law?

Yes No

5. In the last three years has there been a determination of violation of wage and hour laws against your company? Wage and hour violations include failure to pay minimum wages, overtime, or prevailing wages.

Yes No

If “Yes,” attach a separate signed page describing each violation, identifying the claim by claimant, date, and status/outcome.

Unemployment Insurance & Workers’ Compensation

6. In the last three years has there been a determination of violation of unemployment insurance or workers’ compensation requirements against your company?

Yes No

If “Yes,” attach a separate signed page describing each violation, identifying the claim by claimant, date, and status/outcome.

Licensing & Registration

7. If a license or certificate of fitness is required to perform any services provided by your company, has there been a determination of violation of any certificate of fitness requirements against your company in the last three years?

Yes No

If “Yes,” attach a separate signed page describing each violation, identifying the claim by claimant, date, and status/outcome.

Subcontracting

8. I certify that all independent subcontractors engaged by my company meet the definition of an independent contractor under Alaska Statute 23.30.230.

Yes No

9. I understand that my company is responsible for ensuring that each subcontractor my company uses on the project completes this form and associated documentation. I will submit any disclosures required by Anchorage Municipal Code.

I understand

10. I understand that my company is responsible for providing this form and any associated documentation for each subcontractor hired after award within 30 days of hire, and that the subcontractor may not begin work on the project until such information is provided.

I understand

11. I understand that my company is responsible for ensuring that if any event, such as a violation or loss of coverage, causes the information submitted by the subcontractor to change, the subcontractor shall submit updated certifications or disclosures within 30 days of occurrence to the department contract administrator.

I understand

I declare under penalty of perjury that the foregoing is true and correct.

Dated: _____ (Signature)

(Printed name and title)

Right to Appeal: Anchorage Municipal Code provides that any person adversely affected in connection with the award of a municipal contract, including the Municipality’s determination on responsibility, may request that the mayor or assembly refer the matter to the bidding review board.

BID PROPOSAL
(CERTIFICATION)

TO: MUNICIPALITY OF ANCHORAGE _____, 2026
PURCHASING DEPARTMENT
632 W. 6TH AVENUE, SUITE 520
ANCHORAGE, ALASKA 99501

SUBJECT: Invitation to Bid No. 2026C020

PROJECT TITLE: Egan Convention Center Solar Array Expansion

Pursuant to and in compliance with subject Invitation to Bid, and other bid documents relating thereto, the bidder hereby proposes to furnish all labor and materials and to perform all work for the construction of the above referenced project in strict accordance with the bid documents at the prices established in the Bid Proposal, page **BP- 1 of 2 through BP- 2 of 2** submitted herewith.

The bidder agrees, if awarded the contract, to commence and complete the work within the time specified in the bid documents.

BASIC BID; LUMP SUM: \$ _____

The bidder acknowledges receipt of the following addenda:

Addenda No. _____ Addenda No. _____
Addenda No. _____ Addenda No. _____
Addenda No. _____ Addenda No. _____

Enclosed is a Bid Bond in the amount of _____.
(Dollar Amount or Percentage of Bid)

Type of Business Organization

The bidder, by checking the applicable box, represents that it operates as () a corporation incorporated under the laws of the State of _____, () an individual, () an LLC, () a partnership, () a nonprofit organization, or () a joint venture. If a partnership or joint venture, identify all parties on a separate page.

Is this project Federally Funded

Yes

No

Company Name

BID PROPOSAL (CERTIFICATION)
Continued

SUBJECT: Invitation to Bid No. 2026C020

PROJECT TITLE: Egan Convention Center Solar Array Expansion

Date

Alaska Contractor's License Number

Company Name (Printed)

Employer's Tax Identification Number

Authorized Representative Signature

Printed Name & Title

Company **Mailing** Address

Company Phone Number

City, State, Zip Code

Company Fax Number

Company **Physical** Address
(if different from mailing address)

Company Email Address

City, State, Zip Code

BID BOND

KNOW ALL MEN BY THESE PRESENTS, That we, _____
as Principal, and _____ a
corporation organized under the laws of the _____ and
authorized to transact surety business in the State of Alaska, of _____
_____ as Surety, are held and firmly bound unto the MUNICIPALITY OF
ANCHORAGE, as Obligee, in the full and just sum of _____
_____ (\$ _____) Dollars, lawful
money of the UNITED STATES, for the payment of which sum, well and truly to be made, we bind
ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly
by the presents.

WHEREAS, the said Principle is herewith submitting its proposal for _____
_____.

The condition of this obligation is such that if the aforesaid Principal will, within the time required enter
into a formal contract and give a good and sufficient bond to secure the performance of the terms and
conditions of the contract, then this Obligation to be void; otherwise the Principal and Surety will pay
unto to the Obligee the amount stated above.

Signed, sealed, and delivered _____, 20_____.

WITNESS AS TO PRINCIPAL:

Contractor Name

Contractor Signature

(AFFIX CORPORATE SEAL)

Corporate Surety

Surety Business Address

BY: _____
(Attorney-In-Fact)

(AFFIX SURETY SEAL)

CONTRACT

Invitation to Bid No. **2026C**_____

Contract No. **C-2026**_____

NAME AND ADDRESS OF CONTRACTOR:

Check appropriate box:

Incorporated in the State of

MUNICIPALITY OF ANCHORAGE, acting through _____ (hereinafter the Owner).

Contract for _____

BID SCHEDULES

ITEMS

PLAN SHEET
FILE NUMBERS

AMOUNT

\$ _____

Total Amount : \$ _____

THIS CONTRACT, entered into by the MUNICIPALITY OF ANCHORAGE, ALASKA, acting through the Owner named above, and the individual, partnership, or corporation named above, hereinafter called the Contractor, WITNESSETH that the parties hereto do mutually agree as follows:

Statement of Work: The Contractor shall furnish all labor, equipment and materials and perform the Work above described, for the amount stated, in strict accordance with the Contract Documents.

CONTRACT DOCUMENTS

This CONTRACT consisting of 4 pages.

The Bid Proposal Section ___ consisting of ___ pages numbered as ___, **as contained in ITB 2026C**_____.

The Contract Performance and Payment Bond _____.

The Contractor's Certificate of Insurance Dated _____.

Municipality of Anchorage Standard Specifications dated 20 4 (MASS) Incorporated by Reference, **as contained in ITB 2026C**_____.

Specifications consisting of the following:

Supplemental Provisions Section _____ consisting of _____ pages, with attachments Exhibit A through F, **as contained in ITB 2026C**_____.

Equal Opportunity Special Provisions and Forms Section _____ consisting of _____ pages, **as contained in ITB 2026C**_____.

Disadvantaged/Women-Owned Business Enterprise (DBE/WBE) Specification Section _____ consisting of _____ pages, **as contained in ITB 2026C**_____.

The Laborers' and Mechanics' Minimum Rates of Pay dated April 1, 2026 Section _____ consisting of _____ pages, **as contained in ITB 2026C**_____.

Submittal List Section _____ consisting of _____ page, **as contained in ITB 2026C**_____.

The Drawings consisting of _____ sheets numbered _____, **as contained in ITB 2026C**_____.

IN WITNESS WHEREOF, the parties hereto have executed this Contract as of the Contract Date entered below.

MUNICIPALITY OF ANCHORAGE, ALASKA

VENDOR _____

BY _____
Signature

BY _____
Signature

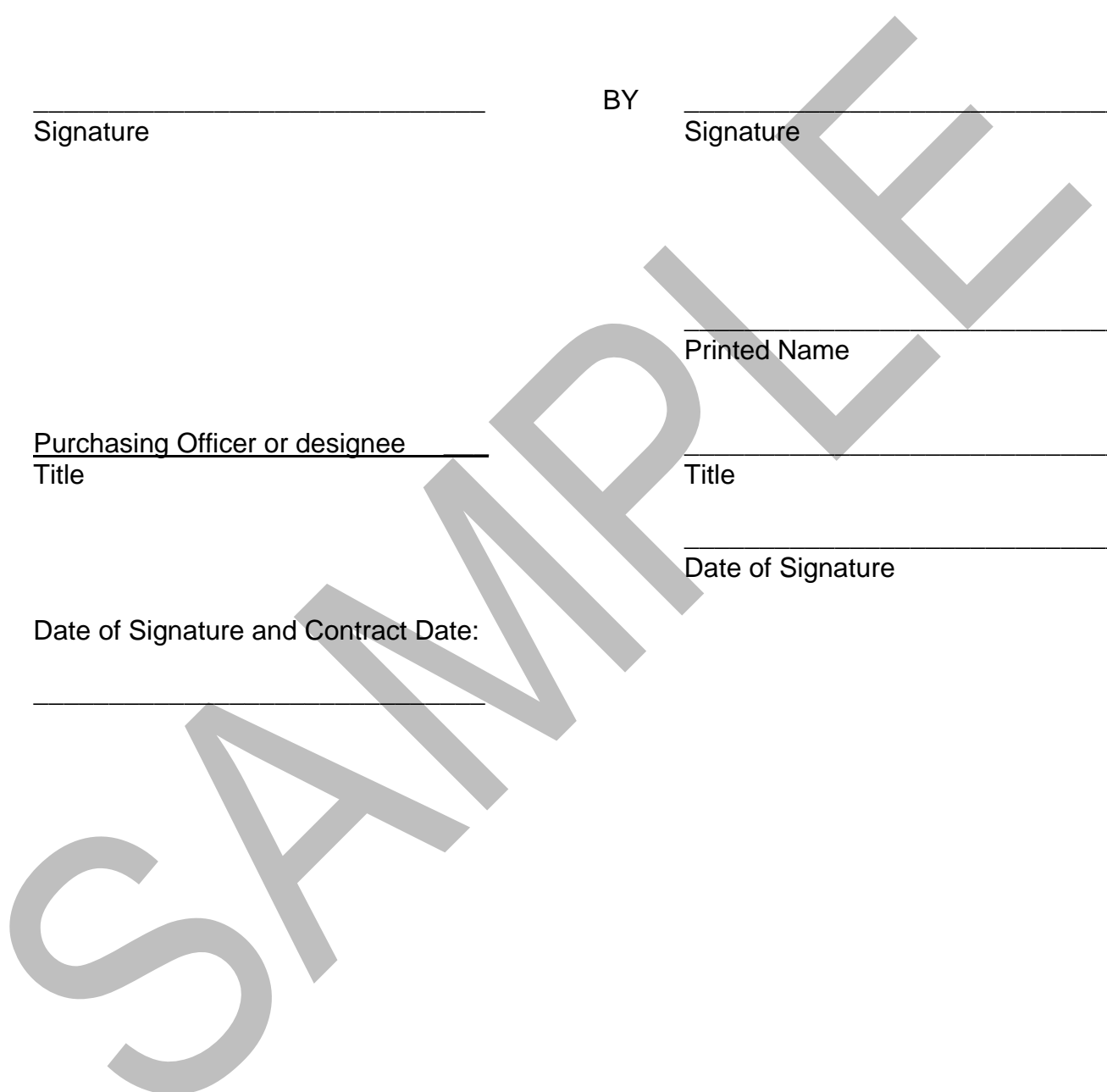
Purchasing Officer or designee
Title

Printed Name

Title

Date of Signature

Date of Signature and Contract Date:



**CONTRACT AND PERFORMANCE AND PAYMENT
BOND SIGNATURE INSTRUCTIONS**

1. The full name and business of the Contractor shall be inserted on Page 1 of the Contract and on the Performance and Payment Bond, hereinafter the Bond.
2. Two copies of the Contract and the Bond shall be manually signed by the Contractor. If the Contractor is a partnership or joint venture, all partners or joint ventures shall sign the Contract and the Bond except that one partner or one joint venturer may sign for the partnership or joint venture when all other partners or joint venturers have executed a Power-of-Attorney authorizing one partner or joint venturer to sign. The Power-of-Attorney shall accompany the executed contract and the Bond.
3. If the Contractor is a corporation, the President of the corporation shall execute the Contract and the Bond unless a Power-of-Attorney or corporate resolution shall accompany the executed Contract and Bond.
4. The Bond shall be returned to the Purchasing Division undated. The Contract Date shall be inserted on the Contract when the Municipality signs the Contract and the Bond shall be dated the same as the Contract Date.

SAMPLE

CONTRACT PERFORMANCE AND PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS, That we _____
_____ of _____
as Principal, and _____
a corporation organized under the laws of the _____
_____ and authorized to transact surety business in the State of Alaska,
of _____
as Surety, are held and firmly bound unto the MUNICIPALITY OF ANCHORAGE, as Obligee, in the full and
just sum of _____
(\$ _____) Dollars, lawful money of the UNITED STATES, for the payment
which, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and
assigns, jointly and severally, firmly by these presents.

THE CONDITIONS OF THIS OBLIGATION IS SUCH, that whereas the principal has entered into a certain
contract dated the _____ date of _____ 20 _____, with the Obligee for the
construction of _____

which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at
length herein.

NOW THEREFORE, if the Principal shall well and truly perform and fulfill all the undertakings, covenants,
terms, conditions, and agreements of said contract, and shall promptly make payments to all persons
supplying labor and material in the prosecution of the work provided for in said contract, during the original
term of said contract and any extensions of modifications thereof that may be granted by the Municipality, with
or without notice to the Surety, then this obligation to be void; otherwise to remain in full force and effect.

This obligation is made for the use of said Obligee and also for use and benefit of all persons who may perform
any work or labor or furnish any material in the execution of said Contract and may be sued on thereby in the
name of said Obligee.

This said Surety, for the value received, hereby stipulates and agrees that no change, extension of time,
alteration or addition to the terms of the contract or to the work to be performed thereunder or the
specifications accompanying the same, shall in anywise affect its obligations on this bond, and it does hereby
waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the
work or to the specifications.

Whenever Principal shall be, and declared by Obligee to be in default under the Contract the Obligee having performed Obligee's obligations thereunder, the Surety may promptly remedy the default or shall promptly:

1. Complete the Contract in accordance with its terms and conditions, or
2. Obtain a bid or bids for submission to Obligee for completing the Contract in accordance with its terms and conditions and upon determination by Surety of the lowest responsible bidder, or, if the Obligee elects, upon determination by Obligee and the Surety jointly of the lowest responsible bidder, arrange for a contract between such bidder and Obligee 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 Obligee to Principal under the Contract and any amendments thereto, less the amount properly paid by Obligee to Principal.

IN TESTIMONY WHEREOF, the parties hereunto have caused the execution hererof in _____
_____ original counterparts as of the _____ day of _____, 20_____.

WITNESS AS TO PRINCIPAL:

(AFFIX CORPORATE SEAL)

(AFFIX SURETY SEAL)

Principal Name

Principal Signature

Corporate Surety

Surety Business Address

BY:

(Attorney-In-Fact)

INSURANCE

By submitting a bid, the bidder agrees, if they are the successful bidder, to obtain and maintain the insurance required by this section. The bidder also agrees to provide the Municipality a copy of their Certificate of Liability Insurance prior to signing the contract and prior to commencement of any work under this contract.

GENERAL: The Contractor will not allow any subcontractor to commence work until the subcontractor has obtained insurance as listed in this section. The contractor and each subcontractor shall maintain this insurance throughout the life of this contract, including any maintenance and/or guarantee/warranty period. The contractor shall obtain separate insurance certificates for each contract.

ADDITIONAL INSURED: The Municipality of Anchorage shall be listed as an additional insured on all General and Auto Liability policies required by this contract. All policies shall contain a waiver of subrogation against the Municipality, except Professional Liability. All policies shall remain in effect during the life of the contract. The Contractors insurance certificate shall also indicate the Municipality of Anchorage as a certificate holder of the policy.

WORKERS COMPENSATION: The Contractor shall purchase and maintain during the life of this contract, workers compensation insurance for all employees who will work on this project and, if any work is sublet, the Contractor shall require the subcontractor similarly to provide such insurance. Employers' Liability with a minimum limit of \$500,000 shall be maintained and Workers Compensation with minimum limits as required by Alaska State Workers Compensation Statutes. The policy shall contain a waiver of subrogation against the Municipality.

NOTICE TO "OUT-OF-STATE" CONTRACTORS WORKING IN ALASKA: The Contractor shall provide evidence of Workers Compensation insurance, either State of Alaska Workers Compensation coverage or an endorsement to the Contractor's home state Workers Compensation policy, evidencing coverage for "other states" including Alaska, prior to execution of a contract or, if approved, before commencement of contract performance in Alaska.

GENERAL LIABILITY: The Contractor shall purchase and maintain, in force, during the life of this contract such general liability insurance as shall protect the Owner and the Contractor against losses which may result from claims for damages for bodily injury, including accidental death, as well as from claims for property damages which may arise from any operations under this contract whether such operations be those of the Contractor, a subcontractor or anyone directly or indirectly employed by either of them.

<u>Commercial General Liability</u>	<u>Minimum Limits</u>
Products/Completed Operations	\$2,000,000
Personal & Advertising Injury	\$1,000,000
Each Occurrence	\$1,000,000
General Aggregate	\$2,000,000
Medical Payments	\$5,000
<u>Commercial Auto Liability</u>	<u>Minimum Limits</u>
Combined single limit (Bodily Injury and Property Damage)	\$1,000,000
Including all owned, hired, and non-owned	
<u>Workers Compensation and Employers Liability</u>	<u>Minimum Limits</u>
Per Alaska statute	\$500,000
<u>Errors and Omissions</u>	<u>Minimum Limits</u>
Professional Liability (Not required unless limits appear in space provided)	
<u>Umbrella Liability</u>	<u>Minimum Limits</u>
(Not required unless limits appear in space provided)	
\$ _____ S.I.R.	

Each insurance policy required by this section shall require the insurer to give advance notice to the MOA/Contract Administrator prior to the cancellation of the policy. IF the insurer does not notify the MOA upon policy cancellation, it shall be the Contractor's responsibility to notify the MOA of such cancellation.



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) shall be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME: PHONE (A/C, No, Ext): _____ FAX (A/C, No, Ext): _____ E-MAIL ADDRESS: _____ <table style="width: 100%; border: none;"> <tr> <td style="width: 80%; text-align: center; border: none;">INSURER(S) AFFORDING COVERAGE</td> <td style="width: 20%; text-align: center; border: none;">NAIC #</td> </tr> <tr> <td style="border: none;">INSURER A :</td> <td style="border: none;"></td> </tr> <tr> <td style="border: none;">INSURER B :</td> <td style="border: none;"></td> </tr> <tr> <td style="border: none;">INSURER C :</td> <td style="border: none;"></td> </tr> <tr> <td style="border: none;">INSURER D :</td> <td style="border: none;"></td> </tr> <tr> <td style="border: none;">INSURER E :</td> <td style="border: none;"></td> </tr> <tr> <td style="border: none;">INSURER F :</td> <td style="border: none;"></td> </tr> </table>	INSURER(S) AFFORDING COVERAGE	NAIC #	INSURER A :		INSURER B :		INSURER C :		INSURER D :		INSURER E :		INSURER F :	
INSURER(S) AFFORDING COVERAGE	NAIC #														
INSURER A :															
INSURER B :															
INSURER C :															
INSURER D :															
INSURER E :															
INSURER F :															
INSURED															

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
	GENERAL LIABILITY <input type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO <input type="checkbox"/> LOC						EACH OCCURRENCE \$ DAMAGE TO RENTED PREMISES (Ea occurrence) \$ MED EXP (Any one person) \$ PERSONAL & ADV INJURY \$ GENERAL AGGREGATE \$ PRODUCTS - COMP/OP AGG \$ \$
	AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> SCHEDULE D AUTOS <input type="checkbox"/> NON-OWNED AUTOS						COMBINED SINGLE LIMIT (Ea accident) \$ BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
	UMBRELLA LIAB OCCUR EXCESS LIAB CLAIMS- DED RETENTIONS \$						EACH OCCURRENCE \$ AGGREGATE \$ \$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE Y / N <input type="checkbox"/> N / A OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below						WC STATUTORY LIMITS OTHER E.L. EACH ACCIDENT \$ E.L. DISEASE - EA \$ E.L. DISEASE - POLICY LIMIT \$

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

1. The Municipality of Anchorage is an additional insured on Auto and General Liability policies. All policies, including workers compensation, contain a WAIVER OF SUBROGATION against the Municipality, except Professional Liability, .
2. CANCELLATION: "Should any of the above described policies be cancelled before the expiration date thereof, notice will be delivered in accordance with the Policy Provisions."

CERTIFICATE HOLDER

CANCELLATION

	<p style="text-align: center;">SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.</p> <p>Authorized Representative</p>
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COMPLIANCE WITH LAWS

The Contractor shall observe and abide by all applicable laws, regulations, ordinances and other rules of the State of Alaska and/or any political subdivisions thereof, or any other duly constituted public authority wherein work is done or services performed, and further agrees to indemnify and save the Municipality of Anchorage harmless from any and all liability or penalty which may be imposed or asserted by reason of the Contractor's failure or alleged failure to observe and abide thereby.

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**MUNICIPALITY OF ANCHORAGE
STANDARD SPECIFICATIONS-BUILDINGS**

**(MASSB)
GENERAL CONDITIONS
SECTION 00 72 13
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**GENERAL CONDITIONS
SECTION 00700**

SECTION 00 72 13.01 DEFINITIONS

In these Contract Documents, the following words or expressions shall have the meaning given below:

AASHTO	- American Association of State Highway and Transportation Officials
ACI	- American Concrete Institute
ANSI	- American National Standards Institute
API	- American Petroleum Institute
APWA	- American Public Works Association
ASA	- American Standard Association
ASHRAE	- American Society of Heating, Refrigeration and Air Conditioning Engineers, Inc.
ASTM	- American Society for Testing and Materials
AWS	- American Welding Society
AWWA	- American Water Works Association
IBC	- International Building Code
ICBO	- International Conference of Building Officials
IEEE	- Institute of Electrical and Electronics Engineers
IFC	- International Fire Code
IMC	- International Mechanical Code
ISO	- Insurance Service Office
IPC	- International Plumbing Code
MASS	- Municipality of Anchorage – Standard Specifications
MASSB	- Municipality of Anchorage – Standard Specifications/Buildings
NEC	- National Electrical Code
NEMA	- National Electrical Manufacturer’s Association
NESC	- National Electrical Safety Code
NFC	- National Fire Code
NFPA	- National Fire Protection Association
OSHA	- Occupational Safety and Health Act

Addendum (Addenda) - Written or graphic communications issued prior to the execution of the Contract that modify or interpret the Bidding Documents and become part of the Contract Documents upon execution of the Contract.

Additional Work - Work not specifically provided for in the Contract as awarded but which is consistent with the original Scope of Work and for which a price for similar work is provided in the Contract.

Alternate – A defined portion of the work that is priced separately and provides options in the final scope of the project.

Architect/Engineer – The author and interpreter of the Contract Documents.

Assembly - The Anchorage Assembly of the Municipality of Anchorage.

Beneficial Occupancy Date - The date, established by the Owner's Representative, when construction is sufficiently completed in accordance with the Contract Documents and the Owner occupies or utilizes the Work, or a designated portion thereof, for the use for which it is intended.

Bid Proposal - The written proposal of the Bidder, on the form furnished, for the Work contemplated.

Bidder - Any individual, firm, partnership, corporation, or combination thereof formally submitting a Bid for the Work contemplated and acting directly or through an authorized representative.

Bidding Documents - The Invitation to Bid, Instruction to Bidders, Bidders Check List, Bid Forms, Contract Forms, Contract Conditions, Supplementary Conditions, Technical Specifications, Construction Drawings, and all Addenda.

Bid Guarantee - The security furnished by the Bidder as a guarantee to enter into a Contract for the Work contemplated if the Bidder is awarded the Contract.

Change Order/Request for Proposal – A written proposal prepared by the Contractor describing and documenting added costs or time extensions that the Contractor feels have been incurred due to unforeseen work and other matters not contemplated or adequately provided for in the Contract Documents.

Change Order/Contract Amendment - A written agreement entered into between the Contractor and the Owner to amend the Contract Documents or to otherwise provide for unforeseen work and other matters not contemplated or adequately provided for in the Contract Documents.

Contract - The four- (4-) page form agreement entitled "Contract" executed by the Contractor and then by the Owner on behalf of the Municipality. The Contract represents the entire and integrated agreement between the parties and supersedes all prior negotiations, representations, or agreements, either written or oral.

Contract Completion Date - The calendar date specified in the proposal for the full completion of all Work required by the Contract Documents, except as otherwise provided in the Contract.

If a number of calendar days is specified in the proposal for the completion of the Contract, the Contract Completion Date will be the specified number of days after the effective date of the Notice to Proceed, including authorized time extensions.

Contract Documents - The Contract and those documents described in page 2 of the Contract. The Contract Documents can only be amended by written Change Order. Instructions, clarifications, and directives issued by the Owner's Representative under Article 5.1 are not Contract Documents.

Contract Item (Bid Item, Pay Item) - A specifically described unit of Work for which a price is provided in the Contract.

Contractor - The individual, firm, corporation, partnership, or joint venture executing the Contract and performing the Work under the terms of the Contract Documents or, where applicable, the designated subcontractors or the employees of the individual, firm, corporation, partnership, or joint venture.

Days -

Calendar: Unless otherwise designated in the Supplementary Conditions, days as used in the Contract Documents are consecutive calendar days.

Working: A working day is defined as any day on which the Contractor is required to work by the Contract Documents or any other day not otherwise defined herein as a nonworking day.

Nonworking: A nonworking day is defined as Sunday, a recognized holiday, a day on which the Contractor is specifically required by the Supplementary Conditions to suspend construction operations, or a day on which a suspension order is in effect. Recognized holidays shall be: New Year's Day, President's Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day, and Christmas Day. When any of the above days falls on a Saturday, the preceding Friday shall be counted as a holiday. When any of the above days falls on a Sunday, the following Monday shall be counted as a holiday.

Drawings - Graphic and textural information organized for the purpose of conveying data regarding design intent and construction requirements and listed and referred to on page 2 of the Contract.

Extra Work - Work not within the original Scope of Work but which is determined by the Owner's Representative to be essential for the satisfactory completion of the Contract.

Final Acceptance Date - The date on which the Work in its entirety has been constructed, inspected, accepted, and a Certificate of Completion issued, pursuant to the provisions of Article 5.27 - Final Inspection.

Furnish – To purchase and deliver to the Project.

Indicated - Shown on the Drawings, noted on Drawings, specified, or a combination thereof.

Inspector - The authorized representative of the Owner assigned to observe the Work.

Install – To set in place and make usable.

Liquidated Damages - The amount prescribed herein to be paid to the Owner, or to be deducted from any payments due or to become due the Contractor, for each day's delay in completing the whole or any specified portion of the Work beyond the time allowed in the Contract or as extended by the Change Order.

Municipality – The Municipality of Anchorage.

New Material and Equipment – Equipment and material that has not previously been used and is in production.

Necessary - Needed, as reasonably inferred from the Contract Documents, in order to make the Work complete and available for use.

Notice to Proceed - The written communication issued by the Owner to the Contractor authorizing the latter to proceed with the Work and that identifies the Owner's Representative and establishes the time of commencement and date of completion.

Notice-to-Resume - The written notice issued by the Owner's Representative that terminates a period of suspension of Work, reinstates the counting of Contract time, and requires the Contractor to resume Contract Work.

Or Equal - Whenever a material, article, or piece of equipment is identified on the Drawings or in the Project Manual by reference to manufacturers' or vendors' names, trade names, or catalog numbers, it is intended merely to establish a standard; and any material, article, or equipment of other manufacturers and vendors that will perform in an equal or better manner the duties imposed by the general design will be considered equally acceptable provided the material, article, or equipment so proposed will not require a change in the related work and is, in the opinion of the Owner's Representative, of equal or better substance and function.

Owner - The Department or Agency of the Municipality of Anchorage identified in page one (1) of the Contract. "Owner" does not include those Municipal employees, such as the Building Official and the Fire Marshal and their staffs, who enforce certain building, health and safety, and fire codes.

Owner's Representative – The person authorized to act on the Owner's behalf.

Performance and Payment Bond - The form of security, approved by the Municipality, that is furnished by the Contractor and the Contractor's Surety, guaranteeing the complete and faithful performance of all the obligations and conditions placed upon the Contractor by the Contract.

Product Data - Brochures, illustrations, diagrams, and other information prepared by the manufacturer and furnished by the Contractor to illustrate a material, product, or system for some portion of the Work.

Project - The total construction of which the Work performed under the Contract Documents may be the whole or a part.

Project Manual - The bound information that includes the bidding requirements, contract conditions, contract forms, and technical specifications.

Provide – To furnish, install, and/or to perform all work necessary to complete the Work.

Purchasing Officer - That person within the Municipality of Anchorage who is vested under the Anchorage Municipal Code with all authority pertaining to the procurement of supplies, services, and construction prior to execution of the Contract.

Request For Information (RFI) – A written document prepared by the Contractor to request information, clarification or deviation to the Contract Documents. Each RFI shall be numbered consecutively and a log maintained of submittals and responses.

Record Drawings – Detailed drawings that accurately depict all changes in location (both horizontal and vertical), material, equipment, and other elements of Work accomplished by the Contractor.

Samples - Physical examples that illustrate materials, equipment, or workmanship and establish standards by which the Work or a product will be judged.

Shop Drawings - All drawings, diagrams, illustrations, schedules, and other data that are prepared by the Contractor, a Subcontractor, a manufacturer, a supplier, or a distributor and which illustrate the equipment, material, or some portion of the Work.

Street Closure - Any action that renders one or more lanes of a street unusable to vehicular traffic.

Subcontractor - Any individual, firm, corporation, partnership or joint venture acting for or on behalf of the Contractor in the performance of a part of the Contract. This does not include those working for hire or suppliers of material or equipment.

Substantial Completion Date - The date upon which the improvements that are the subject matter of the Contract have been inspected and, in the opinion of the Owner's Representative, are essentially completed and available for the Owner's beneficial use for the purpose and in the manner intended by the Contract Documents, and all required testing and inspections have been satisfactorily completed.

Supplementary Conditions - That portion of the Project Manual entitled Supplementary Conditions that modify and expand the General Conditions and set forth conditions or requirements unique to the Project.

Surety - The Company or Association that is bound with and for the Contractor for the acceptable performance of the Contract and for the payment of all obligations arising out of the Contract. Regarding the Bid Guarantee, "Surety" refers to the Company or Association that will forfeit the sum of the Guarantee when the Bidder fails to execute the Contract after the Bid is accepted by the Municipality.

Technical Specifications - Divisions 1 through 49 of the Project Manual that define the qualitative requirements for products, materials, and workmanship.

Time and Material Work - Work performed by the Contractor at the written direction of the Owner's Representative for which no item is provided in the Contract and for which no unit price or lump sum basis can be agreed upon.

Unit Prices – A cost quoted by a bidder for a single, specified unit of work. Unit prices may be additive and/or deductive.

Utility Company - The person, corporation, company, agency, or other entity that furnishes service through, operates, or owns a conduit, pipe, wire, cable, or other transmission line for the purpose(s) of petroleum and petroleum products, electricity, sanitary sewer, communications, steam, water, natural gas, and storm sewer.

Winter Suspension - The period of time during which no fieldwork is accomplished due to adverse winter weather conditions as permitted by Article 5.25 – Suspension of Work

Work - Work shall mean the furnishing of all labor, materials, equipment, and other incidentals necessary or convenient for the successful completion of all the duties and obligations imposed by the contract.

Working Titles – Working titles that are adjectives or have masculine genders such as "workman" and "flagman" or are pronouns such as "he," "his," and "him" are used in the Contract Documents for the sake of brevity and are intended to refer to persons of either gender.

Written Notice - A written communication delivered in person to the individual or to a member of a firm, to an officer of a corporation, or to a representative of an agency for whom it is intended, or sent by mail to the business address stated in the Contract Documents.

SECTION 00 72 13.02 BIDDING REQUIREMENTS AND CONDITIONS

Article 2.1 Examination of Bidding Documents and Site

The Bidder shall examine carefully the site of the proposed Work and the Bidding Documents before submitting a Bid. By submitting a Bid, the Bidder acknowledges that the Bidder has made such examination and is satisfied as to the conditions to be encountered in performing the Work and as to the requirements of the Bidding Documents.

The Municipality assumes no responsibility for any understanding or representations concerning conditions made by any of its officers, agents, or employees prior to the execution of this Contract, unless such understanding or representations are expressly stated in the Bidding Documents or Addenda.

When soil boring data are provided by the Bidding Documents, the Bidder shall assume responsibility for any conclusions the Bidder may draw from such data. The bidder shall be responsible for obtaining and analyzing such additional data as the bidder may require and shall be responsible for conclusions drawn from that information.

By submitting a bid, the Contractor declares that the Contractor has carefully examined the contract documents, that the Contractor has full knowledge thereof, and that the Contractor has investigated the site and satisfied himself as to the conditions affecting the Work, including, but not limited to, those bearing upon transportation, disposal, handling, and storage of materials; availability of labor, water, electrical power, and roads uncertainties of weather; physical conditions at the site including all existing utilities, the conformation and conditions of the ground, and the character of equipment and facilities needed preliminary to and during prosecution of the Work. The Contractor further declares that the Contractor is satisfied as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, including all prior exploratory work, as well as from information presented by the drawings and specifications made a part of this contract. Any failure by the Contractor to acquaint himself with the available information will not relieve him from responsibility for properly estimating the difficulty or cost of successfully performing the Work.

The Bidder shall comply with the requirements of the Equal Opportunity Special Provisions as contained in the Bid and resulting Contract.

Article 2.2 Interpretation or Correction of Bidding Documents

Bidders shall notify the Purchasing Officer promptly of any error, omission, or inconsistency that they discover during examination of the Bidding Documents and the proposed construction site.

Bidders shall request interpretation or clarification of the Bidding Documents in writing to the Purchasing Officer. The Purchasing Officer will consider requests that arrive at least seven (7) working days prior to the date for opening Bids. The Contractor may present oral questions at a pre-bid conference if one is provided for in the Bidding Documents. The Purchasing Officer will issue interpretations, corrections, or changes, if any, to the Bidding Documents by Addendum. Bidders shall not rely upon interpretations, corrections, and changes made in any other manner, including orally, at the pre-bid conference. Interpretations, corrections, and changes shall not be binding unless included in an Addendum.

Article 2.3 Preparation and Submission of Bids

Bidders shall submit manually signed Bid Proposals on forms furnished and shall submit Bids in a sealed envelope addressed as indicated in the Invitation to Bid, plainly marked with the Invitation Number.

Bidders shall quote on all items, unless specifically allowed otherwise by the Invitation to Bid. Failure to do so will disqualify the Bid. When quotations on all items are not required, Bidders shall insert the words "no bid" in the space provided for any item where no quotation is made. The person signing the bid shall initial every erasure or change made to the Bid Proposal forms, if any.

Contractor shall provide a lump sum price, typed or written in ink, for each bid item called for. The bid shall be submitted in both words and figures. If there is a discrepancy between the written words and figures, the written words will govern. In case of error in the extension of prices, the price for each bid item will govern. The Purchasing Officer may reject Bids that show any omissions, alteration of the forms, additions not called for, conditional or alternate bids not called for, qualified bids, or irregularities of any kind.

Article 2.4 Bid Guarantee

Bidders shall accompany each Bid with a certified check, cashier's check, or Bid Bond, in the amount of ten percent (10%) of the total amount of the Bid, if the total amount of the bid is \$100,000 or more, with surety acceptable to the Municipality. If the total bid amount of the bid is less than \$100,000, accompany the bid with a bid guarantee, in the form specified above, in an amount of \$1,000. Bid Guarantees for the three (3) low Bidders will be held until the Contract is executed. All other Bid Guarantees will be returned within seven (7) days of the bid opening. Bidders shall submit Power-of-Attorney for the person signing the Bid Bond for the Surety.

Article 3.1 General

The provisions of Section 00700.03 are intended to be supplemental to, and not to replace, Title 7 of the Anchorage Municipal Code.

Article 3.2 Receipt and Opening of Bids

Submit bids to the Purchasing Officer or his designated representative at the Municipal Purchasing Department prior to the time of opening specified in the Invitation to Bid. The Purchasing Officer or his designated representative will record the exact date and time of receipt of Bids. The Purchasing Officer will not consider late Bids but will hold them unopened until the time of award and then return them to the Bidder unless other disposition is requested or agreed to by the Bidder. The Time of Bid receipt will be determined by the time stamp of the Municipal Purchasing Department.

The Purchasing Officer will not consider facsimile bids; however, he will consider facsimile modifications of bids already submitted in writing if the facsimiles are received prior to the time of bid opening fixed in the Invitation to Bid. Facsimile modifications shall not reveal the amount of the original or revised bid. Modifications shall state a plus or minus to the affected bid item.

No liability will attach to the Municipality for the premature opening of or the failure to open a Bid not properly addressed and identified.

The Contractor may withdraw bids by written request prior to the time specified for bid opening in the Invitation to Bid.

If any one party offers more than one Bid, by or in the name of his clerk, partner, or other person, the Purchasing Officer will reject all such Bids. A party who has quoted prices to a Bidder is not thereby disqualified from quoting prices to other Bidders or from submitting a Bid directly for the Work.

Article 3.3 Bidder Qualifications

The Purchasing Officer reserves the right to determine whether a Bidder is a responsible contractor. The Purchasing Officer may require the Bidder to submit such information as he may deem necessary to determine a bidder's responsibility. Failure or refusal on behalf of the Bidder to submit the required information, in whole or in part, may be grounds for the purchasing Officer to determine the Bidder as non-responsible.

The Purchasing Officer will determine whether a Bidder is responsible on the basis of any or all of the following criteria:

1. The skill and experience demonstrated by the Bidder in performing contracts of a similar nature;
2. The Bidder's record for honesty and integrity;
3. The Bidder's capacity to perform in terms of facilities, personnel, and financing;
4. The Bidder's past performance under Municipal contracts. If the Bidder has failed in any material way to perform his obligations under any contract with the Municipality, the Bidder may be determined as a non-responsible Bidder.

A Bidder's representations concerning his qualifications will be construed as a covenant under the Contract. Should it appear that the Bidder has made a material misrepresentation, the Owner will have the right to terminate the Contract for the Contractor's breach, and the Owner may then pursue such remedies as provided in the Contract Documents or as provided by law or equity.

Any determination that a Bidder is non-responsible will be made by the Purchasing Officer. The Purchasing Officer will make such determination in writing to the Bidder setting forth the reasons for such determination and the Bidder's right to request a review of this determination by the Bidding Review Board.

If a Contractor has had a contract terminated by the Owner for cause as provided in Article 5.29 – Termination of Contract by Owner, the Contractor may not be allowed to bid on the owner's future contracts for a period of two (2) years. This two- (2-) year period shall commence from the date of the termination of the Contractor by the Owner.

All bidders shall hold a valid Alaska Contractor's license per Alaska Statute AS 08.18.

Article 3.4 Action on Bids

The Municipality reserves the right to reject any and all Bids and to waive any informalities and irregularities in a Bid or during award of the Contract.

The Municipality may reject any bid which is unbalanced if it is in the best interest of the Municipality to do so. A bid is unbalanced when, in the opinion of the Purchasing Officer, it allocates a disproportionate share of costs or profit, or both, to the price of one (1) or more items of Work and reduces the share of costs or profit, or both allocated to the price of another item or items of Work, and if there is a reasonable possibility that the bid will not result in the lowest overall cost of the Work to the Municipality.

Unless otherwise stated in the Bidding Documents, the Municipality will award the Contract, if any, to the responsible Bidder who submits the low responsive Bid. When the Bidding Documents contain a basic bid and alternates, the Purchasing Officer will use the total of the basic bid plus the alternatives he selects to determine the low Bidder.

When the Bidding Documents contain a basic bid and additive alternates, the Purchasing Officer will determine the low Bidder by the lowest combination of the basic bid and as many additive alternates as the Purchasing Officer selects within the funds available. The Purchasing Officer will select, in most cases, additive alternates in the order listed in the Bid. However, the Purchasing Officer may bypass any additive alternate whose selection would cause the Contract to exceed the funds available. The Purchasing Officer will compare all bids based upon the same combination of basic bid plus selected additive alternates.

When the Bidding Documents contain deductive alternates, the Purchasing Officer will determine the low Bidder by the lowest basic bid. If the lowest basic bid exceeds the funds available, the Purchasing Officer will determine the low Bidder by eliminating deductive alternates in the order listed in the Bid until the award can be made within the available funds. The Purchasing Officer may bypass any deductive alternate to maximize the use of available funds. The Purchasing Officer will compare all bids based upon the same combination of basic bids and selected deductive alternatives.

The amount of the Contract shall be the total sum of the amounts computed from the estimated quantities and unit prices and/or the lump sum awarded by the Purchasing Officer and specified on page one (1) of the Contract.

The Purchasing Officer will give a written, signed Notice of Award or rejection within forty-five (45) days of Bid opening. The notice will be in writing and signed by the Purchasing Officer. A Notice of Award, and no other act of the Municipality or its representatives, constitutes an acceptance of a Bid. The acceptance of a Bid shall bind the successful Bidder to execute the Contract.

Article 3.5 Bonds and Insurance

If the amount of the contract is \$100,000 or more, the successful Bidder shall furnish the Purchasing Officer a Performance and Payment Bond in the full amount of the Contract and shall maintain the Bond in force during the continuance of this Contract including the one- (1-) year warranty period. For projects less than \$100,000, the requirement for Performance and Payment Bond is deleted. The Bond shall be for the faithful performance of this Contract in all respects including, but not limited to, payments for all materials and labor. All alterations, extensions of time, additional Work and other changes authorized by the Contract Documents may be made without securing the consent of the Surety or Sureties. The bond shall be with a good and sufficient corporate surety acceptable to the Municipality and a Power-of-Attorney for the person signing the Bond for the Surety must be submitted with the Bond.

The successful Bidder shall furnish the Purchasing Officer with a certificate of insurance pursuant to the provisions of Article 6.9

The Bidder shall exercise positive efforts to comply with the Equal Employment Opportunity policies of the Municipality of Anchorage. The Bidder shall familiarize him/herself with the Equal Opportunity Special Provisions for Municipal Contracts, including submittal requirements for bids, prior to award and after award.

Article 3.6 Execution of Contract

The Bidder whose Bid is accepted shall execute the Contract and furnish the required bonding and insurance within five (5) working days after Notice of Award of the Contract is issued.

The Municipality will consider the Contract executed by the successful Bidder when two (2) copies of the Contract, signed by an authorized representative of the Contractor, and the required bond and insurance certificate are received by the Purchasing Officer. Failure or neglect of the Contractor to execute the Contract within the time specified may result in a forfeiture of the Bid Guarantee and award of the Contract to the next lowest Bidder.

The Owner will execute the Contract within ten (10) working days after execution by the Contractor as set forth above. The date the Contract is executed by the Owner is the Contract Date. The rights and obligations provided for in the Contract shall become effective and binding upon the parties as of the Contract Date.

The Municipality will supply the Contractor with four (4) sets of the Contract Documents. The Contractor may obtain any additional documents required from the Architect/Engineer by compensating the Owner for the cost of the printing.

The Municipality will issue the Notice to Proceed within seven (7) working days after the Contract Date unless otherwise specified in the Supplementary Conditions. The effective date of the Notice to Proceed shall be within ten (10) working days of the Contract Date. The Municipality will designate the Owner's Representative, and calculate or identify the completion date in the Notice to Proceed.

Article 3.7 Contractor's Warranty

The Contractor shall warranty all materials and workmanship for one (1) year from the Final Acceptance Date except when a different period is identified in the Supplementary Conditions. Under this warranty, the Contractor shall promptly remedy, without cost to the Owner, any and all defects in material and workmanship, including any consequential damages resulting from defective materials or workmanship.

All warranty work shall be subject to the same contract provisions, including materials, quality of work, authority of the Owner's Representative and inspection, as provided for in the original work; however, all such work shall be at the sole cost of the Contractor. If the defect, in the opinion of the Owner's Representative, is of such nature as to demand immediate repair, the Owner has the right to take corrective action, and the Contractor shall bear the cost thereof. If the contract includes work in different geographic locations, then the Municipality may accept the work in one location and may begin the warranty period for that location independently of the completion of the work in the other locations.

SECTION 00 72 13.04 SCOPE OF WORK

Article 4.1 Intent of the Contract Documents

The intent of the Contract Documents is to provide for the execution and completion of the Work in its entirety. Except as otherwise specifically provided herein, the Contractor shall provide all permits, transportation, handling, materials storage, labor, tools, implements, machinery, supplies, water, heat, utilities, cleaning supplies and activities, and incidentals and shall do all things necessary to perform and to complete the Work.

When words that have a well-known technical or trade meaning are used to describe Work, materials, or equipment, such words shall be interpreted in accordance with that meaning.

Reference to Standard Specifications, manuals, or codes of any technical society, organization, or association, or to the Laws or Regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest Standard Specification, manual, code or Laws or Regulations in effect at the time of opening of Bids, except as may be otherwise specifically stated.

However, no provisions of any referenced Standard Specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the respective duties and responsibilities of the Owner, the contractor, or the Owner's Representative nor any of their consultants, agents, or employees from those set forth in the Contract documents.

With reference to the Drawings, the order of precedence is as follows:

1. Figures (numerals) govern over scaled dimensions.
2. Detailed Drawings govern over general Drawings or standard details.

Article 4.2 Interpretation of Contract, Specifications, and Drawings

The Contract Documents are intended to be complementary and to describe and provide for a complete description of the entire scope of Work. A requirement occurring in one section of the Contract Documents is as binding as though occurring in all.

In cases of conflict in the requirements of the Contract Documents, such conflicts shall be reconciled by the acceptance of the following order of precedence for the various Contract Documents: (1) the Contract; (2) the Bid Proposal; (3) Supplementary Conditions; (4) the Technical Specifications (Division 1 through Division 16); (5) the Drawings; (6) the General Conditions (Section 00700); and (7) standards incorporated by reference in any of the above.

Where the Technical Specifications and Drawings are silent or lack detail, the Contractor shall use the best general practice and approved material and workmanship of first quality.

The Contractor shall carefully study and compare the Contract Documents and shall at once report to the Owner's Representative any error, inconsistency, or omission he may discover, including any requirement that may be contrary to any law, ordinance, rule, regulation, or order of any public authority bearing on the performance of the Work.

The Contractor shall take no advantage of any errors or omissions in the Contract Documents or of any discrepancies within them. Contractor shall assume all risk and expense when knowingly performing Work where such error or omission is not called to the attention of the Owner's Representative.

The Contractor shall accompany all requests for interpretation or clarification of the Contract documents with a completed Request For Information (RFI) form. Each request shall clearly and completely state the basis for lack of clarity in the Contract documents and shall refer to the applicable specifications, drawings, and details that give rise to the request. If not provided in the Contracts Documents, the Contractor shall obtain a copy of the RFI form from the Owner's Representative. The Owner's Representative will respond to the RFI in writing within ten (10) working days.

Article 4.3 Changed Conditions

The Contractor shall promptly, within two (2) working days and before such conditions are disturbed, notify the Owner's Representative in writing of: (1) subsurface conditions or otherwise concealed conditions at the site differing materially from those indicated in this contract, or (2) unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this contract. The Owner's Representative will promptly investigate the conditions, and if he finds that such conditions do materially so differ and cause an increase or decrease in the Contractor's cost of, or the time required for, performance of this contract, the Municipality will make an equitable adjustment and modify the contract in writing accordingly.

The Owner's Representative will not allow a claim under this clause unless the Contractor has given the notice required above. However, the Owner's Representative may extend the time prescribed for completion of Work. Reference Article 5.21 – Changes in the Work.

The Contractor shall not submit a claim for an equitable adjustment hereunder after the date of final payment under this contract.

If the parties are unable to agree on the terms of an equitable adjustment, the Owner's Representative may order such work done and pay for such work as provided in Article 5.21 – Changes in the Work and allow such additional time for performance as he may deem proper. If the Contractor does not agree with such adjustments, he may make claim under Article 5.22, Claims for Additional Compensation.

Article 4.4 Temporary Utilities

The Contractor shall provide and pay all costs for temporary utilities, including gas, water, sanitary sewer, telephone, and electricity, necessary to perform the Work. The Contractor shall pay for these costs during periods of suspensions of work. The Owner does not represent that utility service is available to the site.

The Contractor shall provide temporary heat, including fuel and power, as required to protect materials and Work from the elements. The Contractor shall provide and maintain temporary toilets and shall provide drinking water for all those connected with the Work.

Article 4.5 Surveying

Before starting Work, the Contractor shall locate all general reference points and take such steps as are necessary to prevent their dislocation. If disturbed, the Contractor shall replace reference points as directed by the Owner's Representative. The Contractor shall employ a competent Land Surveyor, licensed in the State of Alaska, to lay out the Work, and shall be responsible for its accuracy.

Article 4.6 Disposal Sites

Except as otherwise stated in the Supplementary Conditions, the Contractor shall make his own arrangements and assume all costs in connection with disposal sites. The Contractor shall furnish a disposal site for trees, brush, oversized boulders, and other objectionable debris. The Contractor shall dispose of unusable excavation at either the Anchorage Regional Landfill off Hiland Road or at a Contractor-furnished disposal site. Unusable excavation or any material containing stumps, brush, or other construction debris will be charged at the current disposal fee at the Anchorage Regional Landfill. The Contractor shall obtain and comply with a grading and fill permit for each disposal site he furnishes, in conformance with the most current International Building Code (IBC), as adopted and amended by the Municipality of Anchorage. Contractor shall locate and maintain the disposal site in such a manner as to prevent a public nuisance.

The Contractor shall obtain written permission from the property owner(s) for such disposal sites and shall furnish the Owner's Representative with a copy of this permission and a Municipal Grading and Fill Permit. The written permission shall specifically provide that the property owner will not hold the Municipality, its employees, agents, or consultants liable for use of or damage to this property. The Contractor shall be held liable for any trespass and property damage incurred outside of the disposal site.

Waste Disposal. Prior to construction, the Contractor shall submit a description of his scheme for disposing of unsuitable materials and waste resulting from the Work under this Contract. If any material is disposed of in unauthorized areas, the Contractor shall remove the material and restore the area to the condition of the adjacent undisturbed areas.

Article 4.7 Protection of Persons and Property

The Contractor shall be responsible for initiating, supervising, and maintaining of all safety programs and precautions in a manner to prevent damage, injury, or loss to the Work employees, the public, and property. These safety requirements are applicable to the Work whether on-site or off the site for Work under the control, custody, or care of the Contractor. These responsibilities include adjacent sites and their improvements including landscaping, walks, roadways, structures, and utilities. If the Contractor encounters material on the site that may be reasonably identified as asbestos-containing material (ACM), polychlorinated biphenyl (PCB), or other hazardous materials not requiring abatement as part of the Work, the Contractor shall stop the Work immediately in the affected area and notify the Owner's Representative and Owner in writing. The Work shall not be resumed in the affected area until a final determination has been made by the Owner's Representative on the status of the material in question.

The Contractor shall be solely and continuously responsible, twenty-four (24) hours per day, seven (7) days per week, until contract completion for the safety measures outlined above and the following:

- (a) Erecting and maintaining, as required by existing conditions and progress of work, all safeguards for safety and protection, including barricades, danger signs, traffic control devices, and other warnings against hazards.
- (b) Providing reasonable access at all times for emergency units such as the Anchorage Police Department, the Anchorage Fire Department, and the Anchorage Fire Department's Hazardous Materials Response Team.

During periods of suspension of work, refer to Article 5.25 – Suspension of Work, for areas of responsibilities.

Protection of Water Resources. The Contractor shall control the disposal of fuels, oils, bitumens, calcium chloride, acid, or harmful materials, both on and off the premises, and shall comply with applicable federal, state, and municipal laws concerning pollution of waterways while performing Work under this Contract. Special measures shall be taken

to prevent chemicals, fuels, oils, greases, bituminous materials, and sewage from entering established drainages.

Article 4.8 Public Convenience and Access

The Contractor shall conduct the Work in such a manner as to cause minimum inconvenience to pedestrians and vehicular traffic and to persons conducting commercial enterprises or residing along the route of Work. The Contractor shall not block entrances or driveways for more than three (3) hours without prior approval of the Owner's Representative. The Contractor shall provide and maintain temporary pedestrian bridges, ramps, or culverts at entrances of adequate width and strength for the service required. All work involved in providing for construction, maintenance, and use of entrances and driveways is the responsibility of the Contractor and will not be paid for separately and will be considered incidental to the lump sum and prices contained in the Contract Documents. It is the Contractor's responsibility to provide adjacent property owners and/or tenants with written notification of closure of access and to provide an Owner's Representative-approved alternative access at all times for the property owners, the tenants, and the public no less than forty-eight (48) hours prior to closure.

The Contractor shall be responsible for maintaining access at all times for emergency vehicles.

The Contractor shall, prior to the commencement of Work, submit any written agreements between the Contractor and property owners regarding access and use of private property within the project limits for any purposes associated with this Project. Any such agreements shall indemnify the Municipality from any and all actions that result from activities of the Contractor

If the Work of the Contractor is delayed because of any construction activities or transportation activities related to nearby construction, whether municipal or private projects and regardless of whether the activities were authorized by the Owner, the Contractor is not entitled to additional compensation from the Owner but will be entitled to an extension of time to the extent that such delay is unavoidable through reasonable efforts on the Contractor's part. Except as to a possible entitlement to such an extension of time, the Contractor shall hold harmless, defend, and indemnify the Owner from and against any and all claims, damages, losses, and expenses, including attorneys' fees, by the Contractor or third parties, arising directly or otherwise out of the construction and/or transportation activities as indicated above.

Article 4.9 Street Closures

The Contractor shall conduct construction operations so as to offer the least interference to vehicular traffic. Provide vehicular access to emergency units to and through all work areas at all times. Do not close two (2) adjacent parallel streets at the same time.

The Contractor shall submit requests for all street closures or partial closures to the Owner's Representative and the Municipal Permit Office and will not commence closures

or partial closures until the Owner's Representative and the Permit Office issue approvals.

In the case of arterial street closures, do not commence street closures or partial street closures until after giving forty-eight- (48-) hours advanced notice to the public.

Prepare and submit four (4) copies of an acceptable Traffic Control Plan (TCP) to be employed during construction. Deliver the TCP to the Owner's Representative within ten (10) days of the effective date of the Notice to Proceed, or five (5) working days before commencement of Work, whichever is the earlier date. The Owner's Representative will review and accept or reject the plan within five (5) working days of submission. Successive submittals will also be reviewed within five (5) working days.

The TCP shall conform to the standards in the latest edition of the Municipality of Anchorage Standard Specifications (MASS), Part VI of the Manual of Uniform Traffic Control Devices (MUTCD), and shall also conform to the requirements in the latest edition and supplements of the Alaska Traffic Manual (ATM). When conflict exists between MASS and the ATM, the requirements of MASS and these General Conditions shall govern.

Article 4.10 Maintenance and Drainage

The Contractor will maintain all detour routes, haul routes, streets under construction, ditches, water courses, existing drainage patterns, siltation controls, gutters, sidewalks, walkways, and bike trails affected by the Work until the Final Acceptance Date. This includes but is not limited to shaping, grading, and dust control. The Contractor will maintain existing drainage patterns disturbed as a result of construction, including reestablishment of drainage ditches, swales and gutter flow lines to their preconstruction condition, grade, and elevation.

When cleaning paved streets, curb and gutters, and alleys and sidewalks, the Contractor shall not flush the streets using only water but shall use such methods as established by the Director of Health and Human Services for sweeping operations. The Contractor shall prevent any spillage from entering any storm drains.

The Contractor shall restore all streets, drainage ditches, swales, water courses, gutters, sidewalks, walkways, and bike trails used by the Contractor or interrupted by his Work to their preexisting condition. The Contractor shall construct and maintain any drainage and siltation control necessary to accommodate water released by pumping or dewatering operations and contain the water to prevent inconvenience to pedestrian and vehicular traffic.

The Contractor shall repair or replace any culverts, swales, catch basins, or storm drains damaged during construction at no expense to the owner.

Upon receipt of the building permit, the Contractor shall prepare and implement an Erosion and Sediment Control Plan on the construction site prior to starting construction and maintain it throughout the construction period. The Erosion and Sediment Control Plan shall be readily accessible on site.

All costs associated with maintenance of drainage patterns and repair or replacement of drainage ditches, swales, catch basins, storm drains, gutter flow lines, and any other drainage appurtenances are incidental to the Contract or to the item under construction, and no separate payment will be made.

Dust and Mud Control

- a. The Contractor shall maintain all excavations, embankments, stockpiles, access roads, waste areas, borrow areas, and all other work areas free from excess dust and mud to such reasonable degree as to avoid causing a hazard or nuisance to others.
- b. All existing paved areas and roadways, especially heavily traveled roads, adjacent to the project construction site or used as haul roads, shall be kept clean of dirt, mud, and debris resulting from the Contractor's operation during the construction period.

Article 4.11 Utilities

Whenever the Contract Documents require permanent connections to be made to utility lines, the Contractor shall, unless otherwise specified in the Supplementary Conditions, be responsible for making the connection to the utility line at the point(s) indicated on the Drawings, including making all necessary applications with the Utility Company, for paying the fees and for performing the work associated with making the connections indicated. The Contractor is not responsible for bringing utility lines to the point of connection. The Contractor shall pay all costs for utility service prior to the date of Substantial Completion.

Locations of utilities shown on the Drawings are not exact. Aboveground utilities have been field-located. Belowground utilities are shown as depicted on record documents prepared by others. The Contractor shall not hold the Owner liable for damages to utilities incurred during construction due to deficiencies or omissions on the Drawings or these provisions. At least forty-eight (48) hours prior to commencing work, the Contractor shall contact all local utility companies to obtain underground utility locates and shall exercise due care to prevent damage to utilities. Should a utility be damaged, the Contractor shall immediately notify the utility company and have the damage repaired, at no cost to the Owner. The utility has the right to do work or have its contractor do work in connection with making repairs to the utility lines damaged by the Contractor. If any Utility Company determines that a utility has to be temporarily raised, lowered, moved, guyed,

shored, braced, or otherwise protected during construction, the Contractor shall do so at his own expense and to the satisfaction of the utility company.

The Contractor shall maintain all utility service connections whether marked on the Drawings or not. In addition, the Contractor shall repair or replace all utility service connections (at his own cost) that are damaged by his actions.

At a sufficient distance, prior to encountering a known obstacle or tie-in to an existing conduit, pipe, or manhole, the Contractor shall expose and verify the exact location of the obstacle, pipe, or manhole so that proper alignment and/or grade may be determined before the pipe sections are laid in the trench and backfilled. The Contractor shall notify the Owner's Representative of the results of this verification prior to commencement of the Work affected by results of verification, so that any modification to the contract drawings or supplementary instructions may be supplied by the Owner's Representative. The Contractor shall allow the Owner's Representative one complete working day to review the verification results and provide any design modifications or supplementary instructions necessary. No additional payment will be made for this Work.

The Contractor shall bear all costs incurred for removal and alignment of backfilled pipe sections due to improper verification methods.

Unless otherwise specified in the Supplementary Conditions, it is the intent of the Contract Documents that utilities will not be relocated to facilitate construction. If the Owner's Representative determines that an existing utility must be relocated because it is in direct conflict with the facility being constructed, the existing utility will be relocated by the Utility Company at no charge to the Contractor.

The Contractor shall be responsible for coordinating the Work with any work of a Utility Company and shall not interfere with the initial installation, relocation, reconstruction, or replacement of any utility including the making of necessary service connections by the utility company. If the Work of the Contractor is delayed because of any acts or omissions of the utility company, the Contractor will not be entitled to additional compensation from the owner but may be entitled to an extension of time.

Article 4.12 Utility Connections

Whenever the Contract Documents require permanent connections to be made to utility lines, the Contractor shall, unless otherwise specified in the Supplementary Conditions, make the connection to the utility line, or have the Utility Company make the connection, at the point(s) indicated on the Drawings. The Contractor shall make all necessary applications to the Utility Company and pay all fees and perform all Work associated with making the connections that is not performed by the Utility Company. The Contractor is not responsible for bringing utility lines to the point of connection. The Contractor shall pay all costs for utility service prior to the Date of Substantial Completion.

Article 4.13 As-Built Documentation

The Contractor shall maintain As-Built Documents on the job site consisting of a complete set of Drawings and the Project Manual on which all changes of material, equipment, dimensions, or other changes in the Work shall be recorded (i.e., "marked up") and kept current on a daily basis and shall be made available to the Owner's Representative at all times. This shall include the following:

1. Placing special emphasis on items of the Work that have been or will be concealed and showing substitutions for items specified or shown, and including all approved changes.
2. Requiring Subcontractors, including mechanical and electrical, to keep their portions up to date and correct.
3. Dimensioning all relocations and routing adequately to ensure easy access for maintenance or remodeling.

Upon completion of the marked-up As-Built Documents, the Architect/Engineer will furnish to the Contractor a CD of the drawings along with a complete full size paper set. The Contractor shall only employ personnel for this task who are proficient in the preparation of architectural or engineering drawings.

All additions and corrections shall be neat, clean, and legible and shall match the adjacent existing line work and lettering annotated in type, density, size, and style. If additional drawings are required, the Contractor shall prepare them upon the same size as the original Drawings. Drawings damaged or lost by the Contractor shall be satisfactorily replaced by the Contractor at his expense.

The Architect/Engineer will review all Record Documents for completeness and conformance to the standards stated above. The Contractor shall make all corrections, changes, additions, and deletions required to conform to the standards. The Architect/Engineer may periodically review the status of the Record Documents during the course of the Work. Failure of the Contractor to keep the Record Documents current and in the required condition will be considered cause for additional withholding from the progress payments as provided in MASS Section 00700.07 Measurement and Payment, Article 7.4 Progress Payments

Approved final As-Built Documents, bearing certification of their correctness, shall be delivered to the Owner's Representative prior to the pre-final inspection. The Certificate of Completion shall not be issued until after receipt of final As-Built Documents. All Work associated with the development, preparation, and presentation of all Record Documents shall be incidental to the improvements being constructed, and no separate payment will be made.

Article 4.14 Operations and Maintenance (O&M) Manuals

The Contractor shall provide to the Owner's Representative thirty (30) days prior to the Substantial Completion date three (3) sets of Operations and Maintenance (O&M) manuals and one CD of the scanned O&M for all items of material and equipment as required by the Technical Specifications. The manuals shall be bound in hardcover binders with removable pages. The manuals shall be prepared in three (3) sets: Architectural, Mechanical Equipment, and Electrical Equipment. In addition to the requirements in the Technical Specifications, the manuals shall each contain an Index, by Specification Section; a key plan that graphically locates items of equipment; a list of contractors and subcontractors with addresses and telephone numbers; and a list of local representatives with addresses and telephone numbers.

1. The Contractor shall assemble all copies of the manuals in three-ring, hardcover binders. The Contractor shall be responsible for the following: Clearly label each binder on the cover and the end of the binder to designate the system or equipment for which it is intended with reference to the building and equipment number and the Specification Section where the equipment information is provided. Include the date of completion of the project.
2. Provide each binder with title page, typed table of contents with page numbers, and heavy section dividers with numbered plastic index tabs.
3. Divide each manual into sections paralleling the equipment specifications.
4. Where more than one binder is required, they shall be labeled "Vol. 1," "Vol. 2," and so on. Place the table of contents for the entire set, identified by volume number, in each binder.
5. Submit the manual organization and format to Owner's Representative for approval prior to manual preparation.
6. Hole punch all data for binding and composition and shall arrange printing so that punching holes does not obliterate data.
7. When standard technical data are provided, edit and delete all non-relevant information that is not applicable to the specific equipment or material provided.
8. Material in manuals shall be suitable for photographic reproduction. Where copies of identical material are included, the clarity and quality of copies shall equal the original.

Contents: Each manual shall be complete in all respects regarding equipment, controls, accessories, and associated appurtenances, and shall include the following:

1. Diagrams and illustrations.
2. A detailed description of the function of each principal component of the system.
3. Performance and nameplate data.
4. Installation instructions.
5. Procedure for starting.
6. Proper adjustment information.
7. Test procedures and results of factory tests where required.
8. Procedure for operating.
9. Shutdown instructions for both short and extended durations.
10. Emergency operating instructions and troubleshooting guide.
11. Safety precautions.
12. Maintenance and overhaul instructions, illustrated with detailed assembly drawings showing each part with part numbers and sequentially numbered parts list. Include instructions for ordering spare parts, and complete preventive maintenance and overhaul instructions required to ensure satisfactory performance and longevity of the equipment.
13. Lubrication instructions and diagrams showing point to be greased or oiled; recommend type, grade, and temperature range of lubricants; and frequency of lubrication.
14. List of electrical relay settings and control and alarm contact settings.
15. Electrical interconnection wiring diagram for equipment furnished, including all control and lighting systems.
16. Referral to individual Specification Sections for additional O&M requirements.

Article 4.15 Temporary Erosion Control During Construction

The Contractor shall provide all temporary erosion control measures necessary during construction for the prevention of water pollution, erosion, and/or siltation. These measures are for the protection of all streams, lakes, ponds, wetlands, and tidal waters.

The Contractor is directed to Alaska State regulation 18 Alaska Administrative Code [ACC] 70, which states that no person may conduct an operation that causes or contributes to a violation of water quality standards set forth in 19AAC70.010 through 18ACC70.032.

Unless a temporary erosion control plan during construction is specifically called out and included in the drawings and other contract documents, the Contractor shall provide a plan describing temporary erosion control measures to be employed during construction.

Deliver the plan to the Owner's Representative within ten (10) days of the effective date of the Notice to Proceed or five (5) days before the commencement of Work, whichever is the earlier date. The Owner's Representative will review and accept or reject the plan within five (5) working days of submission, and will review successive submittals within five (5) working days. The Contractor shall install the approved temporary erosion control measures immediately after mobilization and before commencing excavation.

Temporary erosion control measures include such items as silt fences, sedimentation ponds, intercepting embankments and channels, check dams, rock lining, mulching, jute matting, seeding, sodding, and other erosion control devices as required. Where erosion is expected to be a severe problem, the Contractor shall schedule and perform clearing, grubbing, grading, filling, and other operations such that permanent erosion control measures follow immediately.

Permanent erosion control measures are those work items specified elsewhere in the Contract Documents that are intended to provide permanent erosion control such as paving, seeding and other measures as required.

Temporary erosion control measures shall remain in place and in good working condition until Work is complete under the Contract. The Contractor is responsible for the continued maintenance of these temporary erosion control items and replacement of damaged items. The Owner's Representative may suspend Work if the Contractor fails to carry out the requirements of the temporary erosion control plan. After suspension of the Work, the Owner may perform or contract the performance of the erosion control measures and deduct those costs from the Contractor's progress payments.

Payment for this Work is incidental to the Contract, and no separate payments will be made.

SECTION 00 72 13.05 CONTROL OF WORK

Article 5.1 Authority of the Owner's Representative

The Owner's Representative will observe the Work in progress on behalf of the Owner, and will be identified at the time the Notice to Proceed is issued. The Owner's Representative is not responsible for construction means, methods, techniques, sequences, or procedures or for safety precautions and programs in connection with the Work. Visits and observations made by the Owner's Representative will not relieve the Contractor of his obligation to conduct comprehensive inspections of the Work, to furnish materials, to perform acceptable Work, and to provide adequate safety precautions, in conformance with the intent of the Contract. The Work will not be considered completed until a Certificate of Completion is issued by the Owner's Representative. The Contractor shall at all times carry out and fulfill the written instructions and written directions of the Owner's Representative regarding the Contract Documents.

The Owner's Representative has the authority to order changes in the Work requiring an adjustment in the Contract amount and/or time. However, any change in the Work shall be in accordance with Article 5.21 – Changes in the Work. Any single change in the Work, or cumulative changes in the Work, which will cause the total value of the Contract to exceed the limits stated in AMC 7.15.080 requires Assembly approval.

The Owner's Representative will in all cases make determinations on any and all questions that may arise concerning the quality, quantity, and acceptability of materials furnished, the Work performed, the rate of progress of the Work, and the interpretation of Contract Documents.

If the Contractor determines that instructions, clarifications, or directions issued by the Owner's Representative constitute a change in the requirements of the Contract Documents, he may make claim as provided under Article 5.22 - Claims for Additional Compensation.

Article 5.2 Prosecution of the Work

The Contractor shall not commence Work until a written Notice to Proceed has been received by the Contractor. He shall commence the Work within ten (10) days after the effective date specified in the Notice to Proceed and shall prosecute the Work vigorously and continuously.

Article 5.3 Construction Progress Schedule and Schedule of Values

Within ten (10) days after the effective date of the Notice to Proceed and prior to commencement of the Work, the Contractor shall submit, to the Owner's Representative a Construction Progress Schedule in the form of a time-scaled bar chart, the elements of which shall be the Divisions and Sections of the Project Manual, weather and ground condition restraints, and Work suspensions and other significant influences on the Contract amount and/or the time for completion of the Work. The Contractor shall include other significant features of the Work such as the submittal schedule, permit acquisition plan, material procurement milestones, plant and equipment procurement dates, and shipping schedules. The bar chart shall include a graph representing the monthly percent of Work to be completed. The bar chart shall be revised and resubmitted as required by the Owner's Representative, when conditions cause changes to the construction schedule, or on a monthly basis, whichever is sooner.

When required by the Owner's Representative, the Contractor shall also deliver, at the same time the Construction Progress Schedule is delivered and in a form satisfactory to the Owner's Representative, a Schedule of Values for Contract Payments for those lump sum items designated by the Owner's Representative. The Contractor shall submit monthly partial Payment Estimates based on the Schedule of Values. All Schedules of Values and Payment Estimates shall, as a minimum, be organized to be consistent with the Divisions and Sections of the Project Manual. The Owner's Representative may require submission of revised construction schedules demonstrating the manner in which the Contractor will achieve the necessary rate of progress, all without additional cost to

the Owner. Partial Payment Estimates may be appropriately reduced if the Owner's Representative determines that the Contractor has failed to supply the Owner with the requested or necessary information.

In addition to the time-scaled bar chart described above, and when specified in the Supplementary Conditions, the Contractor shall develop and submit to the Owner's Representative for approval a time-scaled Critical Path Method (CPM) schedule. Both a hard copy and electronic copy of the CPM schedule shall be submitted. The Contractor shall revise and resubmit the CPM schedule to reflect any alteration in the sequence of scheduled activities or of the critical path with each partial payment request and at such other times as the Owner's Representative may require, and at any time the Contractor determines that the critical path is altered by changes or other circumstances. The Contractor shall submit the initial CPM schedule to the Owner's Representative no later than twenty-one (21) days from the effective date of the Notice to Proceed and at least monthly thereafter.

The Contractor shall organize the scheduled activities to be consistent with those Specifications Divisions and Sections required for the Work. Each Division and Section of the Specifications and each item in the Schedule of Values shall be represented by one or more scheduled activities. In addition, one or more scheduled activities shall be used to represent the submittal schedule, permit acquisition, materials procurement, plant and equipment procurement, shipping, and all other significant elements of the Work. The Contractor shall include activities that address weather and ground condition restraints, critical dates, holidays, periods of Work suspension, and all other restraints (i.e., all events that are critical or will become critical to the schedule).

All schedules, whether they are bar chart schedules or CPM schedules, shall include enough detail to adequately describe all important activities necessary to complete the Work. Unless otherwise agreed to by the Owner's Representative, no single activity in any schedule will be allowed to represent more than \$50,000 of the total scope of the Work. Providing the initial schedule and monthly schedule updates shall be considered a payable activity and appropriate payment amounts shall be included in the Schedule of Values. Failure to provide adequate schedules will result in non-payment in accordance with the amounts established in the Schedule of Values.

Article 5.4 Unusual Working Hours, Holidays, Saturdays, and Sundays

The Contractor shall give the Owner's Representative forty-eight (48) hours advance notice of his intention to work overtime, Saturdays, nights, Sundays, holidays, or anytime outside the usual working hours. In no case shall the Contractor do any such Work without first notifying the Owner's Representative to allow arrangements for proper inspection. Unless of an emergency nature, the Owner will not pay for work performed in violation of this paragraph.

The Contractor shall reimburse the Owner all costs for inspection work performed on Sundays or recognized holidays except when this work is required by a permit issued by an agency after the contract has been executed.

Article 5.5 Shop Drawings

The Contractor shall submit for review to the Owner's Representative six (6) copies of those Shop Drawings required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the work of the Owner or any separate contractor.

The Shop Drawings submitted by the Contractor shall bear his specific written and signed certification that he has verified that the Work shown is in conformance with the contract documents; that he has determined and verified quantities, dimensions, field measurements, and related field construction criteria; and has checked and coordinated the submittal with the requirements of the Work. The Contractor shall indicate on the Shop Drawing submittal any deviation from the requirements of the Contract Documents.

All Shop Drawings shall be clear and legible. Any Drawings submitted that appear to be carelessly prepared, erroneous, or unchecked will be returned to the Contractor for further action and resubmittal.

The Owner's Representative shall submit the Shop Drawings to the Architect/Engineer. With reasonable promptness, the Architect/Engineer will review and approve or take other appropriate action on the submittals, but only for conformance with the design concept of the Work and with the information given in the Contract Documents. The Architect/Engineer's approval of a specific item will not indicate approval of an assembly of which the item is a component.

The Architect/Engineer will state the reasons for rejection and/or resubmittal requirements if applicable.

The Contractor shall specifically note if revisions on resubmittals are other than those requested by the Architect/Engineer on previous submittals.

The Architect/Engineer, upon his approval, will return two copies of the Shop Drawings to the Contractor. If the Contractor requires more than two (2) copies, he shall submit such additional copies.

The Architect/Engineer's approval of Shop Drawings does not relieve the Contractor of responsibility for any deviation from the Contract Documents unless the Contractor has informed the Architect/Engineer in writing of the specific deviation and the Architect/Engineer has approved the specific deviation in writing. Errors and omissions that may occur in the Shop Drawings are the responsibility of the Contractor. The Contractor is not relieved of this responsibility by the Architect/Engineer's approval of the Shop Drawings.

When Shop Drawings are required on a portion of the Work, the Contractor shall not commence that portion of Work or any item relying on said portion of Work until the Architect/Engineer gives written approval of the Shop Drawings.

The Contractor shall keep one copy of all Contract Documents, including modifications, and one copy of approved Shop Drawings in good order and available to the Architect/Engineer or his representative at the construction site.

Article 5.6 Product Data

The Contractor shall submit for approval six (6) copies of complete Product Data for those items for which submittals are required by the Contract Documents including, but not limited to: specific performance data, material description, rating, capacity, working pressure, material gauge or thickness, brand name, catalog number, and operations and maintenance data. The Contractor shall submit such submittals with reasonable promptness and in such sequence as to not cause a delay in the Work, in the Work of the Owner, or any separate Contractor. With reasonable promptness, the Architect/Engineer will review and approve or take other action on the submittals. The Contractor shall not order equipment before receiving approval by the Architect/Engineer.

Product Data for equipment approved by the Architect/Engineer shall not in any case supersede the Contract Documents. The approval by the Architect/Engineer shall not relieve the Contractor from responsibility to correct deviations from Drawings or Specifications, unless he has in writing called the Architect/Engineer's attention to such deviations at the time of submission and secured the Architect/Engineer's written approval, nor shall it relieve him from responsibility to correct errors of any sort in the items submitted. The Contractor shall check and approve the item described by the Product Data with the Contract Documents for deviations and errors prior to submittal to the Architect/Engineer for approval. It shall be the responsibility of the Contractor to ensure that items to be furnished fit the space available as shown in the Contract Documents.

Upon approval of the equipment by the Architect/Engineer, the Contractor shall furnish four (4) copies of Product Data of all equipment or components together with operations and maintenance instructions.

Article 5.7 Submittal List

The Contractor shall complete, submit, and/or comply with all requirements as indicated in the Submittal List located in the bidding documents. The Contractor is hereby advised that the Submittal List is not an all-inclusive document. The Submittal List does not relieve the Contractor from his obligation to comply with all submittals, certifications, or other requirements as specified in these specifications or in the plans. The Contractor is responsible for determining that all submittals, certifications, and/or requirements are met, whether or not specifically addressed in the Submittal List.

Article 5.8 Materials

All materials and equipment furnished under the Contract shall be new unless otherwise specified and shall be of good quality, shall be free from defects, and shall conform to the requirements of the Contract Documents. Substitute materials shall not be used unless

approved by the Owner's Representative prior to installation. When required by the Owner's Representative, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

In order to establish standards of quality, the Technical Specifications may refer to certain products by name and catalog number. This does not eliminate from competition other products of equal or better quality by other manufacturers. The words "approved equal" are implied regardless of whether or not they appear.

The Contractor shall furnish the Owner's Representative with the list of proposed substitutions within ten (10) calendar days of the effective date of the Notice to Proceed (or such time as may be approved by the Owner's Representative), together with complete engineering and catalog data in sufficient time prior to their use to give the Owner's Representative adequate time for review. Failure on the part of the Contractor to obtain the necessary approval prior to ordering or using such alternate material or equipment shall not relieve the Contractor of furnishing acceptable material or equipment as required by the Contract Documents.

When the Owner's Representative judges the proposed substitute material or items of equipment to be unacceptable, the Contractor shall abide by the Owner's Representative's decision and shall furnish the specified material or item of equipment. The Owner's Representative will approve or disapprove proposed substitutions in writing within a reasonable time.

The Contractor shall store materials in such a manner as to ensure the preservation of their quality and fitness for use. When considered necessary to protect materials against cold or dampness, or to keep them clean and free from dust, dirt, or other detrimental matter, suitable sheds, platforms, and covers will be used that provide easy access to stored materials for inspection whenever access is requested by the Owner's Representative.

The Contractor shall apply, install, connect, erect, use, clean, and condition manufactured articles, material, and equipment as directed by the Manufacturer. In the event of conflict between the manufacturer's directions and the Contract Documents, the higher standard requirements shall govern.

Article 5.9 Testing of Materials

The Contractor shall conduct all tests in accordance with methods as described and designated in the Contract Documents. The Owner shall provide and pay for tests of materials that are required on site, unless otherwise specified in the Supplementary Conditions. The Contractor shall provide and pay for all factory testing, mill testing, and other off-site testing as specified or required to conform to codes and industry standards.

The Contractor shall provide such labor and facilities as may be required for collecting and forwarding samples to the local testing laboratory necessary for testing and shall hold the materials represented by the samples until tests have been made and the materials found equal to the requirements of the Specifications. The Contractor in all cases shall furnish the required samples without charge.

The Owner's Representative may periodically require repetitive testing of materials in constant use. The Contractor shall pay for retesting when materials have previously been tested and have not met the requirements of the Contract Documents.

In the absence of any definite Specification, materials and tests shall meet the specifications and requirements of the American Society for Testing and Materials (ASTM) and the American Association of State Highway Transportation Officials (AASHTO).

Wherever a particular ASTM or AASHTO specification is referred to by number, such reference shall include all amendments and additions thereto adopted by the ASTM or AASHTO prior to the award of the Contract.

Repetitive testing of materials in constant use may be required periodically by the Owner's Representative. Required retesting shall be accomplished at the expense of the Contractor when materials have previously been tested and have not met the requirements of the Contract Documents.

Article 5.10 Contractor's Authorized Representatives and Employees

The Contractor shall, within five (5) days after the Notice to Proceed, in writing, name the Superintendent, and file with the Owner's Representative a list of all persons who are authorized to sign documents on behalf of the Contractor to fully bind the firm.

The Superintendent shall be thoroughly qualified and experienced, shall be completely familiar with the requirements of the Contract Documents, shall direct all Work, and shall be present at the project site or readily available at all times while Work is in progress.

The Contractor shall employ only qualified journeymen, mechanics, operators, tradesmen, and installers who are thoroughly skilled and experienced in their respective trades or specialties. When apprentices and helpers are employed, they shall be under the supervision of qualified journeymen mechanics and tradesmen at all times.

The Contractor shall at all times enforce strict discipline and good order among his employees and Subcontractors and shall not employ on the Work any unfit person or anyone not skilled in the task assigned to him. The Owner's Representative may require the Contractor to remove from the Work any employee or Subcontractor that the Owner's Representative deems incompetent, careless, or otherwise objectionable.

Article 5.11 Subcontracting

If any part of the Work to be done under the Contract is subcontracted, the subcontracting shall be done in accordance with the following provisions:

The Contractor shall provide the Owner's Representative, in writing, a list of Subcontractors within 10 days of Notice to Proceed and prior to subcontractor working on site, together with a summary of the extent and character of the Work each Subcontractor shall do. If, for sufficient reason, at any time before or during the progress of the Work, the Owner's Representative determines that any Subcontractor is incompetent or undesirable, he will notify the Contractor accordingly. The Contractor will take immediate steps for cancellation of such subcontract. Subletting by Subcontractors shall be subject to the above.

The Contractor shall be fully responsible to the Owner for the acts and omissions of his Subcontractors and of persons either directly or indirectly employed by them. Nothing contained in the Contract Documents shall create a contractual relation between any Subcontractor and the Municipality.

The subcontracting of any of the Work to be done shall in no way relieve the Contractor of any part of his obligations under the Contract.

Article 5.12 Right of the Municipality to Do Work

The Municipality has the right to do Work and may award other Contracts in connection with the Work under this Contract or nearby projects. The Contractor shall conduct his operations to interfere as little as possible with other Contractors or Subcontractors on or near the Work.

Article 5.13 Safeguarding of Excavations

The Contractor shall provide such safeguards and protections around and in the vicinity of all excavations as may be necessary to prevent damage to property or injury to persons.

Contractor shall backfill all trench excavations to the top of the trench at the end of each working day, except, at Contractor's option, he may leave open a "bell-hole" if it is properly barricaded and if adequate signing and warning lights are placed to prevent inadvertent entry by vehicular or pedestrian traffic. If groundwater or surface water results in standing water in the remaining excavation, the Contractor shall provide continuous pumping during the nonworking hours to maintain the excavation in a dewatered condition. All roadways shall be left in a drivable condition for normal vehicular and transport operations at the end of each day's operation, except where the Owner's Representative has approved road or lane closures.

These requirements shall in no way relieve the Contractor of the obligation to restore private property to its preconstruction condition.

Article 5.14 Use of Explosives

In the handling and storage of explosives, the Contractor must comply with all federal, state and municipal laws, and shall use every precaution to prevent injury to persons and damage to property. The Contractor shall provide secure storage places, identified with warning signs. Only persons licensed and experienced in the handling of explosives shall be allowed to use them. Before detonating explosives, the Contractor shall sound a warning and remove all persons from within the radius of danger. The Contractor shall provide proof of license to the Owner's Representative prior to handling and use of explosives.

Article 5.15 Duties of Inspectors

Inspectors will be authorized to inspect all Work and Materials. Such inspection may extend to all or any part of the Work and to the preparation, fabrication, or manufacture of the materials to be used. Inspectors will not be authorized to alter or waive the provisions of the Contract. Inspectors will not be authorized to issue instructions contrary to the Contract Documents or to act as supervisors for the Contractor.

Inspectors will immediately inform the Contractor of any deficiency known to exist in the Work and any laboratory test results related to the Work.

The Contractor's responsibility for Work performed under the Contract shall in no way be relieved because of the presence or absence of an inspector. An inspector, by his presence, does not render Work acceptable.

Article 5.16 Inspection

The Contractor shall allow the Architect/Engineer and his representatives and the Owner's Representative access to all parts of the Work at all times and shall furnish them with every reasonable facility for ascertaining whether or not the Work is in accordance with the requirements and intent of the Contract Documents. Upon the request of the Owner's Representative, the Contractor shall, at any time before Final Acceptance of the Work, remove or uncover such portions of the finished Work as may be directed. After examination, the Contractor shall restore said portions of the Work to the standard required by the Contract Documents. Should the Work thus exposed or examined, prove acceptable, the Owner will pay for the uncovering, removing, replacing of the coverage, and restoration of the parts removed as extra work.

Should the Work so exposed or examined prove unacceptable, the Contractor shall pay for the uncovering, removing, replacing of the covering, and restoration of the parts removed.

Article 5.17 Work Limits, Easements, and Rights-of-Way

The Owner will provide work limits, rights-of-way and easements for the Work. Information regarding the width and status of easements is shown on the Drawings. The

Contractor shall comply with all Supplementary Conditions, provisions, stipulations, and restrictions thereof. The Contractor shall confine his operations to the designated work areas, rights-of-way and easements and shall observe all restrictions. Prior to the start of construction of this project, the Contractor will ensure that all permits necessary for the construction of the project, including right-of-entry for driveway reconstruction, have been obtained and will ensure that they are available on the job site at all times.

The Contractor will be responsible for any trespass upon adjacent property or injury thereto resulting from or in connection with his operations. The Contractor shall be liable for any claims that may be made on account of trespass and shall provide a written statement from the property owner of full restoration or satisfactory resolution prior to Final Acceptance of the Work. The Contractor shall not have the right to remove materials from a right-of-way, easement, or work area unless otherwise provided in the Contract Documents.

Should the Contractor desire to go outside designated work areas, rights-of—way or easements, he shall provide the Owner’s Representative with written permission from the property owner before entering such property. The written permission shall specifically provide that the property owner will not hold the Municipality or its employees, agents, or consultants liable for use of or damage to this property.

Article 5.18 Responsibility for Damages

The Contractor shall be responsible for all damages to property; injury to persons; and loss, expense, inconvenience, and delay that may be caused by or that may result from any act, omission, or neglect of the Contractor, his Subcontractors, or his employees in the performance of the Work.

It is specifically understood between the parties executing the Contract that the Contract Documents do not make anyone a third-party beneficiary, nor does the Contract authorize anyone not a party to maintain a lawsuit for personal injuries or property damage.

Article 5.19 Repair of Damages Caused by Contractor

All damage and injury to property that is caused by or that results from the carrying out of the Work, or from any act, omission, or neglect of the Contractor, his Subcontractors, or his employees, shall promptly be remedied by the Contractor either by the repairing, rebuilding, or replacing of the property damaged or in some other manner satisfactory to the owner of such property. In case of failure on the part of the Contractor to promptly and satisfactorily remedy such damage or injury, the Municipality may proceed to repair, rebuild, or replace such property as required, and the cost thereof will be deducted from any monies due or that may become due the Contractor.

In applying the above provisions, the repairing, rebuilding, or replacing of damaged property shall be understood to include the providing of any temporary facilities that may be needed to maintain normal service until the required repairing, rebuilding, or replacing is accomplished.

This provision also applies to all areas used by the Contractor for staging of the construction and shall include restoring those properties to their original condition to the satisfaction of the Owner's Representative.

Article 5.20 Unauthorized and Defective Work

Any unauthorized or defective Work found to exist during construction shall be immediately remedied by the Contractor. If the Contractor fails to correct unauthorized or defective Work, the Owner may, three (3) days after a written notice to the Contractor, correct such deficiencies and deduct the cost thereof from any payment due the Contractor without prejudice to any other remedy including the use of Article 5.29 – Termination of Contract by Owner.

Article 5.21 Changes in the Work

The Owner's Representative shall have the authority to order changes in the Work requiring an adjustment in the Contract amount and/or time. Such changes in the Work shall be performed in accordance with any supplemental Drawings and instructions as the Owner's Representative may issue. Any single change in the Work, or cumulative changes in the Work, which will cause the total value of the Contract to exceed the limits stated in AMC 7.15.080, requires Assembly approval. The Owner will pay for additions to the Work or take credit for reductions to the Work using one of the four methods described below.

- 1) Negotiated unit or lump sum prices.
- 2) Time and Material prices (when the Owner's Representative determines that contract prices or negotiated prices do not apply).
- 3) Contract unit or lump sum prices (if they have been included as a part of the Contract).
- 4) No cost changes (when the Owner's Representative determines that a change is necessary which does not affect the price or time for the work).

Prior to the Owner's Representative authorizing payment for changed work, the Contractor shall furnish a Change Order Proposal that is itemized as required by the Owner's Representative for both additions and deletions to the Work.

The Contractor's Change Order Proposal shall be in sufficient detail to permit an analysis of all materials, labor, equipment, subcontracts, insurance, bonds, overhead costs and profit and shall cover all Work involved to accomplish the modification whether deleted,

added or changed. Any amount claimed for subcontracts shall be supported by a similar price breakdown. The Contractor agrees that it will incorporate the provisions of this Article 5.21 into all agreements with lower tier subcontractors.

If the Contractor's Change Order Proposal includes a request for a time extension, a justification thereof shall also be furnished. The Change Order Proposal together with the price breakdown and time extension justification shall be furnished by such date as may be specified by the Owner's Representative.

Each Change Order Proposal shall include a clear summary of the contract requirements; the reason for the requested change; a description of the change and whether additional time or other compensation is requested or credit offered to the Owner. Unless agreed at the time of the Owners Representative's acceptance of the Change Order Proposal, and formalized by an executed Change Order, any and all increased costs or delays resulting directly or indirectly from an unapproved Change Order Proposal will be borne solely by the Contractor.

1) Negotiated Changes: When extra work is ordered by the Owner's Representative to be performed on a negotiated unit or lump sum basis, the Contractor will be required to submit a properly itemized Change Order Proposal covering all the additional work and/or work to be deleted. The proposal will be itemized for the various components of work and segregated by labor, material, and equipment costs in a format satisfactory to the Owner's Representative. Each proposal will include similar itemized costs for all subcontractors, regardless of tier. The labor, material and equipment components of each proposal shall include the following:

Allowances for Profit and Overhead for Negotiated Changes:

Contractor Change Order Proposals for the performance of changed work shall include all direct costs for labor, materials, and equipment as described above. The Owner's Representative will review the proposals for reasonableness and adequate detail in order to reach agreement with the Contractor before including allowances as described below:

- In addition to the direct costs of labor, materials and equipment incurred by the Contractor, the Contractor shall be entitled to an allowance for profit and overhead. This allowance shall be 20% of direct costs.
- If work is performed by a subcontractor, the subcontractor actually performing the work shall be entitled to those allowances for profit and overhead listed above, and each subsequent higher tiered subcontractor or Contractor shall be allowed an additional 10% markup on the subcontractor's direct costs, up to a maximum of two tiers of subcontractors.

The allowance made in accordance with the terms outlined above will be understood to be complete reimbursement and compensation for all indirect costs associated with changed work including, but not limited to job office overhead, home office overhead, project management, superintendents, general foremen, estimating, engineering, detailing, legal, accounting, shop drawings, submittals, costs of small tools and small equipment, warranty, bond cost, insurance premiums, and profits.

Any allowance made by the Contractor to a Subcontractor, other than specified herein, shall be at the expense of the Contractor.

2) Time & Material Changes: When extra work is ordered by the Owner's Representative to be performed on a time and materials basis, the Contractor will be required to perform the extra work at the actual direct cost for labor, materials and equipment plus allowances for profit and overhead. In order for payment to occur, the Contractor must document all direct costs in a manner acceptable to the Owner's Representative. The contractor shall provide daily time sheets with the names of all Contractor's employees working on the changed work, the number of hours each employee works on the changed work, and a description of the work performed. In addition, the Contractor shall provide daily records of all equipment used to perform the changed work showing the number of hours each piece of equipment was used, a description of the work performed, and the name of the equipment operator. All materials incorporated into the changed work shall be documented with itemized invoices from vendors and suppliers.

Labor:

Labor costs shall include the direct hourly cost of labor stated on the certified payroll for each labor classification plus other direct labor costs including, but not limited to, FICA, Workers' Compensation, ESC, and public liability and property damage insurance when premiums are based on a percentage of payroll. The labor costs shall include only those direct labor hours required to perform the changed work for workers and working foremen. Supervision above the level of working foremen (such as general foremen, superintendents, and project managers, etc.) shall not be included in labor costs and shall be considered to be included in the Overhead and Profit Markup as described later in this Article 5.21.

Materials:

Costs for materials and supplies, including freight, will be based on the net actual cost of the material and supplies required to perform the changed work, as verified by appropriate vendor and third party invoices. Material costs shall reflect cost reductions available to the Contractor due to trade discounts, volume rebates, and price reductions for prompt payments, if applicable. Material costs

must be itemized to display the unit price for each specific item incorporated into the work

Owned Equipment (over \$500):

For any machinery or special equipment (other than small tools less than \$500) the Contractor shall include costs for the rental rates in the current edition and appropriate volume of the "Rental Rate Blue Book For Construction Equipment," (hereinafter referred to as the "Blue Book"), published by Dataquest, Inc. Hourly rental rates shall be determined as follows:

- The established hourly rental rate shall be equal to the monthly rate for the basic equipment plus the monthly rate for applicable attachments necessary to perform the work, both divided by 176, all multiplied by the area adjustment factor, plus the estimated hourly operating costs listed in the Blue Book.
- The area adjustment factors shall be applied for those sections the "Blue Book" containing an area adjustment map.
- The "Equipment Life" adjustment factor sections shall not apply.

For equipment not listed in the Blue Book, the Contractor shall receive a rental rate as agreed upon before the changed work is begun. If agreement cannot be reached, the Owner's Representative reserves the right to establish a rate based on similar equipment shown in the Blue Book or based on prevailing commercial rates in the area.

Rented Equipment (over \$500):

Costs for equipment brought to the work site and rented or leased specifically for work required under this section shall be included at the actual rental rate and supported by invoices from the equipment vendor. Rental rates for equipment shall be consistent with prevailing rates for similar equipment in the area.

Costs for rented equipment previously on the site and utilized specifically for changed work shall be included at the actual rental rate and supported by invoices from the equipment vendor, provided the hourly rate for this equipment shall not be greater than the hourly rate paid for that same equipment for other work in this contract.

Time for both owned and rented equipment will be estimated to the nearest one-quarter hour for purposes of computing compensation to the Contractor for equipment utilized under these rates.

The equipment rates for both owned and rented equipment as determined above shall be full compensation for providing the required equipment and no additional compensation will be made for other costs such as, but not limited to, fuels, lubricants, replacement parts or maintenance. Cost of repairs, both major and minor, as well as charges for mechanic's time utilized in servicing equipment to ready it for use prior to moving to the project and similar charges will not be allowed.

When it is necessary to obtain equipment from sources beyond the project limits exclusively for changed work, the actual cost of transferring the equipment to the site of the work and return will be allowed as an additional item of expense. Where the move is made by common carrier, the move-in allowance will be limited to the amount of the freight bill or invoice. If the Contractor hauls the equipment with his own forces, the allowance will be limited to the rental rate for the hauling unit plus operator wages. Move-in allowance shall not be made for equipment brought to the project for changed work which is subsequently retained on the project and utilized for completion of contract items.

- In addition to the direct costs of labor, materials and equipment incurred by the Contractor, the Contractor shall be entitled to an allowance for profit and overhead. This allowance shall be 15% of direct costs.
- If work is performed by a subcontractor, the subcontractor actually performing the work shall be entitled to those allowances for profit and overhead listed above, and each subsequent higher tiered subcontractor or Contractor shall be allowed an additional 10% markup on the subcontractor's direct costs, up to a maximum of two tiers of subcontractors.

The allowance made in accordance with the terms outlined above will be understood to be complete reimbursement and compensation for all indirect costs associated with changed work including, but not limited to job office overhead, home office overhead, project management, superintendents, general foremen, estimating, engineering, detailing, legal, accounting, shop drawings, submittals, costs of small tools and small equipment, warranty, bond cost, insurance premiums, and profits.

Any allowance made by the Contractor to a Subcontractor, other than specified herein, shall be at the expense of the Contractor.

3) Unit Price Changes: When extra work is ordered by the Owner's Representative to be performed on a unit price basis, the contract amount will be adjusted for both added quantities and deductive quantities in accordance with those unit prices that have been incorporated into the Contract, unless the Owner's Representative determines there is a

more equitable method. For changed work authorized by the Owner's Representative, the Contractor shall submit a Change Order Proposal itemizing the quantities of each item of work for which there is an applicable unit price. The applicable unit prices will be applied to the net differences of all quantities of the same item. These unit prices will be considered to cover all direct and indirect costs of furnishing and installing the item, including all profit and overhead for contractor and subcontractor.

4) No Cost Changes: The Owner's Representative shall have authority to order changes in the Work that in his opinion do not require an adjustment in the Contract amount or an extension of time and are not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order and shall be binding on the Owner and the Contractor. The Contractor shall carry out such written orders promptly.

If the Contractor claims that such written instructions or orders involve extra costs or an extension of time, he shall make his claim by following the procedures set forth in Article 5.22 - Claims for Additional Compensation. The Contractor shall proceed with the Work as directed by the Owner's Representative while his claim is being evaluated and shall not delay the Work while waiting for a decision.

Article 5.22 Claims for Additional Compensation

Except as elsewhere restricted, the Contractor may make a claim for additional compensation when he believes that he has incurred additional costs due to the acts, errors, or omissions of the Owner. If the Contractor becomes aware of any act or occurrence that may form the basis of a claim, the Contractor shall make every effort to mitigate the extent of any amounts claimed for additional compensation and shall immediately inform the Owner's Representative in writing of the potential for the claim, providing sufficient information to outline the basis of the claim. If the matter is not resolved within seven (7) days, the Contractor shall, within the next fourteen (14) days, submit written notice of the facts that may form the basis of the claim.

Thereafter, the Contractor shall submit the claim in writing to the Owner's Representative within twenty-one (21) days of the submission of the written notice of the facts unless the Owner's Representative agrees in writing to an extension of time for good cause shown. The Owner's Representative may grant up to a sixty (60) day extension only upon the written request of the Contractor in which all reasons for the request are stated. The Contractor agrees that unless these written notices are provided, the Contractor will have no entitlement to compensation for the acts, errors, or omissions of the Owner, the Architect/Engineer, or any other Contractor employed by the Owner. The Contractor shall in all cases continue performance of the Contract.

The written claim presented by the Contractor shall be complete and adequately stated. It shall specifically include the facts and circumstances surrounding the claim and the Contract provisions under which the claim is made; the Contractor's assertion as to the

original requirements of the Contract Documents and the basis for that assertion or position, citing all pertinent Specifications, Details, Plan notes or other Contract provisions; a clear certification that the Contractor's Bid Costs were in fact based on the stated original interpretation; the Contractor's assertion as to the revised requirements of the Contract Documents, citing all pertinent Contract provisions, or lack thereof, and other records on which that assertion or position is based; a narrative description of the increase in the Scope of Work resulting from the revision in the requirements; the Pay Items and quantities affected by the alleged change; references to previous notices of pending claim; and the specific relief requested, including both time extension and additional cost compensation and the basis on which both were calculated. In the case of cost compensation, such basis for specific relief shall include the labor classifications, rates and additional time; the equipment descriptions, rates and additional time; material descriptions, unit prices and quantities; and appropriate supporting documentation as to materials, unit prices, labor rates, and equipment rates.

Claims presented that do not include the above information or are otherwise considered to be incomplete will be returned to the Contractor without review by the Owner's Representative. The Owner's Representative will render a decision as to the merit of a properly presented claim within sixty (60) days of its receipt. Any change in the Contract amount resulting from such claim will be subject to approval by the Owner through the execution of a Change Order.

Article 5.23 Time for Completion of Work

The Owner shall indicate in the Supplementary Conditions either a time period for completion of the Work or a completion date. Time is of the essence in the Contract. Therefore, the Work to be performed under the Contract shall be completed in its entirety within the time period specified or before the completion date.

The Contractor shall furnish all labor, materials, facilities, and equipment and shall work the required hours, including night shifts, overtime operations, and Saturdays, Sundays, and holidays (per the requirements in Article 5.4 – Unusual Working Hours, Holidays, Saturdays, and Sundays) as may be necessary to ensure the completion of the Work within the time specified.

Failure of the Contractor to comply with the requirements of this Article may be considered grounds for termination under the provisions of Article 5.29 - Termination of Contract by Owner.

Article 5.24 Delays and Extension of Time

If the Contractor is delayed, beyond his control and without fault or negligence on his part, at any time in the progress of the Work by any act or neglect of the Owner or by changes ordered in the Work or by labor disputes, fire, unusual delay in transportation, adverse weather conditions not reasonably anticipated, unavailability of materials for which orders were timely placed, or by unavoidable casualties, then the time period for completion or the completion date may be extended by a Change Order, for such reasonable time as

the Owner's Representative may determine, without invalidating any of the provisions of the Contract and without the consent of the Surety.

Any claim for extension of time shall be made in accordance with the procedures set forth in Article 5.22 - Claims for Additional Compensation. In the case of a continuing delay, only one claim is necessary. The Contractor shall provide an estimate of the probable impact of such delay on the progress of the Work.

Article 5.25 Suspension of Work

By executing a contract, the Contractor agrees that the Owner has the undisputed right to suspend the Work and that this right is a material condition of the contract. The Contractor shall immediately suspend the Work as directed in the written order. Failure of the Contractor to immediately suspend the Work as directed shall constitute a material and immediate breach of the contract by the Contractor. The Owner may terminate this contract for default without providing the ten (10) day notice specified in Article 5.29 – Termination of Contract by Owner, should the Contractor fail, refuse or otherwise not immediately suspend the Work as directed.

The Work may be suspended in whole or in part by order of the Owner's Representative for the convenience of the Owner. The Contractor shall take every precaution to prevent any damage or unreasonable deterioration of the Work during the time it is suspended. Suspension of the Work by the Owner's Representative for the convenience of the Owner may furnish grounds for a claim by the Contractor for additional compensation and/or a time extension, in which case the Contractor, when making a claim, shall comply with the provisions of Article 5.22 - Claims for Additional Compensation.

Upon the failure of the Contractor to carry out the orders of the Owner's Representative or to perform in accordance with the Contract Documents, the Owner's Representative may suspend the Work for such period as may be necessary. Time lost by reason of such suspension, or replacement of improper work or material, shall not furnish any grounds to the Contractor for claiming additional compensation and/or an extension of time and shall not release the Contractor from any liability for damages or for failure to complete the Work within the time prescribed.

In the event that a suspension of Work is ordered in writing by the Owner's Representative due to unsuitable weather or unforeseen conditions, and, in the opinion of the Owner's Representative, the Contractor has prosecuted the Work with due diligence prior to the time of suspension, the Contractor may be due an extension of time.

Where the Contract provides for a time period for completion and the Work is suspended for the convenience of the Owner or unsuitable weather or unforeseen conditions and the Contractor has prosecuted the Work with due diligence, the time period and liquidated damages provision of the Contract shall be tolled until a Notice to Resume Work is issued by the Owner's Representative.

Article 5.26 Final Trimming of Work

The Contractor shall be responsible for all repair to the Work as necessary to overcome deterioration or damage that may occur prior to final inspection. The Contractor at all times shall keep the premises free from accumulation of waste materials, rubbish, and debris. The Contractor shall grade all existing driveways on, and which have been affected by the project within the rights-of-way or easements as directed by the Owner's Representative. At the completion of the Work, all waste materials, rubbish, debris and temporary structures from and about the Project as well as all his tools, construction equipment, machinery, and surplus materials shall have been removed from the Project area. The Work shall be in a neatly trimmed and well-finished condition throughout the Project area at the time of Final Inspection. This Work shall be considered incidental to the contract unless there is a specific contract item for this Work.

At any time during the progress of construction that cleanup is not keeping pace with the rest of the Work in the opinion of the Owner's Representative, the Contractor shall at the direction of the Owner's Representative suspend all operations on the major items of work until the premises are cleaned up to the satisfaction of the Owner. Any additional expense involved will be the sole responsibility of the Contractor, and the Owner will not be held liable for this additional expense.

All street name signs, traffic control signs, mailboxes, newspaper boxes, property corner markers, survey markers, survey monuments, and utility markers removed to facilitate the Work or damaged by the Contractor's operations shall be restored by the Contractor unless otherwise directed. Items damaged by the Contractor during removal, storage, or restoration shall be repaired or replaced in kind by the Contractor. Repairing or replacing damaged items shall be considered incidental to the Contract, and no separate payment shall be made.

Article 5.27 Final Inspection

When the Contractor, by his own comprehensive inspection, has concluded that all Work is completed, all code compliance inspections are performed, and all other contract requirements are fulfilled, he shall notify the Owner's Representative in writing of completion and request a pre-final inspection of the Project. This inspection will be performed in the presence of a representative of the Owner, the Architect/Engineer, and the Contractor. The Contractor will make available copies of all required code compliance inspection reports at this inspection. All deficiencies indicated by this inspection will be listed and promptly furnished to the Contractor for remedial action. When all listed deficiencies have been corrected, the Contractor shall notify the Owner's Representative, and a Final Inspection will be performed. When the Final Inspection verifies correction of the listed deficiencies, the Owner's Representative will issue a Certificate of Completion.

When the Final Inspection reveals uncorrected listed deficiencies, the above outlined procedure shall be repeated and the cost of reinspection will be deducted from any money due the Contractor. This cost will include, but is not limited to, salaries, administrative, and transportation costs.

Article 5.28 Liquidated Damages

For each calendar day that the Substantial Completion and/or Final Acceptance date is delayed beyond the Contract Completion Date, the sum per day listed in the Supplementary Conditions shall be deducted from any monies due the Contractor. After Substantial Completion, the Owner shall deduct from any monies due the Contractor the sum per day listed in the Special Provisions for every calendar day that the Final Acceptance date is delayed beyond the Contract Completion Date. If no money is due the Contractor, the Owner shall have the right to recover said sums from the Contractor or the Surety, or both.

The Contractor acknowledges that the daily amount of the Liquidated Damages provision is not a penalty but rather is a reimbursement for damages that the Owner will sustain by reason of delayed completion. The Contractor further acknowledges that the daily amount of Liquidated Damages is a reasonable alternative to the complex calculations that would otherwise be necessary to determine such damages.

Permitting the Contractor to continue and finish the Work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, will in no way operate as a waiver on the part of the Owner of any of the Owner's rights under the Contract.

Article 5.29 Termination of Contract by Owner

If the Contractor should be adjudged bankrupt; if he should make a general assignment for the benefit of his creditors; if a receiver should be appointed on account of his insolvency; if he should persistently or repeatedly refuse or fail to supply enough properly skilled workmen or proper materials for the efficient prosecution of the Work; or if he should persistently disregard laws, ordinances, or the instructions of the Owner's Representative, or otherwise substantially violate any provisions of the Contract, then the Owner may without prejudice to any other right or remedy and after giving the Contractor and his Surety ten (10) days concurrent written notice, terminate the Contract and take possession of the premises and of all materials, tools, and appliances thereon. Notwithstanding the preceding, the Owner may immediately terminate this contract for default without providing a ten (10) day notice if the Contractor fails, refuses or otherwise does not comply with a written order by the Owner's Representative that may involve issues of safety or a suspension of work issued under Article 5.25 – Suspension of the Work. When the Contractor and Surety are notified of the termination of the Contract, the Owner may demand that the Surety fulfill its obligations under the Performance and Payment Bond. Should the Surety fail to perform its obligations under the Bond upon demand of the Owner, then the Owner may finish the Work by whatever method that the Owner determines expedient. The Contractor and his surety shall be responsible for compensating the owner for all excess costs, including applicable liquidated damages and all added procurement costs incurred in accomplishment of the Contract Work.

In the event that the Owner terminates the Contract, the Owner does not waive any other right or remedy under the Contract or any other right or remedy available at law or equity.

The Contractor may not be allowed to bid on any Owner's contracts for a period of two (2) years following the date of this termination by the Owner.

In the case of termination before completion for any cause whatsoever, the Contractor, if notified to do so by the Owner, shall promptly remove equipment and supplies from the premises of the Owner. Failure to do so will authorize the Owner to remove such equipment and supplies from the premises at the expense of the Contractor.

Article 5.30 Termination of Work for Owner's Convenience

At any time during the term of this contract, the Owner may terminate the Work, in whole or in part, for any reason that the Owner's Representative shall determine to be in the best interest of the Owner. Any such termination shall be effected by delivery of a Notice of Termination to the Contractor, specifying that the termination is for the convenience of the Owner; the extent to which performance of the Work under the Contract is terminated; and the date upon which such termination becomes effective.

After receipt of a Notice of Termination and except as otherwise directed by the Owner, the Contractor shall:

1. Stop work under the contract on the date and to the extent specified in the Notice of Termination;
2. Place no further orders or subcontracts for materials, services, or facilities except as may be necessary for completion of such portion of the Work under the contract as is not terminated;
3. Terminate all orders and subcontracts to the extent that they relate to the performance of Work terminated by the Notice of Termination;
4. Settle all outstanding liabilities and all claims arising out of such termination of orders and subcontracts, the cost of which would be reimbursable, in whole, or in part, in accordance with the provisions of the contract;
5. Submit to the Owner's Representative a list, certified as to quantity and quality, of any or all termination inventory items, excluding items that the Owner's Representative directed or authorized disposition of;
6. Transfer to the Owner's Representative the completed or partially completed plans, drawings, information, and other property that, if the contract had been completed, would be required to be furnished to the Owner;
7. Take such action as may be necessary or as the Owner's Representative may direct for the protection and preservation of the contract-related property that is in the possession of the Contractor and in which the Owner has or may acquire any interest.

The Contractor shall proceed immediately with the performance of the above obligations notwithstanding any delay in determining or adjusting the amount of any item of reimbursable cost under this clause.

When the Owner orders termination of Work, effective on a certain date, all completed Work will be paid for at the contract price. Payment for materials included in the material inventory described in item 5 listed above will be paid at actual cost delivered to the project or storage site, including transportation charges. Allowable total markup on the actual cost shall be fifteen percent (15%).

After receipt of a Notice of Termination, the Contractor shall submit to the Owner's Representative his claim for alleged additional damages or costs not covered above or elsewhere in these specifications as provided in Article 5.22 – Claims for Additional Compensation. In no event, however, will loss of anticipated profits be considered as part of any settlement.

Article 5.31 Use of Completed or Uncompleted Portions

The Owner shall have the right to take possession of and use any completed or partially completed portions of the Work, prior to the date specified for completion, and such action and use shall not be considered an acceptance of that Work. If such use by the Owner causes additional expense to the Contractor and/or delay in the Work, the Contractor may be entitled to additional compensation and/or an extension of time. Claims for additional compensation or a time extension shall follow the procedures set forth in Article 5.22 - Claims for Additional Compensation. The Owner shall be responsible for routine maintenance or damages caused by the Owner's use of such portions of the Work.

Article 5.32 Preconstruction Conference

Within five (5) days after delivery of the executed agreement by the Owner to Contractor, but before the Contractor begins the Work at the site, a Preconstruction Conference will be held to review the contractor's schedules and plans, to establish procedures for handling shop drawings and other submissions, to establish procedures for submitting and processing applications for payment, and to establish a working understanding between the parties as to the project. The Owner or his Representative, the Architect/Engineer, the Inspector, and the Contractor and his Superintendent and key Subcontractors' representatives will be present at the meeting. Construction Progress Meetings will be conducted each month on a scheduled basis to review work progress, schedules, and other matters requiring discussion and resolution. At a minimum, the Owner, Architect/Engineer, and Contractor's Project Manager, or their representatives,

will attend the Construction Progress Meetings, which will be conducted on the project site.

SECTION 00 72 13.06 LEGAL RELATIONS AND RESPONSIBILITIES

Article 6.1 Laws to Be Observed

The Contract shall be governed by the laws of the State of Alaska. The Contractor at all times shall observe and comply with all federal, state, and municipal laws, ordinances, and regulations in any manner affecting the conduct of the Work and all such orders or decrees existing or which may be enacted or promulgated by legislative bodies, boards, tribunals, or courts having any jurisdiction or authority over the Work. The Contractor shall defend, indemnify, and hold harmless the Municipality and the officers, employees, and agents of the Owner, including the Architect/Engineer, against any claim or liability arising from or based on the violation of any such laws, ordinances, regulations, orders, or decrees, whether such violations be by the Contractor, his Subcontractor, or his employees.

Article 6.2 Notice to Contractors

Any written notice to the Contractor by the Owner shall be served on said Contractor or his representative either personally or by mailing to the address given in the Contract.

Article 6.3 Notice by Contractors

Any notice to the Owner by the Contractor shall be made in writing and shall be delivered to the Owner's Representative or his representative in person or mailed to the office of the Owner's Representative at the address given in the official Notice to Proceed.

Article 6.4 Successors and Assigns

The Contractor binds himself, his partners, successors, assignees, and legal representatives to the Owner with respect to all covenants, conditions, and obligations contained in the Contract Documents.

Article 6.5 Assignments

The Contractor shall not assign the whole or any part of the Contract or any monies due or to become due the Contractor without written consent of the Owner. If the Contractor assigns all or any part of any monies due or to become due him, the instrument of assignment shall state that the right of the assignee in and to any monies due or to become due to the Contractor shall be subject to prior claims of all persons, firms, and corporations who performed Work or supplied materials under the Contract.

Article 6.6 Permits

All permits or licenses not required to be obtained by the Owner but which are required by any federal, state, or municipal governmental agency or any public utility shall be obtained and paid for by the Contractor when such permits or licenses are necessary for the prosecution of the Work. The Contractor shall be responsible for all stipulations of these permits and shall be responsible for all costs associated with these permits and their stipulations.

It will be the Contractor's responsibility to give all notices and comply with all laws, ordinances, rules, and regulations bearing on the conduct of the Work as specified herein. The Contractor shall also be responsible for requesting all code compliance inspections.

The Owner will obtain the required permits and authorizations for Work within the Alaska Railroad Corporation rights-of-way and permits from the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, and the Alaska Department of Fish and Game. Prior to the start of construction within the scope of such permits, the Contractor shall obtain the necessary approvals and permits relating to the method, plan, and exact schedule of construction for any Work within such rights-of-way, creeks, and wetlands. Failure on the part of the Contractor to comply with any of the stipulations of any of the applicable Owner- or Contractor-acquired permits shall be sufficient cause for the Owner to suspend that Work.

The payment of basic and special fees, established under Anchorage Municipal Code (AMC) Chapter 24.30, AMC 24.30.100.A, AMC 24.30.100.B, and AMC 24.30.100.F,

Permit Fees for Permanent Uses of Public Places (street use ordinance), and which are applicable to the Work, shall not be the responsibility of the Contractor. These fees shall not be considered a bid item, nor shall they be considered incidental to any bid item.

The Contractor shall be responsible for applying for permits and fulfilling all other requirements of the MASS, the Municipal Code, and the Director of the Municipality of Anchorage's Office of Planning, Development, and Public Works pertinent to the approval and issuance of the permits.

The Contractor shall obtain and pay for all permits, deposits and connection fees for tapping any required water and/or wastewater service connection permits for new and disrupted service connections.

Article 6.7 Copyrights and Patents

The Contractor shall defend, indemnify, and hold harmless the Municipality, its officers, its employees, and agents of the Owner, including the Architect/Engineer, from any and all claims, suits, or actions brought for the infringement of any copyright or patent claimed to be infringed by any material, devices, drawings, method, or process to be

incorporated in the Work and/or required to be used in connection with the Work, including all attorney's fees and costs.

Article 6.8 Safety

The Contractor shall be solely and completely responsible for conditions of the job site, including safety of all persons (including employees, Owner's Representatives, and the public) and property during performance of the Work. This requirement shall apply continuously twenty-four (24) hours per day, seven (7) days per week and shall not be limited to normal working hours. Safety provisions shall conform to the rules and regulations established by the U.S. Department of Labor, the Occupational Safety and Health Administration (OSHA), the State of Alaska Occupational Safety and Health Section (OSH), as well as all other applicable federal, state, or municipal laws, ordinances, codes, the requirements set forth below, and any regulations that may be detailed on other parts of the Contract Documents. Where any of these are in conflict, the more stringent requirement shall be followed. The Contractor's failure to thoroughly familiarize himself with the aforementioned safety provisions shall not relieve him from compliance with the obligations and penalties set forth herein.

The Contractor shall develop and maintain, for the duration of this Contract, a safety program that will effectively incorporate and implement all required safety provisions. The Contractor shall appoint an employee who is qualified and authorized to supervise and enforce compliance with the safety program and shall notify the Owner's Representative of the name and contact phone number for this person prior to commencement of the Work.

The duty of the Owner's Representative to conduct construction review of the Work does not include review or approval of the adequacy of the Contractor's safety supervisor, the safety program, or any safety measures taken in, on, or near the construction site.

If death, serious injuries, or serious damages are caused, the accident shall be reported immediately by telephone or messenger to both the Architect/Engineer and the Owner. In addition, the Contractor must promptly report in writing to the Owner's Representative all accidents whatsoever arising out of, or in connection with, the performance of the Work, whether on, or adjacent to, the site, giving full details and statements of witnesses.

If a claim is made by anyone against the Contractor or any Subcontractor on account of any accident, the Contractor shall promptly report the facts in writing to the Owner's Representative, giving full details of the claim.

Failure to comply with all applicable safety rules and regulations, notwithstanding any other provision of the Contract, is sufficient cause for termination under the provisions of the Contract.

Article 6.9 Insurance

Before signing the Contract or commencing the Work or allowing any Subcontractor to commence Work, the Contractor shall obtain all insurance required under this Article. The Contractor shall maintain this insurance until the Final Acceptance Date. The Contractor shall file with the Purchasing Officer as verification of insurance a certificate of insurance on the forms furnished, showing the type and amounts of insurance, the policy number, the expiration date, and the signature of an authorized representative of the insurance company. The insurance company must provide written notification to the MOA contract administrator of any material change, cancellation, or non-renewal of the insurance policies. If the insurer does not notify the MOA in these circumstances, it will be the contractor's responsibility to make that notification. All insurance policies required under this Article shall name the Municipality as an additional insured for the purposes of the Project and shall contain a waiver of subrogation against the Municipality.

The Contractor shall provide the following types of insurance:

Workers' Compensation

Minimum Limits

\$500,000 Employers Liability and Workers' Compensation as required by Alaska State Workers' Compensation Statutes

Statutory

Commercial General Liability

Minimum Limits

Bodily Injury and Property Damage Liability
Premises Operations including explosion, collapse and underground;
Products and Complete Operations;
Broad Form Property Damage;
Blanket Contractual;
Personal Injury;
Owner's/Contractor's Protection

\$1,000,000 Combined
Limit Each Occurrence
and \$2,000,000
Aggregate

Commercial Automobile Liability

Minimum Limits

Bodily Injury and Property Damage,
including all owned, hired, and non-owned
automobiles

\$1,000,000 Combined
Limit per Occurrence

When specified in the Supplementary Conditions, the Contractor shall provide the following additional coverages:

Coverages	Minimum Limits
Federal Longshoremen and Harbor Workers Compensation Act :	Statutory
Federal Maritime Liability Law (Jones Act:)	\$1,000,000
Builder's Risk:	Total Contract Amount

NOTICE TO "OUT OF STATE" CONTRACTORS:

A Certificate of Insurance for Alaska Worker's Compensation, or an "other states" endorsement on your home state Worker's Compensation policy, is required prior to execution of a Contract or commencement of any contract performance, if any in-state visits or Work is required or anticipated.

Article 6.10 Indemnification

To the fullest extent permitted by law, the Contractor shall indemnify, defend, and hold harmless the Municipality and the Architect/Engineer and their agents and employees from and against all claims, damages, losses, and expenses, including attorneys' fees, arising out of or resulting from the performance of the Work, provided that any such claim, damage, loss, or expense (1) is attributable to bodily injury, sickness, disease, death, or personal injury or to injury to or destruction of tangible property including the loss of use resulting therefrom; and (2) is caused in whole or in part by any negligent act or omission of the Contractor, any Subcontractor, anyone directly or indirectly employed by the Contractor or Subcontractors, or anyone for whose acts the Contractor or Subcontractors may be liable, regardless of whether or not the claim, damage, loss, or expense is caused in part by a party indemnified hereunder.

In any and all claims against the Municipality or the Architect/Engineer or their agents or employees by any employee of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation under this Article shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for the Contractor or any Subcontractor under Worker's Compensation acts, disability benefit acts, or other employee benefit acts.

Article 6.11 Claims by Workers, Suppliers, and Subcontractors

In the event the Contractor or any Subcontractor fails, neglects, or refuses to make prompt and full payment for labor, services, materials, supplies, or provisions furnished by any person in connection with the Work, then the Owner may withhold the amount due from the Contractor's progress payments provided that an affidavit of claim on the form furnished is filed with the Owner's Representative. The withholding by the Owner does not relieve the Contractor or his Surety from their obligations with respect to the payment

of such claims. Sums withheld from progress payments will be disbursed pursuant to Article 7.5 - Payment of Claimants.

Article 6.12 Certified Payroll

The Contractor shall file a certified payroll on Friday of each week that covers the preceding week; the payroll shall be filed with the State of Alaska Department of Labor, Labor Standards and Safety Division, Wage and Hour Administration.

Article 6.13 Lawsuits

If a lawsuit is filed by the Contractor or his Surety against the Municipality or by the Municipality against the Contractor or his Surety, the suit shall be commenced in the Superior Court, Third Judicial District, in Anchorage, Alaska.

If one of the questions at issue is the satisfactory performance of the Work by the Contractor, and should the appropriate Court decide that the Work of the Contractor was unsatisfactory, then the Contractor or his Surety shall reimburse the Owner for all legal and all other expenses incurred by the Owner because of the lawsuit as may be allowed and set by the Court. Further, it is agreed that the Owner may deduct such costs from any sum or sums then due or that may become due the Contractor under the Contract.

If any clause or condition of the Contract is held as a matter of law to be unenforceable or unconscionable, the remainder of the Contract shall be enforceable without such clause.

Article 6.14 Preference to Local Labor

The Contractor shall comply with the Provisions of Title 36, Chapter 10 of the Alaska Statutes requiring employment preference for Alaska residents.

Article 6.15 State of Alaska Prevailing Wage Scale

The Contractor shall comply with the Provisions of Title 36 of the Alaska Statutes for the payment of prevailing wages to their employees.

If the contract contains State of Alaska wage rates and a federal wage decision, the Contractor and all Subcontractors shall comply with both wage decisions. The Contractor and all Subcontractors shall be responsible for paying the higher pay rate between the state and federal wage decisions. Additionally, the Contractor and all Subcontractors shall be responsible for providing certified payrolls, to the State of Alaska Department of Labor, Wage and Hour Division on a weekly basis, using the appropriate agency's form(s) and, upon request to the Contract Administrator.

Article 6.16 Nondiscrimination

The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, national origin, ancestry, age, sex, or marital status or any employee or applicant who is a "qualified individual with a disability"

(As defined in the Americans with Disabilities Act of 1990). The Contractor shall take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to their race, color, religion, national origin, ancestry, age, sex, marital status, or mental or physical impairment/disability. Such action shall include, without limitation, the following: employment, upgrading, demotion, or transfer; recruitment or recruiting advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.

The Contractor shall state in all solicitations or advertisements for employees for the Work that all qualified applicants will receive consideration for employment without regard to race, color, religion, national origin, ancestry, age, sex, marital status, or mental or physical impairment/disability.

The Contractor shall include the provisions of the first two paragraphs of this section in every subcontract or purchase order under this contract, so as to be binding upon every such Subcontractor or vendor of the Contractor under this contract.

Article 6.17 Rights and Remedies

The duties and obligations of the Contractor imposed by the Contract Documents and the rights and remedies of the Owner available thereunder shall be in addition to and not a limitation of any duties, obligations, rights, and remedies otherwise imposed or available by law.

The failure of the Owner or the Architect/Engineer to insist in any one or more instances upon the strict performance of any one or more of the provisions of the Contract, or to exercise any right herein contained or provided by law, shall not be construed as a waiver or relinquishment of the performance of such provision or right(s) or of the right to subsequently demand such strict performance or exercise of such right(s), and the rights shall continue unchanged and remain in full force and effect.

Article 6.18 Payment of Taxes

As a condition of performance of this contract, the Contractor shall pay all municipal taxes incurred by the Contractor. Payment of such taxes is required before the Municipality will issue any payment to the Contractor for Work.

SECTION 00 72 13.07 MEASUREMENT AND PAYMENT

Article 7.1 Payment to Contractor

The contract amount shall be lump sum as stated in the contract and shall include any authorized adjustment(s). The contract amount represents the total amount payable to the Contractor by the Owner for performance of the Work as required by the Contract Documents.

Prior to the first application for payment, the Contractor shall submit a Schedule of Values (as described in Article 5.3 – Construction Progress Schedule and Schedule of Values), which outlines material and labor in categories that allocate portions of the Work in a detailed manner. The allocations, at a minimum, shall address the portions of the Work listed in the Table of Contents of the Specifications.

Article 7.2 Scope of Payment

The Contractor shall accept the compensation as herein provided in full payment for the Work. The Contractor shall do all things necessary to perform and to complete the Work according to the Contract Documents, including but not limited to furnishing all labor, tools, implements, machinery, supplies, materials, water, heat, utilities, transportation, and permits necessary to perform the Work. The Contractor shall be responsible for all loss, damage, or liability arising from the nature of the Work, from the action of the elements, or from any unforeseen difficulties that may be encountered. Work paid for under one item will not be paid for under another item.

The contract price shall constitute full compensation for furnishing all labor, equipment, and materials and performing all operations required to complete the Work as specified and as shown on the drawings or otherwise directed. Notwithstanding the omission or mention of any incident or incidental Work, the contract price and payment shall also constitute full compensation for all work incident or incidental to completion of the items, unless such Work is otherwise specifically mentioned for separate payment under another bid item. In the event any Work is required by the specifications or by the bidding schedule and is not directly incident or incidental to the completion of any such items, the contract price or prices for all enumerated items shall also constitute full compensation of such Work.

In this Section 00700.07, the terms "construct, furnish, install, erect, place, and prepare," shall be construed to mean that the bid item(s) is (are) complete, in place, and approved by the Owner's Representative.

Article 7.3 Advances on Materials

The Contractor may request advance payment for materials to be incorporated in the Work, provided such materials are delivered and stored at the site or, if approved by the Owner's Representative, at another site within the Municipality. The Contractor shall be solely responsible for the protection of these materials. Only the Contractor's costs of materials (including freight), as verified by invoices, will be considered for such advance payments by the Owner.

No payment for materials shall be made on any single class of material the value of which is not at least \$5,000. No advance shall be made for fuels, supplies, forms, lumber, falsework, or other materials or on temporary structures of any kind that will not become an integral part of the finished construction.

The Contractor shall make available to the Owner's Representative evidence of payment for the materials for which it is requesting advances and of insurance to ensure replacement if such material is lost, stolen, or damaged; and other information the Owner's Representative may request.

Article 7.4 Progress Payments

The Contractor shall submit to the Owner's Representative an Application for Payment, on the forms furnished, supported by such data as the Owner's Representative may require that substantiate the Contractor's right to payment for Work done during the preceding calendar month. The Owner's Representative will, within eight (8) days after receipt of the Application for Payment, either approve a Partial Payment Estimate and present it to the Contractor for signature or notify the Contractor in writing of his reasons for withholding approval. Approved Partial Payment Estimates shall be received by the Owner within two (2) days after execution by the Contractor.

The Owner will process Partial Payment Estimates and make payment to the Contractor within fifteen (15) days of receipt of the Partial Payment Estimate. If the Owner fails to make payment to the Contractor within thirty (30) days (twenty-one [21] days if the project is funded with State of Alaska grants) of receipt of the Application for Payment, the Contractor may, upon seven (7) days written notice to the Owner, suspend the Work. The Contractor shall take every precaution to prevent any damage or unreasonable deterioration of the Work during the time it is suspended.

Retainage: For projects where a Performance and Payment Bond is required, under Article 3.5 – Bonds and Insurance, progress payments at one hundred percent (100%) of the estimated value of the work accomplished, less all previous payments, shall be made to the Contractor, and no retainage shall be deducted, except as provided under the withholding provisions of this Article (Article 7.4).

For projects where a Performance and Payment Bond is not required under Article 3.5 – Bonds, Insurance. The Owner will retain ten percent (10%) of the total earnings to date until the Work is completed and accepted. However, if the Owner at any time after fifty percent (50%) of the Work has been completed determines that satisfactory progress is maintained, the Owner may continue to hold the retainage to date and authorize progress payments to the Contractor in full for Work performed beyond the fifty percent (50%) stage of completion. After ninety-five percent (95%) of the Work has been satisfactorily completed, the Owner may reduce the retention to two percent (2%) of the earnings to date. Interest on retainage shall accrue at the rate of eight percent (8%) per annum, simple interest, or, when the State of Alaska is to provide a grant for all or part of the

funding for the Work, the rate of interest will be equal to the amount set out in Alaska Statute (AS) 45.45.010(a).

No interest shall accrue and no interest shall be paid on sums that are withheld as provided for hereinafter.

Withholding: The Owner's Representative may withhold from a progress payment for any of the following reasons:

1. Defective Work;
2. Claims made directly against the Municipality alleging an act or omission on the part of the Contractor, Subcontractors, or their agents in connection with the Work;
3. Damage to the Municipality;
4. Reimbursements for Work done by the Owner because of any failure to carry out the Work in accordance with the Contract Documents;
5. Uncompleted incidental work, not earning direct payment, including but not limited to testing, cleanup, updating of progress schedules, and preparation of Record Documents and Operation and Maintenance Manuals;
6. Liquidated damages;
7. Claims by Subcontractors, suppliers, laborers, or the Alaska Department of Labor.

The amount of any withholding for items 1-5 listed above shall be the reasonable value of the Work or remedy to be accomplished as estimated by the Owner's Representative, without regard to bid amount or cost to the Contractor. The amount of withholding for items 6-8 shall be in accordance with the claimed amount or the applicable contract provisions.

Progress payments shall not be construed as an acceptance or approval of any part of the Work covered thereby, and they shall in no manner relieve the Contractor of responsibility for correcting defective workmanship or material.

The estimates upon which progress payments are based are not represented to be accurate estimates, and all quantities shown therein are subject to correction on any subsequent pay estimate. If the Contractor uses such estimates as a basis for making payment to Subcontractors, he does so at his own risk, and he shall bear all loss that may result.

The making of progress payment under the Contract, either before or after the date set for completion of the Work, shall not operate to invalidate any of the provisions of the Contract or to release the Surety.

Article 7.5 Payment of Claimants

Any claim received by the Owner's Representative against the Contractor or Subcontractors from any material men, laborer, supplier, Subcontractor, or the Alaska Department of Labor will be forwarded to the Contractor by certified mail as soon as practical following receipt by the Owner's Representative. Within twenty-one (21) days after the Contractor's receipt of the said notice, the Contractor shall notify the Owner's Representative in writing by Certified Mail that the said claim is contested or provide proof that the claim has been satisfied. If the Contractor contests the claim, the Contractor shall describe in detail how the Subcontractor was paid or why the Subcontractor should not be paid and furnish the 3-point statement described below. If the Contractor does not respond during the time allotted above, this lack of notice shall constitute consent by the Contractor to have the owner pay the claim from the earnings of the Contractor.

The Owner shall not be responsible to the Contractor if the Contractor subsequently contests the validity of the claim. Sums withheld pursuant to disputed claims will not be paid to the claimant except where compelled by legal authority. Such sums may be paid to the Contractor upon the filing of a 3-point statement by the Contractor and his Surety on the form furnished by the Owner's Representative stating that: (1) the Contractor contests the validity of the claim, (2) the Surety acknowledges responsibility for the payment of the claim in the event it is valid, and (3) that the Contractor and the Surety specifically agree to hold the Municipality harmless for making payment to the Contractor of the sums withheld.

In the event that the Contractor revokes consent to pay a claimant as provided herein and refuses to execute the said statement referenced above, the Municipality may institute an interpleader action in Superior Court, Third Judicial District, and all Court costs and attorney's fees incurred by the Municipality shall be paid by the Contractor or the Surety. Claimants are not intended beneficiaries of this Article and shall have no recourse against the Municipality for any failure to pay claims from sums withheld from the Contractor.

Article 7.6 Final Payment

Upon completion of the Work and issuance of a certificate of completion by the Owner's Representative, the Contractor shall submit a request to the Owner's Representative for the final payment. The retainage shall be held by the Owner for a period of not less than ninety (90) days following the Final Acceptance of the Work. No final payment shall be made until the Contractor has filed with the Owner's Representative, prior to acceptance of the Work, a notarized Certificate of Compliance as follows:

I (we) hereby certify that all Work has been performed and materials supplied in accordance with the Contract Documents for the above Work; that not less than the prevailing rates of wages as required by the State of Alaska statute have been paid to laborers, workers, and mechanics; that all payroll taxes have been paid; and that all claims for material and labor and other services performed in connection with these Contract Documents have been satisfied.

There shall be deducted from the final payment any sums withheld pursuant to Article 7.5 - Payment of Claimants.

Article 7.7 Correction of Work After Final Payment

Neither the final payment nor any progress payment shall relieve the Contractor of his responsibility for paying all costs resulting from defects in materials or workmanship supplied under the terms of this contract, and for correction of those defects, for a period of one (1) year following the Final Acceptance Date. The Owner shall give notice of observed defects with reasonable promptness. The Contractor shall initiate corrective action within five (5) days after written notification from the Owner, or the Owner will make other provisions to complete the Work, and all costs shall be paid by the Contractor.

END OF SECTION

MAINTENANCE AND OPERATIONS

Egan Convention Center Solar Array Expansion

SUPPLEMENTARY CONDITIONS

SECTION 00 72 13.02 BIDDING REQUIREMENTS AND CONDITIONS

Article 2.2 Interpretation or Correction of Bidding Documents

Add the following definition:

The following supplements, modifies, changes, deletes from or adds to the Section 00 72 13 of the Municipality of Anchorage - Standard Specifications-Building (MASSB). Where any Article, Paragraph, Subparagraph, or Clause is modified, or added by these Supplementary Conditions, the unaltered provisions of the Article, Paragraph, Subparagraph, or Clause shall remain in effect. If the Supplementary Conditions conflict with any general condition it shall supersede the conflicting item.

SECTION 00 72 13.03 AWARD AND EXECUTION OF CONTRACT

Article 3.4 Action on Bids

Paragraph seven (7) Modify the following:

The Purchasing Officer will give a written, signed Notice of Award or rejection within sixty (60) days of Bid opening when the Bid amount exceeds \$500,000 or more.

Article 3.6 Execution of Contract

Paragraph four (4) Modify the following:

The Municipality will supply the Contractor with the Contract Documents, which includes the ITB (Invitation to Bid) Book and Drawing Set; the Contractor may request additional copies which the Municipality will supply, up to (3) sets.

Article 3.7 Contractor's Warranty

At the end of Paragraph one (1) Add the following:

The Contractor shall extend to the Municipality such other bond, warranty of manufacturer or any other guarantee given on any material, goods, equipment or workmanship included in the work.

SECTION 00 72 13.05 CONTROL OF WORK

Article 5.7 Submittal List

Remove this Article completely.

Article 5.23 Time for Completion of Work

Add the following at the end of paragraph one:

All work shall be complete within **180** calendar days after receipt of Notice to Proceed. All work must be coordinated with facility operator to minimize impacts to their event schedule.

Article 5.28 Liquidated Damages

Add the following at the end of paragraph one:

Liquidated damages under this contract will be \$250.00 per day.

SECTION 00 72 13.06 LEGAL RELATIONS AND RESPONSIBILITIES

Article 6.6 Permits

Add the following after paragraph three:

The Contractor shall obtain all required permits and related inspections, *including the required delegated design submittals*. The Contractor shall obtain certificates of inspection from the appropriate municipal, state, or federal inspector and submit them to the Contract Administrator. The Contractor shall provide the Contract Administrator with a copy of the issued permits and invoice for the first progress payment. The Contractor shall provide the Contract Administrator a copy of the Certificate of Occupancy with the final invoice for the project.

Article 6.9 Insurance

The insurance requirements in Section 00 62 16 supersede the requirements in the General Conditions 00 72 13 Article 6.9.

EQUAL EMPLOYMENT OPPORTUNITY SPECIAL PROVISIONS CONTRACT COMPLIANCE SPECIFICATIONS

Every municipal contract shall include language substantially the same as the following: The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, national origin, ancestry, age, sex, sexual orientation, gender identity, marital status, or physical or mental disability. The contract will comply with all laws concerning the prohibition of discrimination including, but not limited to, Title 5 and Title 7 of the Anchorage Municipal Code.

Every municipal contract shall state, in all solicitations or advertisements for employees to work under the contract, that all qualified applicants will receive consideration for employment without regard to race, color, religion, national origin, ancestry, age, sex, sexual orientation, gender identity, marital status, or physical or mental disability.

Laborers' & Mechanic' Minimum Rates of Pay

Title 36. Public Contracts AS 36.05 & AS 36.10 Wage & Hour Administration Pamphlet No. 600 (Pamphlet 600) is hereby incorporated in its entirety. Pamphlet 600 is available for free download at <http://labor.state.ak.us/lss/pamp600.htm>.

The Municipality of Anchorage will include a paper copy of the wage rates in the signed Contract.

SECTION 26 05 00 - COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. General Requirements specifically applicable to Division 26, in addition to MASS-B provisions.
- B. The electrical system equipment and installation shall comply with all provisions and requirements of this specification, as well as any and all applicable national, state and local codes and standards.

1.2 WORK SEQUENCE

- A. Construct Work in sequence under provisions of MASS-B.

1.3 COORDINATION

- A. Coordinate the Work specified in this Division under provisions of MASS-B.
- B. Prepare drawings showing proposed rearrangement of Work to meet job conditions, including changes to Work specified under other Sections. Obtain permission of Owner prior to proceeding.

1.4 REFERENCES

- A. ANSI/NFPA 70 - National Electrical Code, latest adopted edition including all state and local amendments.
- B. NECA - Standard of Installation.
- C. NETA ATS – Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- D. Electrical Reference Symbols: The Electrical "Legend" on drawings is standardized version for this project. All symbols shown may not be used on drawings. Use legend as reference for symbols used on plans.
- E. Electrical Drawings: Drawings are diagrammatic, not intended to show all features of work. Install material not dimensioned on drawings in a manner to provide a symmetrical appearance. Do not scale drawings for exact equipment locations. Field verification of dimensions, locations and levels is directed.

1.5 REGULATORY REQUIREMENTS

- A. Conform to ANSI/NFPA 70.
- B. Conform to the latest adopted edition of the International Building Code and the International Fire Code including all state and local amendments thereto.
- C. Obtain electrical permits, plan review, and inspections from authority having jurisdiction.

ANCHORAGE, ALASKA

COMMON WORK RESULTS FOR ELECTRICAL

1.6 SUBMITTALS

- A. Submit inspection and permit certificates under provisions of MASS-B.
- B. Include certificate of final inspection and acceptance from authority having jurisdiction.
- C. Submittal review is for general design and arrangement only and does not relieve the Contractor from any requirements of Contract Documents. Submittal not checked for quantity, dimension, fit or proper operation. Where deviations of substitute product or system performance have not been specifically noted in the submittal by the Contractor, provisions of a complete and satisfactory working installation is the sole responsibility of the Contractor.
- D. In addition to requirements referenced in MASS-B, the following is required for work provided under this division of the specification.
 - 1. Provide material and equipment submittals containing complete listings of material and equipment shown on Electrical Drawings and specified herein. Separate from work furnished under other divisions.
 - 2. Submittals shall be provided in PDF format with each section indexed in the PDF document. Submittals for Division 26 shall be complete and submitted at one time. Unless given prior approval, partial submittals will be returned unreviewed.
 - 3. Clearly identify all material and equipment by item, name or designation used on drawings and in specifications.
 - 4. Submit only pages which are pertinent; mark catalog sheets to identify pertinent products, referenced to Specification Section and Article number. Show reference standards, performance characteristics, and capacities; wiring diagrams and controls; component parts; finishes; dimensions; and required clearances.
 - 5. Modify manufacturer's standard schematic drawings and diagrams to supplement standard information and to provide information specifically applicable to the work. Delete information not applicable.
 - 6. Review submittals prior to transmittal; determine and verify field measurements, field construction criteria, manufacturer's catalog numbers, and conformance of submittal with requirements of Contract Documents.
 - 7. Coordinate submittals with requirements of work and of Contract Documents.
 - 8. Certify in writing that the submitted shop drawings and product data are in compliance with requirements of Contract Documents. Notify Owner/Engineer in writing at time of submittal, of any deviations from requirements of Contract Documents.
 - 9. Do not fabricate products or begin work which requires submittals until return of submittal with Owner/Engineer acceptance.
 - 10. Equipment scheduled by manufacturer's name and catalog designations, manufacturer's published data and/or specification for that item, in effect on bid date, are considered part of this specification. Approval of other manufacturer's item proposed is contingent upon compliance therewith.

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COMMON WORK RESULTS FOR ELECTRICAL

1.7 SUBSTITUTIONS

- A. In accordance with the General Conditions and the General Requirements, Substitution and Product Options, all substitute items must fit in the available space, and be of equal or better quality including efficiency performance, size, and weight, and must be compatible with existing equipment.

1.8 PROJECT RECORD DRAWINGS

- A. Maintain project record drawings in accordance with MASS-B.
- B. In addition to the other requirements, mark up a clean set of drawings as the work progresses to show the dimensioned location and routing of all electrical work which will become permanently concealed. Show routing of work in permanently concealed blind spaces within the building. Show complete routing and sizing of any significant revisions to the systems shown.
- C. Record drawing field mark-ups shall be maintained on-site and shall be available for examination of the Owner's Representative at all times.

1.9 OPERATION AND MAINTENANCE MANUALS

- A. Provide operation and maintenance manuals for training of Owner's Representative in operation and maintenance of systems and related equipment. In addition to requirements referenced in MASS-B, the following is required for work provided under this section of the specifications.
- B. Manuals shall be separate from work furnished under other divisions. Prepare a separate chapter for instruction of each class of equipment or system. Index and clearly identify each chapter and provide a table of contents.
- C. Unless otherwise noted in MASS-B, provide one copy of all material for approval.
- D. The following is the suggested outline for operation and maintenance manuals and is presented to indicate the extent of items required in manuals.
 - 1. List chapters of information comprising the text. The following is a typical Table of Contents:
 - a. Solar Photovoltaic System
 - b. Other chapters as necessary.
 - 2. Provide the following items in sequence for each chapter shown in Table of Contents:
 - a. Describe the procedures necessary for personnel to operate the system including start-up, operation, emergency operation and shutdown.
 - 1) Give complete instructions for energizing equipment and making initial settings and adjustments whenever applicable.
 - 2) Give step-by-step instructions for shutdown procedure if a particular sequence is required.

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COMMON WORK RESULTS FOR ELECTRICAL

- 3) Include test results of all tests required by this and other sections of the specifications.

b. Maintenance Instructions:

- 1) Provide instructions and a schedule of preventive maintenance, in tabular form, for all routine cleaning and inspection with recommended lubricants if required for the following:
 - a) Solar Photovoltaic System
- 2) Provide instructions for minor repair or adjustments required for preventive maintenance routines, limited to repairs and adjustments which may be performed without special tools or test equipment and which requires no special training or skills.
- 3) Provide manufacturers' descriptive literature including approved shop drawings covering devices used in system, together with illustrations, exploded views, etc. Also include special devices provided by the Contractor.
- 4) Provide any information of a maintenance nature covering warranty items, etc., which have not been discussed elsewhere.
- 5) Include list of all equipment furnished for project, where purchased, technical representative if applicable and a local parts source with a tabulation of descriptive data of all electrical-electronic spare parts and all mechanical spare parts proposed for each type of equipment or system. Properly identify each part by part number and manufacturer.

1.10 DEMONSTRATION OF ELECTRICAL SYSTEMS

A. During substantial completion inspection:

1. Conduct operating test for approval under provisions of MASS-B.
2. Demonstrate installation to operate satisfactorily in accordance with requirements of Contract Documents.
3. 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.
4. Have instruments available for measuring voltage and current values, and for demonstration of continuity, grounds, or open circuit conditions.
5. Provide personnel to assist in taking measurements and making tests.

1.11 WARRANTY

- A. In addition to the requirements of MASS-B, or as specified in other sections. Warrant all materials, installation and workmanship for one (1) year from date of acceptance.
- B. Solar panels shall carry a minimum manufacturer warranty of 10 years.

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COMMON WORK RESULTS FOR ELECTRICAL

- C. Copies of manufacturer product warranties for all equipment shall be included in the operation and installation manuals.

1.12 INSTRUCTION OF OPERATING PERSONNEL

- A. In accordance with the requirements of MASS-B and this section provide services of qualified representative of supplier of each item or system listed below to instruct designated personnel of Owner in operation and maintenance of item or system.
- B. Make instruction when system is complete, of number of hours indicated, and performed at time mutually agreeable.

System or Equipment	Hours of Instruction
Solar Photovoltaic System	8

- C. Certify that an Anchorage, Fairbanks or Seattle based authorized service organization regularly carries complete stock of repair parts for listed equipment or systems, that organization is available and will furnish service within 48 hours after request. Include name, address and telephone number of service organization.
- D. Have approved operation and maintenance manuals and parts lists for all equipment on hand at time of instruction.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

- A. All Materials and Equipment shall be new.
- B. All Materials and Equipment shall be listed by Underwriter's Laboratories or equivalent third party listing agency for the use intended.
- C. Materials and Equipment shall be acceptable to the authority having jurisdiction as suitable for the use intended when installed per listing and labeling instructions.
- D. No materials or equipment containing asbestos in any form shall be used. Where materials or equipment provided by this Contractor are found to contain asbestos such items shall be removed and replaced with non-asbestos containing materials and equipment at no cost to the Owner.
- E. In describing the various items of equipment, in general, each item will be described singularly, even though there may be numerous similar items.

PART 3 - EXECUTION

3.1 WORKMANSHIP

- A. Install Work using procedures defined in NECA Standard of Installation and/or the manufacturer's installation instructions.

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Section 26 05 00 - Page 6
COMMON WORK RESULTS FOR ELECTRICAL

3.2 PENETRATIONS OF FIRE BARRIERS

- A. All holes or voids created to extend electrical systems through fire rated floors, walls or ceiling shall be sealed with an asbestos-free intumescent fire stopping material capable of expanding 8 to 10 times when exposed to temperatures 250°F or higher.
- B. Materials shall be suitable for the fire stopping of penetrations made by steel, glass, plastic and shall be capable of maintaining an effective barrier against flame, smoke and gases in compliance with the requirements of ASTM E814 and UL 1479.
- C. The rating of the fire stops shall be the same as the time-rated floor, wall or ceiling assembly.
- D. Install fire stopping materials in accordance with the manufacturer's instructions.

END OF SECTION

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Section 26 05 19 - Page 1
LOW-VOLTAGE ELECTRICAL
POWER CONDUCTORS AND CABLES

SECTION 26 05 19 – LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Building Wire.
- B. Cable.
- C. Wiring Connections and Terminations.

1.2 RELATED SECTIONS

- A. Section 26 05 53 – Identification for Electrical Systems.

1.3 REFERENCES

- A. Federal Specification FS-A-A59544 – Cable and Wire, Electrical (Power, Fixed Installation).
- B. Federal Specification FS-J-C-30B – Cable Assembly, Power, Electrical.
- C. ANSI/NEMA WC 70-2009 – Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy.
- D. NETA ATS – Acceptance testing specifications for Electrical Power Distribution and Systems.
- E. NFPA 70 – National Electrical Code.
- F. UL 83 – Thermoplastic Insulated Wire and Cable.
- G. UL 1479 – Standard for Fire Tests of Through Wall Penetration Fire Stops.
- H. UL 1581 – Reference Standard for Electrical Wires, Cables and Flexible Cords.

1.4 SUBMITTALS

- A. Submittals are not requested for this section.

PART 2 - PRODUCTS

2.1 BUILDING WIRE

- A. Thermoplastic-insulated Building Wire: NEMA WC 70.
- B. Feeders and Branch Circuits Larger Than 6 AWG: Copper, stranded conductor, 600 volt insulation, THW, THHN/THWN or XHHW-2 as indicated.

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LOW-VOLTAGE ELECTRICAL
POWER CONDUCTORS AND CABLES

- C. Feeders and Branch Circuits 6 AWG and Smaller: Copper conductor, 600 volt insulation, THHN/THWN or XHHW-2. 6 and 8 AWG, stranded conductor; smaller than 8 AWG, solid or stranded conductor.
- D. Branch Circuit Wire Color Code:
 - 1. Color code wires by line or phase as follows:
 - a. Brown, orange, yellow and gray for 277/480V systems.
 - 2. For conductors 6 AWG and smaller, insulation shall be colored. For conductors 4 AWG and larger, identify with colored phase tape at all terminals, splices, and boxes.
 - 3. Grounding conductors 6 AWG and smaller shall have green colored insulation. For 4 AWG and larger, use green tape at both ends and at all other visible points in between, including pull and junction boxes.
- E. Control Circuits: Copper, stranded conductor 600 volt insulation, THHN/THNN or XHHW-2.

2.2 REMOTE CONTROL AND SIGNAL CABLE

- A. Control Cable for Class 1 Remote Control and Signal Circuits: Copper conductor, 600 volt insulation, rated 90° C, individual conductors twisted together, shielded, and covered with an overall PVC jacket; UL listed.
- B. Control Cable for Class 2 or Class 3 Remote Control and Signal Circuits: Copper conductor, 300 volt insulation, rated 90° C, individual conductors twisted together, shielded or unshielded (as required), and covered with a PVC jacket; UL listed.
- C. Plenum Cable for Class 2 or Class 3 Remote Control and Signal Circuits: Copper conductor, 300 volt insulation, rated 90° C, individual conductors twisted together, shielded or unshielded (as required), and covered with a nonmetallic jacket; UL listed for use in air handling ducts, hollow spaces used as ducts, and plenums.

2.3 WIRING CONNECTIONS AND TERMINATIONS

- A. For conductors 8 AWG and smaller:
 - 1. Dry interior areas: Spring wire connectors, pre-insulated “twist-on” rated 105 degrees C per UL 468C. Where stranded conductors are terminated on screw type terminals, install crimp insulated fork or ring terminals. Thomas & Betts Sta-Kon or equal.
 - 2. Wet or exterior: Spring wire connectors, pre-insulated “twist-on”, resin filled rated for direct burial per UL 486D.
- B. For conductors 6 AWG and larger:
 - 1. Bus lugs and bolted connections: 600 V, 90 degrees C., two hole long barrel irreversible compression copper tin plated. Thomas & Betts or approved equal.

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Section 26 05 19 - Page 3
LOW-VOLTAGE ELECTRICAL
POWER CONDUCTORS AND CABLES

2. Two way connector for splices or taps: 600 V, 90 degrees C., compression long barrel, copper tin plated. Thomas & Betts or approved equal. Insulate with Scotch 23 rubber insulating base covering and Scotch 33+ outer wrap.

PART 3 - EXECUTION

3.1 GENERAL WIRING METHODS

- A. Use no wire smaller than 12 AWG for power circuits, and no smaller than 18 AWG for control wiring.
- B. Splice only in junction or outlet boxes.
- C. Neatly train and lace wiring inside boxes, equipment, and panelboards.
- D. Do not share neutral conductors. Provide a dedicated neutral conductor for each branch circuit that requires a neutral.

3.2 WIRING INSTALLATION IN RACEWAYS

- A. Pull all conductors into a raceway at the same time. Verify that raceway is complete and properly supported prior to pulling conductors. Use UL listed wire pulling lubricant for pulling 4 AWG and larger wires.
- B. Do not install XHHW-2 conductors when ambient temperatures are below –5 degrees C and THHN/THWN conductors when ambient temperatures are below 0 degrees C.
- C. Conductors shall be carefully inspected for insulation defects and protected from damage as they are installed in the raceway. Where the insulation is defective or damaged, the cable section shall be repaired or replaced at the discretion of the Owner and at no additional cost to the Owner.
- D. Place an equal number of conductors for each phase of a circuit in same raceway or cable.
- E. Route conductors from each system in independent raceway system and not intermix in the same raceway, enclosure, junction box, wireway, or gutter as another system unless otherwise shown on the plans.
- F. No more than six current carrying conductors shall be installed in any homerun unless otherwise indicated on the drawings or without prior approval from the Engineer.
- G. Completely and thoroughly swab raceway system before installing conductors.
- H. When two or more neutrals are installed in one conduit, identify each with the proper circuit number in accordance with Section 26 05 53.

3.3 CABLE INSTALLATION

- A. Provide protection for exposed cables where subject to damage.
- B. Use suitable cable fittings and connectors.

ANCHORAGE, ALASKA

Section 26 05 19 - Page 4
LOW-VOLTAGE ELECTRICAL
POWER CONDUCTORS AND CABLES

3.4 WIRING CONNECTIONS AND TERMINATIONS

- A. Stranded wire shall not be wrapped around screw terminals.
- B. Splice only in accessible junction boxes.
- C. Thoroughly clean wires before installing lugs and connectors.
- D. Make splices, taps and terminations to carry full ampacity of conductors without perceptible temperature rise.
- E. Terminate spare conductors with twist on connectors or heat shrink insulation to proper voltage rating.
- F. Control systems wiring in conjunction with equipment to be identified in accordance with wiring diagrams furnished with equipment.
- G. Do not exceed manufacturer's recommended pull tensions.

3.5 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of Division 01 and Section 26 01 26.
- B. Inspect wire and cable for physical damage and proper connection.
- C. Torque conductor connections and terminations to manufacturer's recommended values.

3.6 WIRE AND CABLE INSTALLATION SCHEDULE

- A. All Locations: Building wire and/or remote control and signal cable in raceways.

END OF SECTION

ANCHORAGE, ALASKA

Section 26 05 26 - Page 1
GROUNDING AND BONDING
FOR ELECTRICAL SYSTEMS

SECTION 26 05 26 – GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Power System Grounding.
- B. Electrical Equipment and Raceway Grounding and Bonding.

1.2 RELATED SECTIONS

- A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under MASS-B General Requirements, Section 26 05 00 – Common Work Results for Electrical.
- B. Section 26 05 19 – Low-Voltage Electrical Power Conductors and Cables.
- C. Section 26 31 00 – Solar Photovoltaic System.

1.3 REFERENCE STANDARDS

- A. ANSI/NFPA 70 – National Electrical Code.
- B. ASTM B 3 – Standard Specification for Soft or Annealed Copper Wire.
- C. AWS A5.8/A5.8M – Specification for Filler Metals for Brazing and Braze Welding.
- D. IEEE Std 142 – Recommended Practice for Grounding of Industrial and Commercial Power System.
- E. UL 467 – Standard for Grounding and Bonding Equipment.

1.4 SYSTEM DESCRIPTION

- A. Provide a complete grounding system for services and equipment as required by State and Local Codes, NEC, applicable portions of other NFPA codes, and as indicated herein.

1.5 SUBMITTALS

- A. No submittals are requested for this section.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Bonding Conductors: Solid bare copper wire for sizes No. 8 AWG and smaller diameter. Stranded bare copper wire for sizes No. 6 AWG and larger diameter. Conductors may be insulated conductors if used provide green insulation.

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Section 26 05 26 - Page 2
GROUNDING AND BONDING
FOR ELECTRICAL SYSTEMS

- B. Grounding Conductors: Copper conductor bare or green insulated.
- C. Mechanical Grounding and Bonding Connectors: Non-reversible crimp type lugs only. Use factory made compression lug for all terminations.
- D. In external locations, clamping shall be used only where a disconnect type of connection is required. Connection device may utilize spring-loaded jaws or threaded fastener. Device shall be constructed such that positive contact pressure shall be maintained at all times. Machine bolts with tooth-type or spring-type lock washers shall be used.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Provide a separate, insulated equipment-grounding conductor in all feeder and branch circuits. Terminate each end on a grounding lug, bus, or bushing. Multiple conductors on single lug not permitted. Each grounding conductor shall terminate on its own terminal lug.
- B. Bond together equipment enclosures, exposed non-current carrying metal parts of electrical equipment, metal raceway systems, and grounding conductor in raceways and cables.
- C. Grounding conductors for branch circuits shall be sized in accordance with NEC, except minimum size grounding conductor shall be No. 12 AWG.
- D. Grounding conductor is in addition to neutral conductor and in no case shall neutral conductor serve as grounding means.

3.2 FIELD QUALITY CONTROL

- A. Inspect grounding and bonding system conductors and connections for tightness and proper installation.

END OF SECTION

ANCHORAGE, ALASKA

Section 26 05 29 - Page 1
HANGERS AND SUPPORTS
FOR ELECTRICAL SYSTEMS

SECTION 26 05 29 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Section included hangers and supports for Power Systems.
- B. Conduit Supports.
- C. Formed Steel Channel.
- D. Spring Steel Clips.

1.2 RELATED SECTIONS

- A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under MASS-B General Requirements, and Section 26 05 00 – Common Work Results for Electrical.
- B. Section 26 05 48 - Vibration and Seismic Controls for Electrical Systems.

1.3 REFERENCES

- A. International Building Code (IBC), Chapter 16 – Structural Design.

1.4 SUBMITTALS

- A. Submittals are not requested for this section.

1.5 QUALITY ASSURANCE

- A. Support systems shall be adequate for weight of equipment and conduit, including wiring, which they carry.
- B. Perform Work in accordance with Municipality of Anchorage Standard Specifications.

PART 2 - PRODUCTS

2.1 CONDUIT SUPPORTS

- A. Manufacturers:
 - 1. Allied Tube & Conduit Corp.
 - 2. Minerallac Fastening Systems.
 - 3. O-Z Gedney Co.
 - 4. Substitutions: per MASS-B

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Section 26 05 29 - Page 2
HANGERS AND SUPPORTS
FOR ELECTRICAL SYSTEMS

- B. Hanger Rods: Threaded high tensile strength galvanized carbon steel with free running threads.
- C. Beam Clamps: Malleable Iron, with tapered hole in base and back to accept either bolt or hanger rod. Set screw: hardened steel.
- D. Conduit clamps for trapeze hangers: Galvanized steel, notched to fit trapeze with single bolt to tighten.
- E. Conduit clamps - general purpose: One-hole malleable iron for surface mounted conduits.
- F. Cable Ties: High strength nylon temperature rated to 185 degrees F. self-locking.

2.2 FORMED STEEL CHANNEL

- A. Manufacturers:
 - 1. B-Line Systems.
 - 2. Allied Tube & Conduit Corp.
 - 3. Unistrut Corp.
 - 4. Substitutions: per MASS-B.
- B. Product Description: Galvanized 12 gage thick steel. With holes 1-1/2 inches on center.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. MASS-B: Verification of existing conditions before starting work.
- B. Verify openings are ready to receive sleeves.

3.2 PREPARATION

- A. Obtain permission from Owner's Representative before using powder-actuated anchors.
- B. Obtain permission from Owner's Representative before drilling or cutting structural members.

3.3 INSTALLATION - GENERAL

- A. Fasten hanger rods, conduit clamps, and outlet and junction boxes to building structure using precast insert system, expansion anchors, preset inserts, beam clamps, or spring steel clips.
- B. Use toggle bolts or hollow wall fasteners in hollow masonry partitions and walls; expansion anchors or preset inserts in solid masonry walls; self-drilling anchors or expansion anchor on concrete surfaces; sheet metal screws in sheet metal studs; and wood screws in wood construction.

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Section 26 05 29 - Page 3
HANGERS AND SUPPORTS
FOR ELECTRICAL SYSTEMS

- C. Do not support raceways, low voltage pathways, cables, telecommunication pathways or boxes from ceiling suspension wires or suspended ceiling systems. Provide support from building structure independently to allow ceiling removal and replacement without removal of electrical system. If dedicated support wires are used, wires and wire clips must be painted or color-coded.
- D. Do not fasten supports to piping, ductwork, mechanical equipment, conduit, or ceiling suspension system.
- E. Do not penetrate by drilling or screwing into metal roof decking. All penetrations into metal roof decking must be approved by the Project Manager in writing.
- F. Fabricate supports from structural steel or steel channel, rigidly welded or bolted to present a neat appearance. Use hexagon head bolts with spring lock washers under all nuts.
- G. In wet locations install free-standing electrical equipment on concrete pads. Pad top shall be a minimum of 3 ½" above the surrounding grade and shall be reinforced in accordance with Division 3 of these specifications.
- H. Install surface-mounted cabinets and panelboards with minimum of four anchors.
- I. Bridge studs top and bottom with channels to support flush-mounted cabinets and panelboards in stud walls.
- J. Securely fasten fixtures and equipment to building structure in accordance with manufacturer's recommendations and to provide necessary earthquake anchorage.
- K. Provide wall attached fixtures and equipment weighing less than 50 pounds with backing plates of at least 1/8" x 10" sheet steel or 2" x 10" fire retardant treated wood securely built into the structural walls. Submit attachment details of heavier equipment for approval.
- L. Earthquake Anchorages:
 - 1. Equipment weighing more than 50 pounds shall be adequately anchored to the building structure to resist lateral earthquake forces.
 - 2. Total lateral (earthquake) forces shall be 1.5 times the equipment weight acting laterally in any direction through the equipment center of gravity. Provide adequate backing at structural attachment points to accept the forces involved.
- M. Provide one seismic support wire for all fixtures weighing less than 10lbs. two minimum color-coded dedicated seismic support wires for each ceiling mounted light fixture weighing less than 50 pounds. Attach support wires to building structure independent from ceiling system and on opposing corners of the light fixtures to not allow fixture to drop more than 6 inches upon ceiling failure. Secure each end with three tight wraps within 1 inch at each end of the wire. Provide four supports on fixtures >50 lbs.
- N. Attach the supporting cables for all pendant fixtures to both the building structure and to the ceiling grid which they pass through.

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HANGERS AND SUPPORTS
FOR ELECTRICAL SYSTEMS

- O. Power-driven fasteners are prohibited for tension load applications (such as supporting luminaries or conduit racks from ceiling above). Use drilled-in expansion anchors, or drilled and screw-in anchors such as Kwik-Con II or Tapcon.

3.4 INSTALLATION - SLEEVES

- A. Exterior watertight entries: Seal with adjustable interlocking rubber links.
- B. Conduit penetrations not required to be watertight: Sleeve and fill with silicon foam.
- C. Set sleeves in position in forms. Provide reinforcing around sleeves.
- D. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.
- E. Extend sleeves through floors 1 inch above finished floor level. Caulk sleeves.
- F. Where conduit or raceway penetrates floor, ceiling, or wall, close off space between conduit or raceway and adjacent work with stuffing or fire stopping insulation, as required, and caulk. Provide close fitting metal collar or escutcheon covers at both sides of penetration.

END OF SECTION

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Section 26 05 33 - Page 1
RACEWAY AND BOXES
FOR ELECTRICAL SYSTEMS

SECTION 26 05 33 – RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Metal Conduit.
- B. Flexible Metal Conduit.
- C. Liquidtight Metal Conduit.
- D. Electrical Metallic Tubing.
- E. Fittings and Conduit Bodies.
- F. Wall and Ceiling Outlet Boxes.
- G. Pull and Junction Boxes.

1.2 RELATED SECTIONS

- A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under MASS-B - General Requirements and Section 26 05 00 – Common Work Results for Electrical.
- B. Section 26 05 19 – Low-Voltage Electrical Power Conductors and Cables.
- C. Section 26 05 29 – Hangers and Supports for Electrical Systems.
- D. Section 26 05 53 – Identification for Electrical Systems.

1.3 REFERENCES

- A. American National Standards Institute (ANSI):
 - 1. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.
 - 2. ANSI C80.3 - Electrical Metallic Tubing, Zinc Coated.
- B. American Society for Testing and Materials (ASTM):
 - 1. ASTM A 123 – Specification for Zinc Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars and Strip.
- C. National Electrical Manufacturers Association (NEMA):
 - 1. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.

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2. NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
 3. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
- D. Underwriters Laboratory (UL):
1. UL 6 - Rigid Steel Conduit, Zinc Coated.
 2. UL 514B – Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
- E. National Fire Protection Association (NFPA):
1. NFPA 70 - National Electrical Code.
- F. International Building Code (IBC):
1. IBC chapters 16 and 17 seismic requirements.

1.4 RACEWAY AND BOX INSTALLATION SCHEDULE

- A. Raceway Minimum Size:
1. Above Grade: Provide 1/2 inch minimum, unless otherwise noted. Raceway may be reduced to 1/2 inch for final connection of raceway up to 6 feet for connection to fixture or device where maximum conduit entry size is 1/2 inch.
- B. Outdoor Above Grade, Damp or Wet Interior Locations:
1. Raceway: Provide rigid steel conduit or intermediate metal conduit.
 2. Boxes and Enclosures: Provide weatherproof malleable iron for branch circuit junction and outlet boxes. Provide weatherproof NEMA 3R sheet metal enclosures for safety and disconnect switches and NEMA 4 sheet metal enclosures with gaskets for motor controllers and control panels.
 3. Fittings: Provide galvanized malleable iron with gaskets. Provide Myers threaded hubs for all conduit entries into top and side of sheet metal enclosures.
- C. Concealed Dry Locations:
1. Raceway: Provide rigid steel conduit, intermediate metal conduit, or electrical metallic tubing.
 2. Boxes and Enclosures: Provide sheet-metal boxes.
 3. Fittings: Provide galvanized malleable iron and steel.

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D. Exposed Dry Locations:

1. Raceway: Provide rigid steel conduit or intermediate metal conduit. EMT conduit may be used where exposed conduit is allowed, where it is not subject to physical damage, or where installed on the ceiling or a minimum of ten feet above the floor.
2. Boxes and Enclosures: Provide sheet-metal boxes with raised steel covers.
3. Fittings: Provide galvanized malleable iron and steel.

E. Branch Circuits 60 Amperes or Larger and Feeders:

1. Raceway: Provide rigid steel conduit or intermediate metal conduit.
2. Boxes and Enclosures: Provide sheet-metal boxes.
3. Fittings: Provide galvanized malleable iron and steel.

F. Equipment Connections: Provide short extensions (three feet maximum) of flexible metal conduit for connections to equipment that requires removal for maintenance or replacement.

1.5 DESIGN REQUIREMENTS

A. Raceway Minimum Size:

1. Line Voltage Circuits: Raceway is sized on the drawings for copper conductors with 600-Volt type XHHW insulation, unless otherwise noted. Where a raceway size is not shown on the drawings, it shall be calculated to not exceed the percentage fill specified in the NEC Table 1, Chapter 9 using the conduit dimensions of the NEC Table 4, Chapter 9 and conductor properties of the NEC Table 5, Chapter 9.
2. Low-Voltage Circuits: Where installed in raceways, the raceway size shall be calculated to not exceed the percentage fill specified in the NEC Table 1, Chapter 9, using the conduit dimensions of the NEC Table 4, Chapter 9, and cable diameter provided by the manufacturer.

B. Box Minimum Size: Provide all boxes sized and configured per NEC Article 370 and as specified in this section.

C. Seismic Support: Provide support in accordance with section 26 05 29 – Hangers and Supports for Electrical Systems and 26 05 48 – Vibration and Seismic Support for Electrical Systems.

1.6 SUBMITTALS

A. Submittals are not requested for this section.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.

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PART 2 - PRODUCTS

2.1 RIGID METAL CONDUIT (RMC)

- A. Rigid Steel Conduit: ANSI C80.1, UL 6.
- B. Fittings and Conduit Bodies: NEMA FB 1, UL 514B; Galvanized malleable iron with threaded hubs for all conduit entries. Provide threaded connections and couplings only. Set Screw and running thread fittings are not permitted.
- C. Provide insulated throat bushings at all conduit terminations.

2.2 INTERMEDIATE METAL CONDUIT (IMC)

- A. Product Description: ANSI C80.6, UL 1242; Galvanized Steel Conduit.
- B. Fittings and Conduit Bodies: NEMA FB 1, UL 514B; use fittings and conduit bodies specified above for rigid steel conduit.
- C. Provide insulated throat bushings at all conduit terminations.

2.3 FLEXIBLE METAL CONDUIT (FMC)

- A. Product Description: UL 1, FS WW-C-566; galvanized or zinc-coated flexible steel, full or reduced-wall thickness.
- B. Fittings and Conduit Bodies: ANSI/NEMA FB 1; steel or malleable iron with insulated throat bushings. Die cast zinc or threaded inside throat fittings are not acceptable.

2.4 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)

- A. Product Description: UL 360, flexible metal conduit with interlocked steel construction and PVC jacket.
- B. Fittings and Conduit Bodies: ANSI/NEMA FB 1; liquid tight steel or malleable iron with insulated throat bushings. Die cast fittings are not acceptable.

2.5 ELECTRICAL METALLIC TUBING (EMT)

- A. Product Description: ANSI C80.3, UL 797; galvanized steel tubing.
- B. Fittings and Conduit Bodies: ANSI/NEMA FB 1; steel or malleable iron, compression type with insulated throat bushings. Zinc die cast, set screw, or indentor fittings are not acceptable.
- C. Maximum size shall be 2". Provide factory elbows on sizes 1-1/2" and larger.

2.6 OUTLET BOXES

- A. Sheet Metal Outlet Boxes: ANSI/NEMA OS 1, UL514A galvanized steel.
 - 1. Minimum Size: 4 inches square or octagonal, 1-1/2 inches deep, unless otherwise noted.

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2. Equipment Supporting Boxes: Rated for weight of equipment supported; furnish 1/2 inch male fixture studs where required. Minimum Size: 4 inches square or octagonal, 2-1/8 inches deep.
- B. Cast Boxes: NEMA FB 1, Type FD, galvanized malleable iron. Furnish gasketed cover by box manufacturer. Furnish threaded hubs. "Bell" boxes are not acceptable.

2.7 PULL AND JUNCTION BOXES

- A. Sheet Metal Pull and Junction Boxes: ANSI/NEMA OS 1, UL514A galvanized steel.
 1. Minimum Size: 4 inches square or octagonal, 1-1/2 inches deep, unless otherwise noted.
- B. Sheet Metal Boxes Larger Than 12 Inches in Any Dimension: Hinged enclosure, Hoffman or approved equal.
- C. Cast Metal Boxes for Outdoor and Wet Location Installations: NEMA 250, Type 4X; flat-flanged, surface mounted junction box, UL listed as raintight:
 1. Material: Galvanized cast iron.
 2. Cover: Furnish with ground flange, neoprene gasket, and stainless steel cover and screws.

2.8 EXPANSION FITTINGS

- A. Galvanized malleable iron, galvanized with grounding bond jumper.

2.9 BUSHINGS

- A. Non-grounding: Threaded impact resistant plastic.
- B. Grounding: Insulated galvanized malleable iron/steel with hardened screw bond to raceway and conductor lug.

2.10 LOCKNUTS

- A. Threaded Electro Zinc Plated Steel designed to cut through protective coatings for ground continuity.

2.11 WIREWAY

- A. Product Description: General purpose type wireway. Size per NEC minimum fill capacity required.
- B. Knockouts: Field-installed, no factory knockouts acceptable.
- C. Cover: Screw cover.

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- D. Fittings and Accessories: Include factory couplings, offsets, elbows, adapters and support straps required for a complete system. Provide internal ground bonding jumper bonded to each section.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Ground and bond raceway and boxes.
- B. Provide seismic support and fasten raceway and box supports to structure and finishes in accordance with Section 26 05 29.
- C. Identify raceway and boxes with origin and destination in accordance with Section 26 05 53.
- D. Unless otherwise noted, do not inter-mix conductors from separate panelboards or any other system in the same raceway system or junction boxes.

3.2 INSTALLATION - GENERAL RACEWAY

- A. Install raceway for all systems, unless otherwise noted.
- B. Install an equipment grounding conductor inside of all raceways containing line voltage conductors.
- C. Raceway routing and boxes are shown in approximate locations unless dimensioned. Where raceway routing is not denoted, field-coordinate to provide complete wiring system.
- D. Do not route raceways on floor. Arrange raceway and boxes to maintain a minimum of 6 feet 6 inches of headroom and present a neat appearance. Install raceways level and square to a tolerance of 1/8" per 10 feet. Route exposed raceways and raceways above accessible ceilings parallel and perpendicular to walls, ceiling, and adjacent piping.
- E. Maintain minimum 6-inch clearance between raceway and mechanical and piping and ductwork. Maintain 12-inch clearance between raceway and heat sources such as flues, steam pipes, heating pipes, heating appliances, and other surfaces with temperatures exceeding 104 degrees F.
- F. Seal raceway penetrations of fire-rated walls, ceilings, floors in accordance with the requirements of Section 26 05 00.
- G. Where raceway penetrates fire-rated walls and floors, seal opening around conduit with UL listed firestop sealant or intumescent firestop, preserving the fire time rating of the construction.
- H. Raceways and boxes penetrating vapor barriers or penetrating areas from cold to warm shall be taped and sealed with a non-hardening duct sealing compound to prevent the accumulation of moisture, and shall include a vapor barrier on the outside.
- I. Arrange raceway supports to prevent misalignment during wiring installation. Support raceway using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.

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- J. Do not attach raceway to ceiling support wires or other piping systems and do not fasten raceway with wire or perforated pipe straps. Remove all wire used for temporary raceway support during construction, before conductors are pulled. Raceway shall be installed to permit ready removal of equipment, piping, ductwork, or ceiling tiles.
- K. Group raceway in parallel runs where practical and use conduit rack constructed of steel channel with conduit straps or clamps, as specified in Section 26 05 29. Provide space on each rack for 25 percent additional raceway.
- L. Cut conduit square; de-burr cut ends. Bring conduit to the shoulder of fittings and couplings and fasten securely. Where locknuts are used, install with one inside box and one outside with dished part against box.
- M. Use threaded raintight conduit hubs for fastening conduit to cast boxes, and for fastening conduit to sheet metal boxes in damp or wet locations. Sealing locknuts are not acceptable.
- N. Install no more than the equivalent of three 90-degree bends between boxes.
- O. Install conduit bodies to make sharp changes in direction, such as around beams. "Goosenecks" in conduits are not acceptable.
- P. Use hydraulic one-shot conduit bender or factory elbows for bends in conduit larger than 2 inch size.
- Q. Provide protective plastic bushings or insulated throat bushings at each raceway termination not installed to an enclosure. Bushings shall be threaded to the raceway end or connector.
- R. Avoid moisture traps; install junction box with drain fitting at low points in raceway system.
- S. Install fittings and flexible metal conduit to accommodate 3-axis movements where raceway crosses seismic joints.
- T. Install fittings designed and listed to accommodate expansion and contraction where raceway crosses control and expansion joints.
- U. Use cable sealing fittings forming a watertight non-slip connection to pass cords and cables into conduit. Size cable sealing fitting for the conductor outside diameter. Use Appleton CG series or equal cable sealing fittings.
- V. Use suitable caps to protect installed raceway against entrance of dirt and moisture.
- W. Provide nylon "jet-line" or approved equal pull string in empty raceway, except sleeves and nipples.
- X. Paint all exposed conduit to match surface to which it is attached or crosses. Clean greasy or dirty conduit prior to painting in accordance with paint manufacturer's instructions. Where raceway penetrates non-rated ceilings, floors or walls, provide patching, paint and trim to retain architectural aesthetics similar to surroundings.

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RACEWAY AND BOXES
FOR ELECTRICAL SYSTEMS

3.3 INSTALLATION – GENERAL BOXES

- A. Provide electrical boxes as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections, and code compliance. All electrical box locations shown on Drawings are approximate unless dimensioned.
- B. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only. Where installation is inaccessible, install outlet and junction boxes no more than 6 inches from ceiling access panel or from removable recessed luminaries.
- C. Coordinate layout and installation of boxes to provide adequate headroom and working clearance.
- D. Adjust box location up to 6 feet prior to rough-in to accommodate intended purpose.
- E. Locate and install boxes to maintain headroom and to present a neat appearance.
- F. Provide knockout closures for unused openings.
- G. Do not fasten boxes to ceiling support wires or other piping systems.
- H. Support boxes independently of conduit.
- I. Clean interior of boxes to remove dust, debris, and other material and clean exposed surfaces and restore finish.
- J. Provide blank covers or plates for all boxes that do not contain devices.

END OF SECTION

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Section 26 05 48 - Page 1
VIBRATION AND SEISMIC CONTROLS
FOR ELECTRICAL SYSTEMS

SECTION 26 05 48 – VIBRATION AND SEISMIC CONTROLS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. This section includes requirements for vibration and seismic restraints for electrical equipment installed in seismic categories D, E or F.

1.2 RELATED SECTIONS

- A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under MASS-B General Requirements, Section 26 05 00 – Common Work Results for Electrical.
- B. Section 26 05 33 - Raceway and Boxes for Electrical Systems.
- C. Section 26 05 29 – Hangers and Supports for Electrical Systems.
- D. Section 26 24 16 – Panelboards.
- E. Section 26 31 00 – Solar Photovoltaic System.

1.3 DESCRIPTION

- A. Provide seismic anchorage and restraint of electrical systems including, equipment and raceways.
- B. Seismic Category D, E and F:
 - 1. All electrical items that are of Importance Factor (I_p) = 1.5 are required to be seismically braced. This applies to the following:
 - a. The component is required to function for life safety purposes after an earthquake, including fire protection systems, fire alarm systems, emergency lighting, etc.
 - b. The component contains hazardous materials.
 - c. The component is in or attached to an Occupancy Category IV structure (Hospitals, fire station, police station, emergency shelters, etc. per ASCE 7-05, Table 1-1) and it is needed for continued operation of the facility or its failure could impair the continued operation of the facility.
- C. All other electrical equipment shall be assigned a component importance factor (I_p) = 1.0 and are required to be seismically braced unless one of the following conditions is satisfied:
 - 1. Component is MOUNTED (connection to structure) at less than 4' above the floor (to the center of gravity of the component), and weighs less than 400 lbs.

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2. Component is mounted higher than 4' (to the center of gravity of the component), but weighs less than 50 lbs (if it is concealed).
 3. Component is mounted higher than 4' (to the center of gravity of the component), but weighs less than 100 lbs (if it is exposed).
 4. Flexible connections between the components and associated conduit are provided.
 5. All runs or groupings of conduits on or off of trapezes shall be seismically braced, unless the distribution system (including conduit, wiring and fittings) weighs less than 5 pounds per linear foot.
- D. In accordance with ASCE 7-10 13.6.4, all electrical components with $I_p = 1.5$ shall also satisfy the following requirements:
1. Provisions shall be made to eliminate seismic impact between components.
 2. Loads imposed on the components by attached utility or service lines that are attached to separate structures shall be evaluated.
 3. Batteries on racks shall have wrap-around restraints to ensure that the batteries will not fall from the rack. Spacers shall be used between restraints and cells to prevent damage to cases. Racks shall be evaluated for sufficient lateral load capacity.
 4. Internal coils of dry type transformers shall be positively attached to their supporting substructure within the transformer enclosure.
 5. Electrical control panels, computer equipment, and other items with slide-out components shall have a latching mechanism to hold the components in place.
 6. Electrical cabinet design shall comply with the applicable National Electrical Manufacturers Association (NEMA) standards. Cutouts in the lower shear panel that have not been made by the manufacturer and reduce significantly the strength of the cabinet shall be specifically evaluated.
 7. The attachments of additional external items weighing more than 100 lbs shall be specifically evaluated if not provided by the manufacturer.
 8. Where conduit, cable trays, or similar electrical distribution components are attached to structures that could displace relative to one another and for isolated structures where such components cross the isolation interface, the components shall be designed to accommodate the seismic relative displacements defined in ASCE 7-10 Section 13.3.2.
- E. Unless otherwise exempted above, electrical component supports and the means by which they are attached to the component shall be designed for the Seismic Category they are installed in accordance with ASCE 7-10 Section 13.6.5, which includes the following additional requirements:

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1.4 REFERENCE STANDARDS

- A. Seismic anchorage and restraints shall be designed and installed in accordance with codes and standards as enforced by authorities having jurisdiction in [Anchorage,]Alaska. Authorities shall include Owner's insurance company.
- B. Where applicable, building standards supersede those of other evaluation or listing agencies referenced in specification.
- C. International Building Code (IBC), Chapter 16 – Structural Design.
- D. ASCE 7-10 Chapter 13.

1.5 SUBMITTALS

- A. Provide structurally engineered shop drawings for seismic restraint of all electrical equipment required by the International Building Code (IBC), Chapters 16, 17. Structural design shall be based on the Seismic Use Category and Seismic Design Category as designated in these chapters.
- B. Provide complete calculations, drawings and details.
- C. Shop drawings shall be stamped by a professional engineer registered in the State of Alaska.
- D. Submittals shall be coordinated with building Structural engineer.
- E. Submit for approval, seismic restraint calculations, drawings and details to authorities having jurisdiction as required by those authorities.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Materials and devices shall be in accordance with applicable codes and standards and shall be appropriate for intended use.
- B. Anchors and attachments to building structure shall be as approved by building Structural engineer.
- C. Seismic restraints used in conjunction with vibration isolators may consist of loose cables, telescoping pipes or box sections, angles or sections, flat plates used as limit stops or snubbers, or other types of housing used either integral with or separate from vibration isolators to accomplish necessary seismic restraint.

2.2 EQUIPMENT

- A. Equipment available with seismic rating shall be provided with rating applicable to seismic zone of project location.

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VIBRATION AND SEISMIC CONTROLS
FOR ELECTRICAL SYSTEMS

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Secure stationary equipment, raceways and equipment supports to structure, concrete bases, or special supports to provide protection against earthquakes and to restrain lateral or vertical movement. Where vibration isolators are used, seismic restraints shall be designed to limit lateral or vertical movement during earthquake without short-circuiting vibration isolation system.
- B. Coordinate seismic restraints with building Structural engineer and incorporate building Structural engineer's requirements.
- C. Seismic restraint methods and materials shall be supplementary to support devices specified in other sections of this specification and together shall serve as equipment support criteria.
- D. Installation of devices shall be in accordance with seismic Structural engineer's drawings and details and in accordance with seismic guidelines.
- E. Coordinate installation of devices with other trades and incorporate their requirements.
- F. Modify raceway and equipment locations as required for seismic restraint system.
- G. Seismic restraint systems shall not interfere with installation of other building systems or access.

END OF SECTION

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Section 26 05 53 - Page 1
IDENTIFICATION FOR
ELECTRICAL SYSTEMS

SECTION 26 05 53 – IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Nameplates and Tape Labels.
- B. Wire and Cable Markers.

1.2 RELATED SECTIONS

- A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under MASS-B General Requirements, and Section 26 05 00 – Common Work Results for Electrical.
- B. Section 26 05 19 – Low-Voltage Electrical Power Conductors and Cables.
- C. Section 26 05 33 – Raceway and Boxes for Electrical Systems.
- D. Section 26 24 16 – Panelboards.

1.3 SUBMITTALS

- A. Submittals are not requested for this section.

1.4 ENVIRONMENTAL REQUIREMENTS

- A. Install labels and nameplates only when ambient temperature and humidity conditions for adhesive are within range recommended by manufacturer.

PART 2 - PRODUCTS

2.1 NAMEPLATES

- A. Product Description: Laminated three-layer plastic with engraved white letters on black background. Nameplate for array disconnect shall be engraved white letters on red background.
- B. Letter Size:
 - 1. 1/4-inch high letters for identifying individual panel or equipment.
 - 2. 1/8-inch high letters for remaining lines with 1/8 inch spacing between lines.
- C. Minimum nameplate size: 1/8 inch thick with a consistent length and height for each type of nameplate wherever installed on the project.

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2.2 TAPE LABELS

- A. Product Description: Adhesive tape labels, with 3/16 inch Bold Black letters on clear background made using Dymo Rhino series label printer or approved equal.
- B. Embossed adhesive tape will not be permitted for any application.

2.3 WIRE MARKERS

- A. Power Description: Machine printed heat-shrink tubing, cloth or wrap-on type, for all neutrals and Phase conductors.
- B. Low Voltage System Description: Self-adhesive machine printed label with unique wire number that is shown on shop drawing for system.

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION

- A. Degrease and clean surfaces to receive nameplates and tape labels.
- B. Install nameplates and tape labels parallel to equipment lines.

3.2 NAMEPLATE INSTALLATION

- A. Secure nameplates to equipment fronts using machine screws tapped and threaded into panelboard, or using rivets. The use of adhesives is not acceptable. Machine screws to not protrude more than 1/16 inch on back side.
- B. Service Disconnect Nameplate: Provide nameplate on array disconnects that reads "SOLAR ARRAY DISCONNECT 1 OF 2" and "SOLAR ARRAY DISCONNECT 2 OF 2".
- C. Branch Panelboard Nameplates:
 - 1. Provide nameplate for each panelboard with the following information:
 - a. Line 1: Panelboard name.
 - b. Line 2: Source from which the panelboard is fed.
 - c. Line 3: Voltage, phase and wire configuration.
 - d. Line 4: AIC rating of the panelboard.
- D. Disconnects, Equipment such as Inverters:
 - 1. Provide nameplate for each device with the following information:
 - a. Line 1: Load served.
 - b. Line 2: Panelboard and circuit number from which the device is fed.

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- c. Line 3: Fuse or Circuit amperage and poles. Where fused disconnect is installed, denote the maximum fuse size to be installed.

3.3 LABEL INSTALLATION

- A. Conduit Feeder Labels - Provide conduit labels on all feeder raceways as follows:
 1. Panelboards – “PANEL xxxx FED FROM xxx”.
- B. Spare Raceways: Provide raceway label on each individual raceway denoting the source and termination point at each end.

3.4 WIRE IDENTIFICATION

- A. Provide wire markers on each conductor in panelboard gutters, pull boxes, outlet and junction boxes, and at load connection. Identification shall be as follows:
 1. Markers shall be located within one inch of each cable end, except at panelboards, where markers for branch circuit conductors shall be visible without removing panel deadfront.
 2. Each wire and cable shall carry the same labeled designation over its entire run, regardless of intermediate terminations.
 3. Color code phases, neutral, and ground per NEC requirements and Section 26 05 19.
 4. Color-code all low-voltage system wires and cables in accordance with the individual sections in which they are specified.
 5. For power and circuits, identify with branch circuit or feeder number.
 6. Control Circuits: Control wire number as indicated on schematic and shop drawings.
- B. Provide pull string markers at each end of all pull strings. Marker shall identify the location of the opposite end of the pull string.

3.5 JUNCTION BOX IDENTIFICATION

- A. Label each power junction box with the panelboard name and circuit number.
- B. For junction boxes above ceilings, mark the box cover with the circuit or system designation using permanent black marker. For junction boxes in finished areas, mark the inside of the cover with the circuit or system designation using permanent black marker.

3.6 PANELBOARD IDENTIFICATION

- A. Provide panelboard circuit directories in accordance with Section 26 24 16.

END OF SECTION

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Section 26 24 16 - Page 1
PANELBOARDS

SECTION 26 24 16 - PANELBOARDS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Branch Circuit Panelboards.

1.2 RELATED SECTIONS

- A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under MASS-B General Requirements, and Section 26 05 00 – Common Work Results for Electrical.
- B. Section 26 05 53 – Identification for Electrical Systems.
- C. Section 26 05 48 – Vibration and Seismic Control for Electrical Systems.

1.3 REFERENCES

- A. NEMA AB 1 - Molded Case Circuit Breakers.
- B. NEMA KS 1 - Enclosed Switches.
- C. NEMA PB 1 - Panelboards.
- D. NEMA PB 1.1 - Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less.
- E. NEMA PB 2.2 - Application Guide for Ground-fault Protective Devices for Equipment.
- F. UL 50 – Enclosures for Electrical Equipment.
- G. UL 67 – Panelboards.
- H. UL 98 - Enclosed and Dead-front Switches.
- I. UL 489 – Molded Case Circuit Breakers and Circuit Breaker Enclosures.
- J. Federal Specification W-C-375B/Gen – Circuit Breakers, Molded Case, Branch Circuit and Service.

1.4 SUBMITTALS

- A. Submit data under provisions of MASS-B and Section 26 05 00.
- B. Product Data: Submit product data for all components provided which fall under this section showing configurations, finishes, and dimensions. Each catalog sheet should be clearly marked to indicate exact part number provided, including all options and accessories.

ANCHORAGE, ALASKA

- C. Shop drawings: Submit shop drawings for each panelboard indicating features and device arrangement and size. Include outline and support point dimensions, voltage, main bus ampacity, and integrated short circuit ampere rating.

1.5 CLOSEOUT SUBMITTALS

- A. Project Record Drawings: Accurately record actual locations of panelboards. Submit final record panel schedules. Submit under Section 26 05 00.
- B. Operation and Maintenance Manuals: Provide product data and shop drawing information including replacement parts list. Provide installation, operation and maintenance information per manufacturer.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver products to site under provisions of MASS-B.
- B. Upon arrival at the site inspect equipment and report on any damage.
- C. Handle carefully on site to avoid any damage to internal components, enclosures and finishes.
- D. Store in a clean, dry environment. Maintain factory packaging and provide an additional heavy canvas or plastic cover to protect enclosures from dirt, water, construction debris and traffic.

1.7 WARRANTY

- A. Manufacturer shall warrant specified equipment to be free of defects for a period of one year from the date of installation.

1.8 SPARE PARTS

- A. Keys: Furnish 2 each to Owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS - PANELBOARDS

- A. Square D.
- B. Cutler Hammer.
- C. General Electric.
- D. Siemens.
- E. Substitutions: Under provisions of MASS-B.

2.2 BRANCH CIRCUIT PANELBOARDS

- A. Branch Circuit Panelboards: NEMA PB 1; circuit breaker type.

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- B. Enclosure: NEMA PB 1; Type 1 or 3R as indicated on Drawings. Boxes shall be galvanized steel constructed in accordance with UL50 requirements. Interiors shall be field convertible for top or bottom incoming feed. Main lug interiors up to 400 amperes shall be field convertible to main breaker. Interior leveling provisions shall be provided for flush mounted applications.
- C. Cabinet Size: 6 inches deep; 20 inches wide minimum.
- D. Provide flush or surface cabinet front as indicated on the Drawings with concealed trim clamps, concealed hinge and flush lock all keyed alike. Finish in manufacturer's standard gray enamel.
- E. Provide panelboards with copper bus, ratings as scheduled on Drawings. Provide one continuous bus bar per phase each. Panelboards shall have sequentially phased branch circuit connectors suitable for bolt-on branch circuit breakers. Bussing shall be fully rated.
- F. Integrated Short Circuit Rating: Provide panelboards with minimum ratings of 14,000 amperes RMS symmetrical for 480/600 volt panelboards.
- G. Branch Circuit Breakers: NEMA AB 1; Provide panelboards with bolt-on type thermal magnetic trip circuit breakers.
 - 1. Circuit breakers shall be operated by a toggle-type handle and shall have a quick-make, quick-break over-center switching mechanism that is mechanically trip-free with common trip handle for all poles.
 - 2. Lugs shall be UL Listed to accept copper and aluminum conductors and shall be suitable for 90°C rated wire, sized according to the 75 °C temperature rating per NEC Table 310-16. Lug body shall be bolted in place.

2.3 PANELBOARD IDENTIFICATION

- A. For each panelboard, provide typed schedule denoting each circuit load by the load type.
- B. Provide panel schedule in O&M manual for every new panelboard.
- C. All panelboards shall have signage for arc hazard installed. The marking shall be located to be clearly visible to qualified personnel before examination, adjustment, servicing or maintenance of the equipment. At a minimum the signage shall state the following:

Warning

Arc Flash and Shock Hazard

Appropriate PPE Required

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install panelboards plumb and flush with wall finishes, in conformance with NEMA PB 1.1.
- B. Height: 6 feet, 6 inches to top of panelboard.

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- C. Provide filler plates for unused spaces in panelboards.

3.2 FIELD QUALITY CONTROL

- A. Visual and Mechanical Inspection: Inspect for physical damage, proper alignment, anchorage, and grounding. Check proper installation and tightness of connections for circuit breakers.

END OF SECTION

ANCHORAGE, ALASKA

Section 26 28 16 - Page 1
ENCLOSED SWITCHES AND CIRCUIT BREAKERS

SECTION 26 28 16 - ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Enclosed Switches.

1.2 RELATED SECTIONS

- A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under MASS-B General Requirements and Section 26 05 00 – Common Work Results for Electrical.
- B. Section 26 05 26 – Grounding and Bonding for Electrical Systems.
- C. Section 26 05 48 – Vibration and Seismic Controls for Electrical Systems.
- D. Section 26 05 53 – Identification for Electrical Systems.

1.3 REFERENCE STANDARDS

- A. ANSI/UL 98 Enclosed and Dead Front Switches.
- B. NEMA KS 1 - Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum).
- C. UL 489 – Molded Case Circuit Breakers and Circuit Breaker Enclosures.
- D. NEMA AB-1 – Molded Case Circuit Breakers and Molded Case Switches.
- E. NEMA 250 – Enclosures for Electrical Equipment (1000 Volts Maximum).
- F. NETA ATS – Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

1.4 SUBMITTALS

- A. Product Data: Submit product data for all components provided, showing electrical characteristics, material, and dimensions. Each catalog sheet should be clearly marked to indicate exact part number provided, including all options and accessories.
- B. Shop Drawings: Submit shop drawings include outline drawings with dimensions, and equipment ratings for voltage, capacity, horsepower, and short circuit current interrupting rating.

1.5 CLOSEOUT SUBMITTALS

- A. Project Record Drawings: Accurately indicate actual location of enclosed switches, circuit breakers and ratings of actual installed fuses.

ANCHORAGE, ALASKA

Section 26 28 16 - Page 2
ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS - ENCLOSED SWITCHES

- A. Square D.
- B. Siemens.
- C. Cutler Hammer.
- D. General Electric.
- E. Substitutions: Under provisions of MASS-B.

2.2 ENCLOSED SWITCHES

- A. Nonfusible Switch Assemblies: NEMA KS 1; Heavy Duty type; quick-make, quick-break, load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position. Handle lockable in OFF position.
- B. Enclosures: NEMA KS 1; Type 3R.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install enclosed switches and circuit breakers where indicated on Drawings, and where required for NEC required disconnect of equipment specified under other divisions, but installed under Division 26.

3.2 FIELD QUALITY CONTROL

- A. Field inspecting, testing, adjusting and balancing.

END OF SECTION

ANCHORAGE, ALASKA

Section 26 31 00 - Page 1
SOLAR PHOTOVOLTAIC SYSTEM

SECTION 26 31 00 - SOLAR PHOTOVOLTAIC SYSTEM

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Contractor designed and installed solar photovoltaic (PV) system. Nominal system size is 36.4kW. This is a performance type specification describing the minimum acceptable solar PV system. The Contractor shall design and install the solar PV system in accordance with the requirements of NFPA 70. The solar PV system components on the drawings are shown in suggested locations. The final locations of all devices shall be solely determined by the Contractor and shall be in accordance with NFPA 70.
- B. The solar PV system described in this document shall be of the grid-connected type and shall not include battery/backup storage or secondary electrical generation devices. The solar PV system shall feed AC power into the local services when solar energy is available and shall immediately disconnect from the grid upon loss of grid power to the service as per IEEE and local utility regulations.

1.2 RELATED SECTIONS

- A. Section 26 05 19 – Low-Voltage Electrical Power Conductors and Cables.
- B. Section 26 05 26 – Grounding and Bonding for Electrical Systems.
- C. Section 26 05 33 – Raceway and Boxes for Electrical Systems.
- D. Section 26 05 53 – Identification for Electrical Systems.
- E. Section 26 28 16 – Enclosed Switches and Circuit Breakers

1.3 REFERENCES

- A. NFPA 70 - National Electrical Code.
- B. NEMA – National Electric Manufacturer Association.
- C. ANSI – American National Standards Institute.
- D. IEEE 928 – Recommended Criteria for Terrestrial PV Power System.
- E. IEEE 929 – Recommended Practice for Utility Interface of residential and Intermediate PV System.
- F. ASTM – American Society for Testing and Materials.
- G. ASCE (7-05 or 7-10): Minimum Design Loads for Building and Other Structures.
- H. IBC – International Building Codes.
- I. IEC 61215 – Crystalline Silicon Terrestrial Photovoltaic Modules.

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- J. IEC 61730 – Photovoltaic Modules Safety Qualification.
- K. IS 9000 – Basic Environment Testing Procedure for Electronic and Electrical Items

1.4 REGULATORY REQUIREMENTS

- A. System: UL listed.
- B. Conform to the requirements of UL 1703-02
- C. Conform to requirements of UL 1741-10.
- D. Conform to requirements of IEEE 929.
- E. Install system in accordance with NFPA 70.

1.5 SYSTEM DESCRIPTION

- A. Solar PV System: Contractor designed and installed complete PV system and all its electrical components including PV modules, DC disconnect, grid-tie inverter, AC disconnect, and any PV module by-pass diodes, and DC over-current protection as required. The following design requirements apply:
 - 1. Design and select PV system components according to Generally Accepted PV Design principles.
 - 2. Design and select the wiring, cabling, including PV module interconnections, photovoltaic source circuit, photovoltaic output circuit, PCU output circuit, equipment bonding, and equipment and system grounding.
 - 3. Select an appropriate PV module mounting rack.
 - 4. Select a PV module mounting system for the rack, given the structural parameters and use of a ballasted support system.
 - 5. Design ballasted support system based on parameters given, and include system drawings in structural submittal.
 - 6. Including a monitoring system to measure and record system performance parameters.
 - 7. Include all the equipment design and selection necessary to provide a functional installed system.
 - 8. Design the system for the local solar radiation and temperature conditions.
 - a. If these data are not available for that location, then the closest location in which these data have been recorded is acceptable.
 - b. All equipment located outdoors shall be rated and warranted to withstand and operate under these conditions.

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9. System structural drawings shall be sealed by a professional structural engineer licensed in the State of Alaska.

1.6 QUALIFICATIONS

- A. Company specializing in solar PV systems with three years documented experience. Solar PV System installer shall demonstrate that they have successfully installed at least four projects of 25kW or more system capacity. References shall be provided for each of these referenced projects upon request.

1.7 SUBMITTALS

- A. Submit product data under the provisions of MASS-B.
- B. Submit manufacturer's installation instructions.
- C. Product Data: Submit product data for all components provided which fall under this section and installation instructions.
- D. Shop Drawings: Include photovoltaic module structural supports, solar module control sequences, and instrument mounting and interconnections and all other components, parts and pieces required to complete the functioning assembly. Where applicable, include pre-fabricated racking assemblies, and shop drawings for support structures.
- E. Design Data: Structural design calculations with signature of professional engineer licensed in State of Alaska.
- F. Manufacturer's Certificates: Submit technical representative's certification that the installation has been implemented as intended by the system designer and where applicable, recommended by the manufacturer.
- G. Manufacturer's warranties.

1.8 CLOSE OUT SUBMITTALS

- A. Posted operating instruction for solar photovoltaic energy system: Provide for wiring identification codes and diagrams of solar photovoltaic systems, operating instructions, control matrix, and troubleshooting instructions.
- B. Solar photovoltaic system verification certificate per IEC 62446.

1.9 PROJECT RECORD DRAWINGS

- A. Submit documents under the provisions of MASS-B.

1.10 OPERATION AND MAINTENANCE DATA

- A. Submit operating instructions and maintenance and repair procedures under the provisions of MASS-B.
- B. Include manufacturer representative's letter stating the system is operational.
- C. Include an 11" x 17" set of the solar PV system project record drawings.

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Section 26 31 00 - Page 4
SOLAR PHOTOVOLTAIC SYSTEM

1.11 DEMONSTRATION AND TRAINING

- A. The Manufacturer's Representative shall be responsible for an on-site demonstration of the operation of the system and initial staff training.
- B. Under the provisions of MASS-B and Section 26 05 00, provide formal instruction in the operation, maintenance, and troubleshooting of all equipment, provided at the project site with manufacturer's representative with the Owner's personnel

1.12 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site, store and protect, under provisions of MASS-B.

1.13 WARRANTY

- A. Manufacturer Limited Warranty: Ten (10) years product warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Canadian Solar.
- B. Suniva.
- C. ISI
- D. SunEdision.
- E. SMA
- F. Magnum Energy
- G. Ironridge
- H. Substitutions: Under provisions of MASS-B.

2.2 SOLAR PHOTOVOLTAIC (PV) MODULES

- A. PV modules shall be rated equal to or greater than shown on drawings. Provide modules with manufacturer cabling and connectors.
- B. PV modules shall meet or exceed the requirements of IEC 61215.
- C. PV modules shall be framed, flat-plate, non-concentrating type.

2.3 GRID-TIE INVERTERS

- A. The inverter's DC side shall:
 - 1. Be compatible with the PV system array output.

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2. Be capable of complete automatic, continuous, unattended and stable operation over the range of voltages, currents, power levels and temperature for the size, type and location of the array to which it is connected, including at start-up, synchronization and disconnect.
- B. The inverter's AC side shall:
1. Have a power factor of 1 without using external reactive power compensation.
 2. Have an AC output voltage that is directly compatible to the building or site distribution voltage without the use of an external transformer.
 3. Not require an external isolation transformer.
 4. Be capable of operating in parallel with other inverters and the local electrical distribution system.
- C. The inverter shall:
1. Have a communication port capable of remote monitoring of inverter operation from a computer or from specialized monitoring equipment.
 2. Be fail-safe.
 3. Meet the requirements for a grid-connected inverter as specified.

2.4 DC DISCONNECT SWITCHES

- A. DC disconnect switches to have a DC voltage and current rating appropriate to the photovoltaic output circuit. Disconnect may be integral to inverter.

2.5 RAPID SHUTDOWN/DC COMBINER

- A. Rapid shutdown system shall comply with NEC requirements.
- B. Total number of string inputs/outputs shall be equal to or greater than shown on drawings.

2.6 WIRING SPECIALTIES

- A. All outdoor wiring shall be UV resistant, labelled as such, and listed for temperature rating of 90°C in wet locations.
- B. Wiring shall be listed for use in PV systems.
- C. Wiring size and ratings shall be per the drawings.
- D. Total DC circuit wiring losses shall be limited to no more than 1%.
- E. All DC and AC wiring connected to inverter must conform to requirements given by inverter manufacturer.
- F. Grounding and bonding methods shall be according to NEC requirements.

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Section 26 31 00 - Page 6
SOLAR PHOTOVOLTAIC SYSTEM

2.7 GROUNDING

- A. Array frame shall be installed in accordance with NEC 250.
- B. Shall ground according to manufacturer instruction per UL 1703.
- C. DC Ground-Fault Protector:
 - 1. Shall be listed per UL 1703.
 - 2. Shall comply with requirements of the NEC to reduce fire hazards.
 - 3. Ungrounded DC solar photovoltaic arrays shall comply with the NEC.

2.8 MONITORING PANEL

- A. The monitoring system shall provide access to operational and performance data of the PV system via web-based interface and shall record and display at minimum:
 - 1. Array voltage – VDC (V)
 - 2. Grid voltage – VAC (V)
 - 3. Array current – IDC (A)
 - 4. Grid current – AC (A)
 - 5. Array power – PDC (W)
 - 6. Grid power – PAC (W)

2.9 PV MODULE MOUNTING RACK

- A. Mounting rack shall provide for each module to be individually removed for maintenance, repair, or replacement.
- B. Mounting rack shall ensure that the bonding of all modules is not broken if a module is removed.
- C. Mounting rack shall be appropriately designed for the array tilt angle, angle of attachment structure, space availability and wind and snow loading.
- D. The PV module mounting rack shall allow the PV array to be installed such that the individual modules are uniformly spaced and in a single plane.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Make sure that the modules meet the technical requirements of the overall system.

ANCHORAGE, ALASKA

- C. Other system components shall not exert any adverse mechanical or electrical influences on the module.
- D. To avoid performance losses, all modules connected in series should be arranged with the same orientation and tilt angle.
- E. Implement care while installing components so as not to damage finish surfaces.
- F. Install PV mounting rack and modules per rack manufacturer assembly instructions.
- G. Adjust PV module position to achieve uniform spacing between modules.
- H. Touch up as required to repair damaged finishes.
- I. Remove all protective masking from material immediately after installation.

3.2 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of MASS-B.
- B. Field-test the PV array or each PV string when installed to verify electrical integrity and specified performance.
- C. Measure the PV array or each PV string Voc and Isc under sunny weather conditions. Estimate ambient air temperature and solar radiation conditions. Record and check for consistency with the module field-test measurements.
- D. Correct all installation defects identified by the field testing.
- E. Submit all field test results to the Engineer for approval.
- F. The PV system is not accepted until the Owner provides a written statement of acceptance.

3.3 FOLLOW-UP VERIFICATION

- A. Upon completion of acceptance checks, settings, and tests, the Contractor shall show by demonstration in service that the solar photovoltaic energy power system is in good operating condition and properly performing the intended function.

3.4 COMMISSIONING

- A. Contractor shall coordinate with electrical utility to interconnect system to grid and install new meter.
- B. Connect the solar array to the electrical utility grid only after receiving prior approval from the utility company.
- C. Only qualified personnel shall connect the solar array to the utility grid.

ANCHORAGE, ALASKA

Section 26 31 00 - Page 8
SOLAR PHOTOVOLTAIC SYSTEM

3.5 INSTRUCTION

- A. A complete set of operating instructions for the solar photovoltaic energy power system shall be laminated and installed in a binder near the equipment.
- B. Provide a field-training course for operating and maintenance staff members after the system are functionally complete. Include in the training a discussion of the system design and layout and demonstrate routine operation, maintenance and troubleshooting procedures. Include configuration and training for the monitoring system total number of hours shall be per 26 05 00.

END OF SECTION

STRUCTURAL CALCULATIONS FOR

MOA EGAN CENTER ROOFTOP SOLAR EXPANSION

ANCHORAGE, AK

MOA

DATE: JAN 2026

CEI Project No. 254048



ISSUED FOR CONSTRUCTION (IFC)


COFFMAN ENGINEERS, INC.

ph 907.276.6664

301 W. NORTHERN LIGHTS BLVD,
SUITE 200 ANCHORAGE AK, 99503

fax 907.276.5042

AECC 249

	project	EGAN CENTER ROOFTOP SOLAR EXPANSION	by	EML	sheet no.
	location	ANCHORAGE, AK	date	JAN 2026	COVER
	client	MOA	chkd	MCS	job no.
	topic	STRUCTURAL CALCULATIONS	date	JAN 2026	254048

SCOPE OF WORK:

DEFINE THE STRUCTURAL REQUIREMENTS FOR A NEW SOLAR PANEL SYSTEM PLACED ON THE ROOF OF THE EXISTING EGAN CONVENTION CENTER. THE SOLAR PANEL SYSTEM WILL BE A BALLASTED SYSTEM THAT WILL NOT BE MECHANICALLY ANCHORED TO THE ROOF OR UNDERLYING ROOF STRUCTURE.

THE DESIGN OF THE SOLAR PANEL SYSTEM, INCLUDING BALLAST, WILL BE ACCOMPLISHED BY THE CONTRACTOR.

SNOW LOAD:

ASSUME PANELS ARE SIMILAR TO FLAT ROOF

$$P_f = 0.7 * C_e * C_t * I_s * P_g$$

$$C_e = 1.0$$

$$C_t = 1.2$$

$$I_s = 1.1$$

$$P_g = 50\text{psf}$$

$$P_f = 0.7 * 1.0 * 1.2 * 1.1 * 50\text{psf} = 46.2\text{psf}$$

Original Roof Design Snow = 40psf

WIND LOAD:

$$V = 135 \text{ mph}$$

$$\text{height} = 35'$$

$$K_d = 0.85$$

$$K_z = 1.0$$

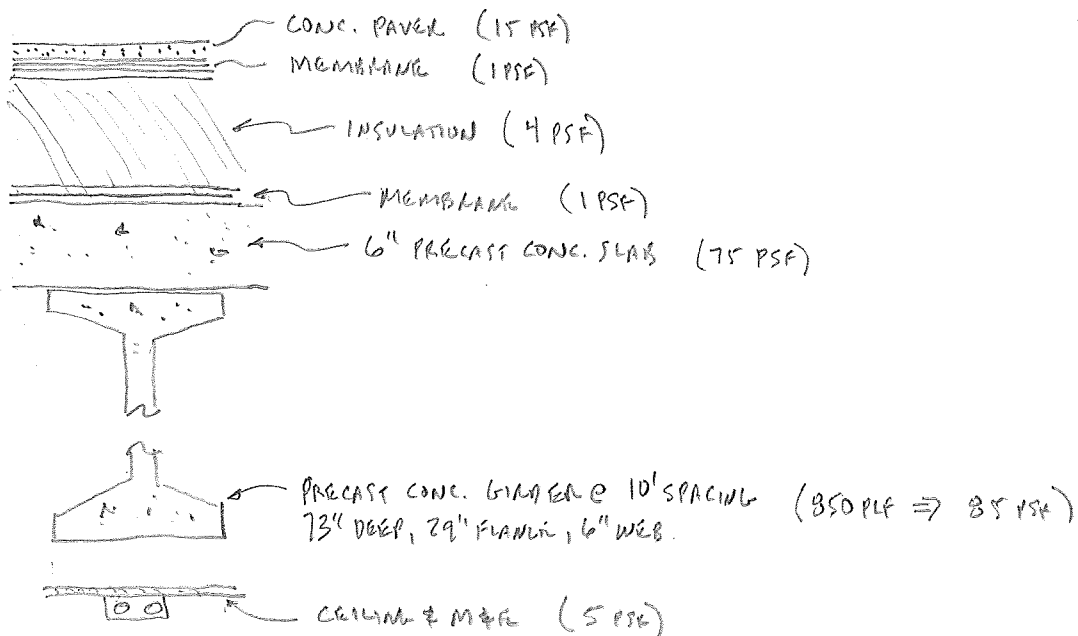
$$G = 0.85$$


$$K_z = 1.0 \text{ (conservatively)}$$

DEAD LOAD:

IEBC limits increase in dead load to 10% (seismic mass)

Upper Roof Boundary = Grids A to P (260') and 1 to 3 (102')



 <p>301 W. Northern Lights Blvd. Anchorage, Alaska 99503 907.276.6664 www.coffman.com</p>	project	by	sheet no.
	location	date	
	client	checked	Job no.
		date	

Total Roof Weight, DL = 186psf

Seismic Mass = (DL) * Area

Area = 260' * 102' = 26,520 sf

Seismic Mass = 186psf * 26,520sf = 4,932,720 lbs

Max Solar System Wt = 0.1 * 4,932,720 lb = 493,272lbs

ALLOWABLE DEAD LOAD - GRAVITY:

ORIGINAL ROOF DESIGN LOADS INCLUDED 100PSF ALLOWABLE FOR FUTURE ICE RINK

EXISTING ROOF DEAD LOAD = 186PSF

IEBC INCLUDES 5% ALLOWABLE INCREASE TO DEAD LOADS, MOA AMENDS THIS 5% TO 10% ALLOWABLE

0.1 * 186PSF = 18.6PSF

EXCESS LIVE LOAD ALLOWANCE = 100PSF - SNOW = 100PSF - 46.2PSF = 53.8PSF

TOTAL ALLOWABLE DEAD LOAD INCREASE = 53.8PSF + 18.6PSF = 72.4PSF (GRAVITY ONLY) > 30PSF ASSUMED SOLAR WEIGHT

*THIS IS A LOCALIZED LOAD. THE SUMMATION OF DEAD LOADS HAS TO BE LESS THAN 493,272 LBS TO MEET SEISMIC LIMITS, INCLUDING THE PREVIOUS SOLAR PANEL WEIGHTS FROM 2018 SOLAR EXPANSION PROJECT.

30PSF ASSUMED SOLAR PANEL WEIGHT * SOLAR PANEL AREA = ASSEMBLY WEIGHT

30PSF * 6,417.93SF = 192,537.9 LBS < 493,272 LBS OK

OR

14,486.8 SF * 30PSF = 434,604 LBS < 493,272 LBS OK

 **COFFMAN**
ENGINEERS
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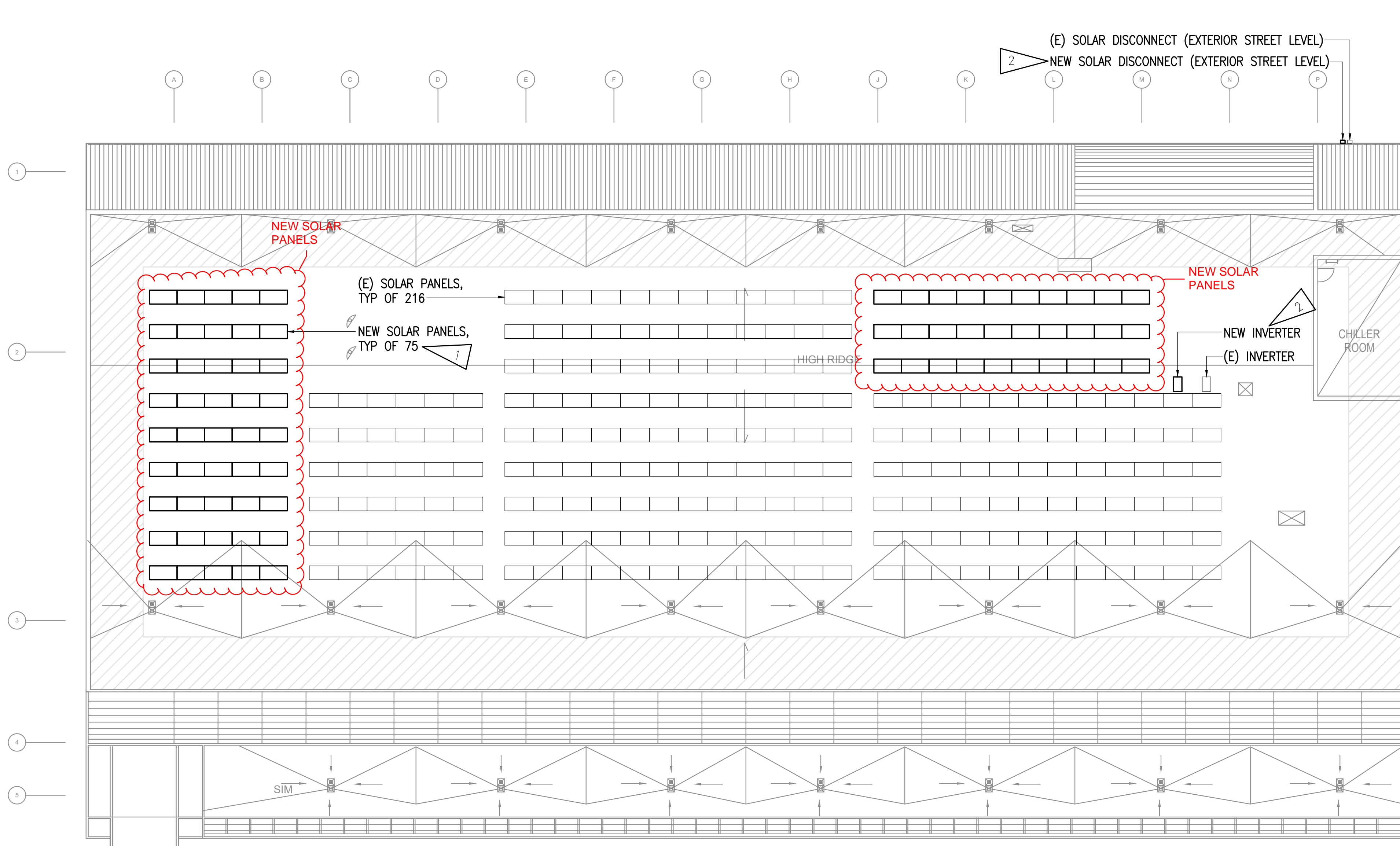
project	by	sheet no.
location	date	
client	checked	Job no.
	date	

GENERAL NOTES:

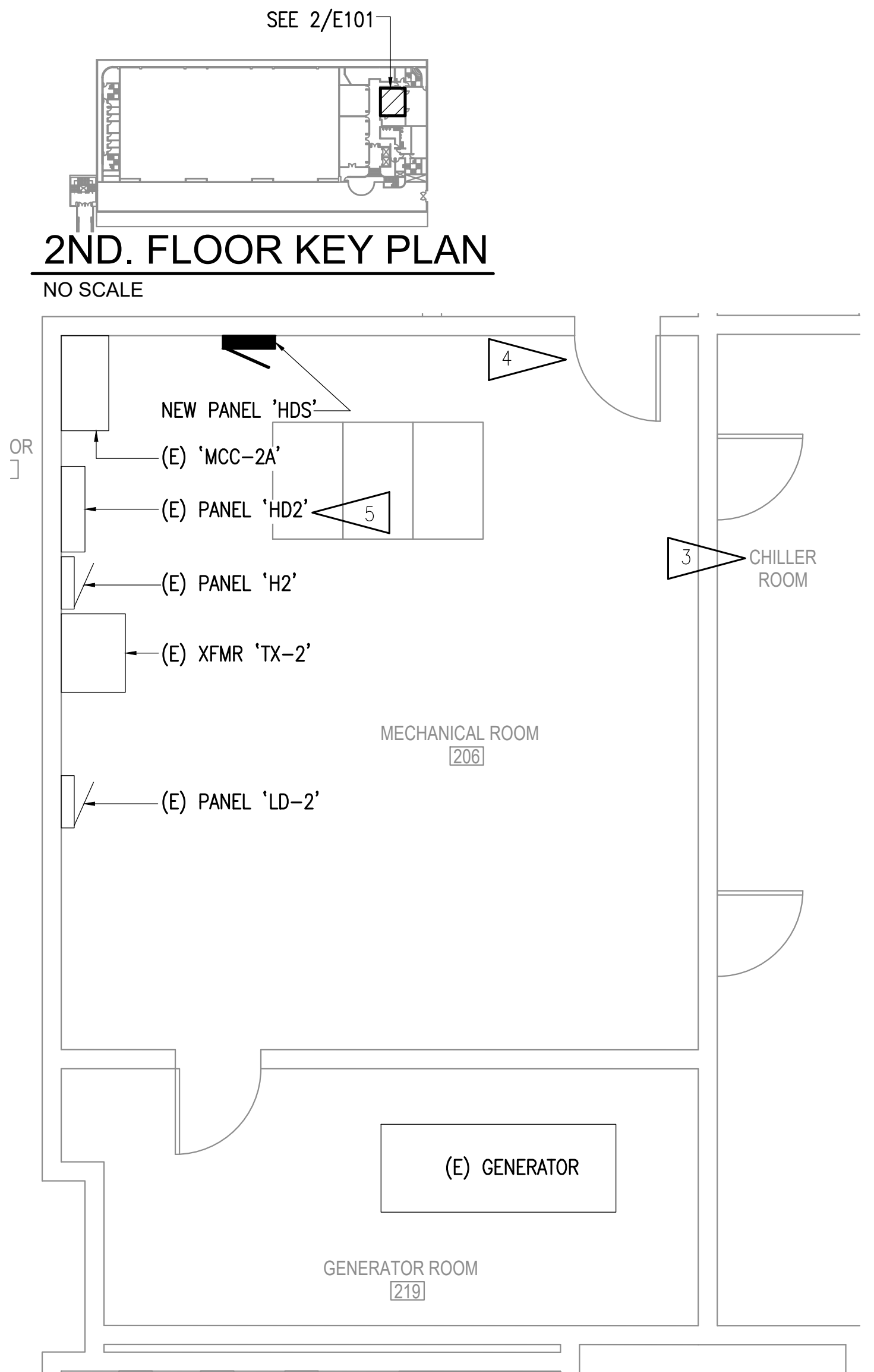
- A. SEE E002 FOR GENERAL NOTES.
- B. SEE 1/E002 FOR CONDUIT, WIRING, AND EQUIPMENT INFORMATION.

SHEET NOTES:

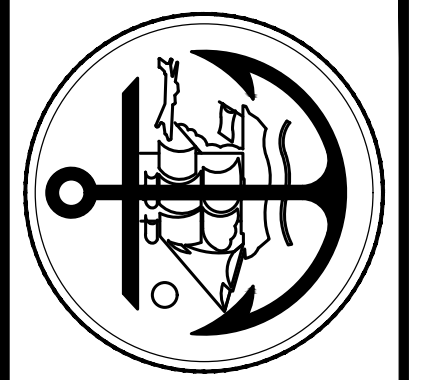
- 1. PROPOSED LOCATION OF SOLAR PANELS.
- 2. PROPOSED LOCATION OF NEW ELECTRICAL EQUIPMENT. COORDINATE LOCATION PRIOR TO ROUGH-IN.
- 3. CHILLER ROOM IS OPEN TO THE EXTERIOR/ROOF ABOVE, ON THE SAME LEVEL AS THE UPPER LEVEL, WITH A ROOF ACCESS LADDER IN THE NORTHWEST CORNER BY THE MECHANICAL ROOM DOOR.
- 4. PROVIDE CONDUIT PATHWAY TO NEW INVERTER FROM THIS AREA FOR TELECOM CABLE. CABLING WILL BE INSTALLED AND COILED UNDER A SEPARATE PROJECT FOR AVAILABILITY.
- 5. REFERENCE 1/E001 AND 1/E002 FOR DEMO AND NEW WORK REQUIRED WITHIN PANEL 'HD2'.



1 SOLAR ARRAY - ROOF PLAN
1/16" = 1'-0"



2 ENLARGED UPPER LEVEL PLAN
1/4" = 1'-0"



REVISIONS:

DRAWN BY: NDZ
CHECKED BY: DB
DATE: 12/19/2025
JOB NUMBER: M5164
DWG FILE: M5164-ESERIES

DRAWING TITLE:
ELECTRICAL PLANS

SHEET:
E101